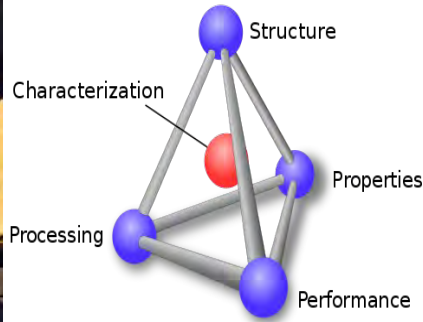




Graduate Student Handbook

UW Materials Science and Engineering



Autumn 2017-Summer 2018



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General Information

Administration

The Materials Science and Engineering administrative office is located in Roberts 302. Office hours are from 8am-12pm and 1-5 pm Monday through Friday. Questions regarding advising, paychecks, rules and regulations, mail, and supplies may be addressed here. Appointments are recommended to ensure availability of the staff.

Administrative Faculty

Jihui Yang, Chair & Professor

Christine Luscombe, Graduate Program Coordinator & Associate Professor

Fumio Ohuchi, Associate Chair; Undergraduate Program & Professor

Administrative Staff

Front Desk Staff

General office services, incoming mail, package receiving

Hong Yen Cone – Administrator, Roberts 302D

Personnel, insurance, budgets, grants and scholarship administration, building coordinator

Karen Wetterhahn –Graduate Program Adviser, Roberts 302B

Sandra Maddox– Undergraduate Program Adviser, Roberts 302A

Karen is your go to person for general program logistics and planning. You will receive emails from her to help keep you informed and on track with your progress throughout the program. She will also be working with you to assist with course planning and degree requirements, along with many other items outlined in the pages that follow.

Sandra provides the same information for students in the undergraduate program. She is available to assist when Karen is unavailable.

Andrea Neubert - Assistant to the Chair, Roberts 302E

Chair's calendar, department seminars, academic personnel, building keys, newsletter, photos.

Bichtien Thach - Administrative Coordinator, first cubicle

Coordinates purchase orders and packages, travel, budgets, paychecks, and petty cash; provides front desk support.

Anthony Amaratunge Fiscal Analyst Lead, second cubicle

Donald Obcena, Financial Analyst, third cubicle

RA/TA payroll, state and grant budgets, travel expenses and supply reimbursements

Technical Staff

Tuesday Kuykendall - MSE Lab Manager, Mueller 156

Manages all department lab operations (except EMC). Provides training for lab instrumentation as well as management and maintenance. Junior lab instructor. Provides some support and consultation for research labs. Lab safety officer.

Tatyana Galenko – MSE Lab Technician, Mueller 152

Assists Lab Manager in all lab operations and supports lab safety. Provides training and support for lab instrumentation and assists with TA training. Tatyana is the contact for Physical Inventory.

Hanson Fong - Assistant Director, Institute for Advanced Materials & Technology

Manages equipment for Electron Microscopy Facility (EMC)

Laszlo Szeleccki - Senior Computer Specialist, Mueller 164

General computer and technical support and operating systems, student computer lab access and manager

Important Resources

[UW Net ID / Email](#) will be required for registration and other UW access.

[MyUW](#) is the homepage for registration, student account, transcripts, etc.

[Academic Calendar](#) dates of instruction, add/drop deadlines, tuition, holidays, etc.

[IT Connect](#) - email and computing tools

[UW Graduate School](#) – Education Policies, Degree requirements, Finances, Student life

Registration Register prior to the start of the quarter to avoid a late fee. Full time enrollment requires enrollment in at least 10 credits each quarter autumn-spring and 2 credits in summer quarter (if applicable). Full time status is required for all RA/TA appointments and international students. **Students can Add/Drop/Change courses without penalty through day 5 of the quarter.** Student schedules should be discussed with the faculty adviser for assistance with how many research credits to enroll in and recommended electives based on path.

Husky Card Account and ID Center After you are registered you will go to the ground floor of Odegaard Undergraduate Library, M-F, 8-5, to obtain your Husky card that will serve as your student ID and UPASS (buss pass). You will have a photo taken that will be on the card and in your student record.

Sign up for UW Alert to receive notifications of emergencies or crisis situations that may disrupt the normal operation of the UW via email and text messages.

Safe Campus is also a valuable resource for students if there is ever a concern for safety, or if you are seeking a safety guard while walking through campus at night, along with other available services such as counseling and violence prevention.

Security and Safety - In the event of an emergency, call 911 to reach the [UW Police](#). Also, inform the Administrator, Yen Cone, or another staff member (if she is not available). The MSE Department is housed in several buildings but generally all security items relate equally to all areas. Safety and security are important especially as visitors and children may pick up pieces of glass or partly empty bottles of chemicals or other hazardous items. Additionally, there is often the problem of theft. Any unusual circumstances such as broken windows, desks pried open, lost or stolen property, presence of unknown individuals at night or weekends, should be reported immediately to UW Police and as soon as possible to the department administrator.

Hall Health Center is an outpatient clinic that provides health and medical care to currently enrolled 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 685-1011 or you can make an appointment via their website after being seen for the first time and setting up an account.

Health Insurance

Doctoral students with an RA/TA student appointment are generally covered by the [Grad Appointee Insurance Program](#). A 3-quarter appointment (Aut-Spr) has 12-month coverage (thru the summer, regardless of enrollment or employment status). International students are required to purchase student the [International Student Health Insurance Plan](#). Domestic students should view the [Student Insurance website](#) for resources to insurance plans.

The University Bookstore

The UW Bookstore is the official place to check for textbooks needed in UW classes. Many classes use course packets and materials reserved at campus libraries instead of or in addition to textbooks. Books needed for classes are often available for internet purchase through companies such as amazon.com and others. Be sure to examine course syllabi and other course materials before purchasing books.

Career Center @ Engineering

CC@E assists you throughout your internship and job search process, from resume writing to salary negotiation. The staff is available for walk-in advice, appointments and workshops.

[Career Center \(UW Wide\)](#)

The Career Center is available to serve students with resources for internships and jobs, connections to alumni and personal appointments to get you prepared for the job market. The College of Engineering is launching their own Career Center in late September.

[College of Engineering Calendar](#)

Engineering events such as career fairs, seminars, info sessions

Grad Student organizations

[GPSS \(Graduate and Professional Students Senate\)](#)

[ASUW \(Associated Students of the University of Washington\)](#)

[Change of address and other official information](#)

Most updates can be made on-line through via MyUW account. Occasionally, students need to visit the Registrar's Office in person on the second floor of Schmitz Hall.

[International Student Services \(ISS\)](#) The International Services Office provides services to non-immigrant students including visa and travel information, traveling outside the USA, working while in the USA, helping family members to visit here, and much more. All incoming students must see ISS upon entry to the UW.

International Students – Tax ID Number or [Social Security Number](#)

International students who have an RA or TA appointment need to obtain either a tax identification number, or if eligible, a social security number. If students are not eligible for a social security number, they may get an ITIN (Individual Tax Identification Number). For more information please refer to their following [website](#). Students seeking a social security number need a letter from ISO and the completed form SS-5; and need to take these forms to a Social Security Administration office with a passport and original Immigration and Naturalization Service (INS) documents. The nearest office locator is on their [website](#). Also, students should view the section on taxes for international students via the [UW Student Fiscal Services website](#).

[FIUTS \(Foundation for International Understanding through Students\)](#)

This is a volunteer campus organization which arranges host families, travel during quarter breaks, and other social activities for international students and their families. Phone: 206-543-0735; located in the HUB.

MSE Desk Space, Keys - See Andrea Neubert in Roberts 302D to obtain building keys with a [Key Request form](#) (along with cash/check deposit fee of \$25). He will provide desk space for PhD students on the 4th floor of Roberts or key access to the AMP office space. Individual and restricted room access (e.g. electron microscope) will be available upon request and faculty/staff approval. In addition, magnetic access cards can be programmed for access to offices, and labs are available to graduate students. See Laszlo to activate the magnetic card for access to various facilities. Building Use Permits for after-hours use of department facilities will be made available to students who have outside door keys.

BUILDINGS, LABS AND FACILITIES

See the [MSE website for materials and related labs](#) and facilities around campus.

This is a highlight of [campus buildings](#) that you will most likely visit at some point.

- Schmitz Hall [Registration/Tuition/ISS]
- Loew Hall [College of Engineering]
- Suzzallo Computing Resource Center
- Intramural Athletic Center [IMA]
- Husky Union Building [HUB]
- Communications Bldg (Graduate School)
- Engr Library/Chem Library/Physics Library
- University Bookstore (University Way and HUB)
- Chem Stores/Physics Stores

Commuting to and from Campus

Student U-Pass (bus pass)

Student U-PASS is generally one of the required fees that all students must pay along with other enrollment fees. The U-PASS is a bus pass plus more. The U-PASS provides students with a variety of low-cost transportation options—from unlimited rides on buses, commuter train service and light rail, to vanpooling and discounted impromptu carpooling.

Parking

Students can purchase daytime or evening parking permits, as well as motorcycle permits. Parking lot availability changes based on occupancy levels. Students must present a copy of the vehicle registration at the time of purchase.

Bike parking

The UW is home to more than 5,500 bicycle parking spaces distributed throughout campus. Bicycle parking can be found near every UW building and facility, and options include uncovered and covered racks, bicycle rooms in buildings, secure bike houses, and bicycle lockers.

Ordering and Purchasing

Contact: Bichtien Thach, Administrative Coordinator, 302 Roberts

Faculty advisors will assign research budget numbers to graduate students working under their direction. Under audit rules, budget numbers can never be used without prior approval. Teaching assistants, working with the faculty and the technician in charge of each lab, will obtain supplies for use in specific courses. These orders from state funds need to be approved in advance by a fiscal specialist or administrator in Roberts 302.

On-Campus Purchasing

On-campus sources include: Printing Services, Electrical Engineering Stores, Physics and the Chemistry Stores. You should check these on-campus sources before ordering from off-campus vendors. The UW has contracts for supplies and equipment with various off-campus vendors such as VWR and Office Depot through e-Procurement. EProcurement offers a wide range of products to the campus community from office supplies, to lab and glassware, medical and dental, custodial and maintenance supplies. Due to the high volume of purchases, eProcurement has established contractual relations with vendors and is able to offer large savings on many of the most commonly used items at the UW. EProcurement allows you to place orders up to any amount approved by your faculty advisor. Your research group should have one or two designated purchasers on the [eProcurement system](#) that will place the orders for your group.

External Vendors

When ordering supplies from an external vendor via purchase order in MSE Department you must:

- Complete the purchase order (PO) form on the [MSE department web site](#) and include the budget number (provided by PI) ship to address and shipping speed.
- Have the PO signed for authorization by your faculty advisor/PI.
- Submit your completed PO to Bichtien Thach, lilies@uw.edu to process the order.

Orders over \$3300.00

All orders over \$3300 dollars go to bid unless you have a justification for a specific vendor. You will need to supply names and quotes from three vendors. Additionally, it may take as long as a month for the bid order to be placed from the UW Purchasing Department. If there is clearly a single source that meets the requirements, then you must write a “sole source statement.” This includes alternate vendors you have contacted, including sales representative name and address; the item they can provide, model number and price; why these do or do not meet your requirements; provided in a formal quote via email.

Petty Cash (under \$200)

It is possible to purchase items from local vendors with petty cash. This means you pay the vendor with cash or credit card and the department reimburses you. Consult with Yen Cone or Bichtien before you make the purchase. A petty cash form must be filled out and a receipt of services must be turned in to the administrator for reimbursement.

Travel Arrangements and Expense

When planning travel that is to be paid through a state or research budget, always consult with one of the fiscal staff members to ensure that airfare and other expenses are handled according to UW policy. See page 25 for information regarding travel funding opportunities from the Graduate School.

Lab Equipment List

The technical staff keeps a computer inventory listing of UW inventoried equipment and a separate department level partial listing of non-inventoried equipment and consumable supplies. These databases contain information as to the equipment's custodian, location, where purchased, price, etc. The inventory is updated and added to as equipment and/or supplies are purchased and when you advise the staff that you have moved an inventoried item. Please contact the Scientific Instructional Technician if you have questions concerning where to find equipment, where to obtain routinely used supplies, their costs, etc.

Teaching Lab Supplies

TAs will consult with the course faculty and develop a list of supplies needed for the upcoming quarter and provide that list to the technical staff member assigned to the laboratory in question as much in advance of the need for those supplies as possible. The tech staff member shall assist the TA in ordering any special supplies of a unique nature required for the course by advising the TA of proper sources, probable lead times, and answering questions about our ordering policies and procedures. The generation and submission to the administrative coordinator of the actual paperwork shall be the TAs responsibility. Technical staff will procure the routinely used common supplies.'

Expenses, Mail, Phone

Department vs. Personal Expenses

As a general rule, graduate students must supply (and pay for) all materials required for their personal education. This includes textbooks, writing materials, photocopying, courses taken by the student and personal computer software and hardware.

On the other hand, doctoral students often have RA or TA appointments and many expenses related to these positions should be charged to a UW research or instructional budget. As an RA, such charges include materials and supplies used directly in lab research, long-distance phone calls when ordering lab supplies, photocopies of journal articles needed as research background, technical services (shop, literature searching), and research-related travel. For a TA, instructional photocopies and supplies should be charged to the appropriate departmental budget. Some cases are ambiguous. When in doubt, a TA should ask the course instructor and an RA should consult the research adviser or the MSE Administrator.

Campus Mail, U.S. Mail and Express Mail

Mail pickup and delivery occurs shortly after 8 a.m. Monday through Friday. Mail is then sorted and the graduate student's mail is put in their fourth floor mailboxes. The mailboxes are not secure. Your address in MSE is:

(Your name)
University of Washington
Departmental of Materials Science and Engineering
Box 352120, 302 Roberts Hall
Seattle, WA 98195-2120

To send mail (UW official business only), you can put the mail in the 302 mail collection boxes marked "campus" or "off campus (must be stamped and have barcode information)." All express mail requires a budget number (department or research grant). Staff can help you prepare packages for mailing.

Phones

Campus telephone numbers are 543-xxxx, 685-xxxx, 616-xxxx, and 221-xxxx. Call campus number by dialing the last five digits. For local calls outside the UW, dial a 9 to get an outside line followed by the local area code and the seven-digit number. If you are dialing long distance you will need to enter a 1 and then the complete number.

Rooms, shops, and access to facilities

Contact: Tuesday Kuykendall or Laszlo Szelezcki

Conference Rooms

The MSE Department has two conference rooms that can be reserved for meetings and presentations using the [MSE Resource Scheduler](#). The rooms are located in Roberts 321 and Wilcox 243. These rooms are kept locked so you will need to have a staff or faculty member open the room for you. There is a projector in each of the rooms that can connect to your PC with an HDMI port, or a MAC that has WIFI, or an HDMI adapter. We recommend you test out the equipment prior to your presentation. Also, you can reference the booklets in the room for setup information.

Machine Shop – Mechanical Engineering Student Shop

The student machine shop is open during normal working hours and access is arranged after safety training. Students must sign up in person with the shop manager. Instruction and safety procedures training **MUST** be obtained prior to using any equipment. Remember that safety goggles must be worn while using machines or engaging in other shop activities. If the shop machines will be used outside normal working hours, the user must make arrangements for a second party to be available for safety reasons. You can make arrangements for training and access via the [online resource scheduling](#).

Spectroscopic and Analytical Instrument Facilities – Department of Chemistry

Anyone using the [SAI Facilities](#) must be trained by the appropriate personnel. Log books: Whenever any equipment is used, it is important that use be entered into the log book for that equipment. These records are used by the department in many ways and are required by auditors. Look for a notice by the door or on the equipment and enter all information that is requested. If you have questions about this, check with one of the department's technical staff, the fiscal specialist, or room supervisor listed on the notice.

Faculty and students using the equipment for outside or consulting purposes will use their own name/company name in place of the budget number or course number. The company will be billed directly. Supply the fiscal specialist with name, full address, and other relevant information such as purchase order number for invoice purposes.

Electron Microscopy Facility

[The EMC](#) is a user facility set up to provide electron microscopy services to the university research and teaching communities. The EMC has three SEM and two TEM as well as sample preparation equipment for use by the community. Corporate use is allowed at a rate commensurate with rates for similar equipment in the corporate world. The center provides training and help with analysis for users of the facility. Users are encouraged to learn to operate the equipment, but operation and analysis will be provided on request.

XRD Operation

Before using any of the department's XRD equipment, prospective users must receive training via Tuesday Kuykendall.

Laboratory and General Building Operating Policies

Contact: Yen Cone and Tuesday Kuykendall

Environmental Health and Safety Training

All new graduate students must attend [EH&S Annual Lab Safety Seminar](#). Students planning to work in biomaterials-related labs must also take Biosafety Training. Your principal investigator may recommend or require additional training as needed for the research you are conducting such as Fire Extinguisher Training or First Aid Training to function as the lab safety coordinator.

EH&S may update policies and students will be notified in those cases. Graduate students and employees who fail to comply to EH&S regulations are subject to disciplinary action.

Housekeeping Facilities

Custodial Services does NOT clean lab spaces. Therefore, housekeeping plays an important role in reducing the frequency of laboratory accidents. Rooms should be kept in a neat, orderly condition. A cluttered laboratory is a

dangerous place to work. Regulations require work places to be kept free of potential hazards. Inspectors can be expected to cite areas with poor housekeeping under this general requirement. All passageways to building exits, stairways and emergency exits must be kept clear. Spaces around emergency showers, eyewash stations, fire extinguishers and electrical controls (i.e., room breaker panels and equipment switches) must be kept free from obstruction at all times. The floor must be kept clear at all times; any accumulation of bottles and apparatus on the floor is to be avoided. Bottles of chemicals on the floor are especially liable to breakage.

Care of Surfaces

Laboratory bench tops should be kept clear and dry. If a corrosive reagent such as concentrated nitric or sulfuric acid or caustic alkali is spilled, it must be washed off immediately with water. Acids and bases must be eliminated completely by neutralizing with a suitable reagent. See the posted spill cleanup instructions in each lab and in the Lab Safety Manual. Writing desks are not to be used as laboratory benches or for the storage of chemicals or apparatus. The floor and floor covering must be protected against attack by corrosive material and water. Remove at once any organic liquids that spill. Remove at once any acid or base which spills on the floor by using a suitable reagent, such as sodium bicarbonate in the case of acids. Call EH&S if the spill is greater than 1 liter.

Do not use tape on painted and varnished surfaces. The indiscriminate use of cellophane, masking and other adhesive tapes causes considerable damage to painted and varnished surfaces. As a general rule, notices should not be posted on bulletin boards.

Facilities Modification and Maintenance

Work affecting any of the following areas must be accomplished or administered by Physical Plant in order to comply with fire, life safety, and other regulatory codes and bargaining agreements: electrical, mechanical, plumbing and other construction; environmental health and safety requirements; duties covered in the university's agreement with unions representing custodial and skilled trade's employees. Physical plant orders which come under one of the above headings must be coordinated through the Administrator on the "Request for Facility Management Services Form" with a budget number.

Basic Lab Safety Outline

Safety glasses must be worn at all times when working with chemicals or machinery.

Labeling

- All chemicals must be labeled; this includes water.
- Use common, not trade, names.
- Be sure to include the date the chemical was opened or mixed on the label.
- Use the adhesive labels; do not write on the bottle. Labels are located in the safety cabinets of the undergraduate labs and can also be obtained from Tuesday Kuykendall or Tatyana Galenko.

Chemical storage

- Chemicals should be kept in a container with a tightly fitting lid.
- Acids, bases, and flammable materials should be stored separately.
- Gas cylinders must be properly secured to a wall or counter at all times. See Tuesday Kuykendall for guidance in the purchase of equipment.

On receipt of any chemical, you are responsible for adding it to the LSS Chemical Inventory of the room where it is stored. In a private research lab your professor's user name and password are used to gain access to the update or insert section of LSS. If the chemical is stored in a common lab the information should be given to the Safety Coordinator. See the LSS manual in the computer labs. There is also a campus-wide chemical inventory database. For more information on how to use it, please refer to the EH&S website.

Chemical disposal

- Disposal of chemicals is covered in Part 2 of the Lab Safety Manual.
- Some chemicals may be neutralized and poured down the drain **but** a log of all such chemicals must be kept and **signed by you**. A list of what chemicals can be poured down the drain can be obtained from the EH&S web page. Please check the list before disposing of a chemical in the drain.
- Most of our chemical waste is picked up by Environmental Health and Safety. [Hazardous Waste forms and labels](#) can be obtained on their website via the_forms section.

Material Safety Data Sheets (MSDS)

- All chemicals in the department must have an MSDS.
- There is a master set of MSDS in the undergrad polishing lab in MUE 166.
- MSDSs can also be obtained from MyChem online. You can access any MSDS with your UW Net ID and password. They may be transferred to your email or printed. Full instructions are in the LSS manual in the computer labs. Use a PC or Macintosh to access Austen. The campus terminals will lock up and have to be reset if you use them.
- If you are a TA, it is your responsibility to ensure that your students comply with these rules.

General Lab Safety

Labeling of Chemicals and Compounds

It is imperative that chemicals and compounds be labeled in a clear and uniform manner. To this end, labels of two types have been placed in the lab safety cabinets. For large containers there are HMIG target organ labels which point out the specific hazards of a given chemical. If you use a quantity of a chemical large enough to merit this label's use, take the time to fill it in using the MSDS as a reference. For smaller containers or short term storage there are plain white labels available in the safety cabinets. Each chemical label must have the following information: your name, exact name and amounts of all chemicals in the container, the date it was made and hazard warnings, including target organ effects if applicable. The health hazards for each chemical can be found in its MSDS.

Liquid Reagents

All large (over one liter) containers holding acids or bases of concentration greater than 1 M are to be stored preferably in cabinets near the floor in a place not subject to traffic hazards or overturn by accidental contact. Do not store on the floor.

Flammable Liquids

The amount of flammable or combustible liquid to be stored in work areas shall not exceed the amount that will be used in one week. In no case shall the quantity stored exceed five gallons unless approved by the Fire Safety Marshall. Quantities of flammable liquids in excess of one pint must be stored in either approved metal safety cans not exceeding five gallons in size or in the original containers kept in approved safety cabinets. The total amount of flammable liquids stored in glass containers must not exceed one gallon in any one working area unless stored in approved flammable storage cabinets. The cabinet tops must be kept clear. Flammable liquid waste must be handled and stored as any other flammable liquid. Disposal of flammable liquids and other hazardous materials must be done in accordance with the procedures set forth in the Operations Manual D12.2 available at the departmental office. Flammable/combustible liquids must not be stored near open flames or other potential ignition sources.

Re-Use of Chemical Bottles

Re-use of bottles in general is strongly discouraged. However, if you need to re-use bottles for materials different from original contents, it is important to remove the old label completely and re-label with present contents and any other needed information.

Gas Flames and Electric Heaters

Gas flames and electric heaters are to be turned off as soon as the operation demanding their use has been completed. If you need to have a gas flame or electric heater in operation overnight or over a weekend, get the approval of the research supervisor and leave a note at the burner or heater to prevent its being turned off. Do not use gas flames in a

room where appreciable quantities of a volatile flammable solvent are being used. Do not forget to extinguish flames when working with flammable materials in the hood. Tygon tubing should be used on the burners, and it should be replaced when it becomes discolored. Extension cords are to be used for temporary purposes only and are not to be left plugged in.

Compressed Gas Cylinders

Compressed gas cylinders (full or empty) must be physically secured to a support at all times by using straps and fixtures specifically designed for this purpose. The cylinder caps must be in place when cylinders are moved, even if the move is only for a short distance. It is mandatory that the cylinder caps be in place when returning empty cylinders to the gas shed. The empty cylinders will not be picked up otherwise.

Unattended Equipment

The design and operation of automatic relay-controlled equipment for unattended operations must be approved by a member of the faculty. A sign should be attached to any equipment operating unattended.

Electrical Grounding

All electrical apparatus must be properly grounded before use. Use of 3-prong adapters is expressly forbidden. If you find an older outlet that has not been converted to the grounded type, please request the replacement through the building administrator in 302 Roberts.

Poisonous Materials

Adequate precautions must always be taken in using poisonous materials. There is a POISON CONTROL CENTER (526-2121) where much information can be obtained with respect to poisonous materials and antidotes for them. If poisonous materials are to be used over a period of time, place a warning sign on the door.

Eye Protection

Eye protection is required by state law to be worn by everyone participating in, observing, or performing any function in connection with any course or activity in any eye protection area. Eye protection areas are defined as those in which activities take place involving (1) hot molten materials; (2) milling, sawing, turning, shaping, cutting, grinding, or stamping of any solid materials; (3) heat treatment, tempering, or kiln firing of any kind; (4) welding of any kind; (5) corrosive, caustic, explosive, or flammable materials; (6) anything else that is potentially hazardous to the eye. Safety goggles are required by everyone at all times in MUE 165, 166, 167, and 176 and lab coats are required by everyone at all times in MUE 165 and 166.

Approved Safety Goggles

Everyone will wear approved safety goggles while in MSE laboratories if any of the above defined activities are taking place. All students will be asked to comply with the regulations or to leave the laboratory at once. Approved safety goggles are available for purchase to all employees (faculty, staff, TAs, RAs, and undergraduate students) from the MSE storeroom. Safety goggles are also available in the Science and Engineering section of the University Bookstore. Other eye protection devices that are required in the shops and other facilities can be requisitioned through the fiscal specialist of the department on approval by the faculty or staff supervisor and with a proper budget number. Visitors shall be furnished eye protection devices while observing activities hazardous to the eye.

Contact lenses

Experience has shown that in cases where chemicals have splashed into the eyes of individuals wearing contact lenses, the damage to the eyes has been of greater severity than otherwise. This results from the chemical material getting under the lens and not being able to be washed out promptly. Users of contact lenses should be mindful of this problem and should avoid the use of contact lenses in the laboratory. If contact lenses must be worn, users should be especially diligent in wearing safety goggles.

SMOKING: Smoking is prohibited in all areas of or near Roberts Hall, Mueller Hall, Wilcox Hall, Wilson Annex, and Wilson Ceramic Lab and severely limited to specific areas on the UW campus as a whole.

Refrigeration and Freezers

Refrigerators and freezers used for cold storage of chemicals must be under control of a specific research or service group. Volatile, flammable chemicals may not under any circumstances be placed in a refrigerator unless it has been

rewired electrically to eliminate the hazard of explosion. Such a device must be so labeled. It is preferred that such units are located within group space; however, any unit located in public space must be kept locked to prevent unauthorized entry. Each refrigerator must be signed to indicate whether suitable for storage of flammable materials. Units must be regularly cleaned by the responsible group. All items placed in cold storage must be labeled to indicate not only ownership but also the name of the compound, nature of hazards involved, and the date.

Consumption of Food

Food should not be prepared or cooked in any building laboratory or shop. Food should not be stored in a refrigerator used for chemical storage. In view of the possible hazardous materials used throughout the buildings, caution should be observed when any prepared foods are consumed.

Lab Water

Laboratory water is not protected from contamination by backflow and should under no circumstances be consumed.

Emergency Procedures

The response to emergencies will vary depending on the level as defined in the University Emergency Plan:

- Level I Emergency: a localized emergency with limited impact, such as fire, hazardous material incident, or limited power outage.
- Level II Emergency: a campus event such as a major fire, civil disturbance or widespread power outage.
- Level III Emergency: a community or region-wide event such as an earthquake or multi-casualty incident.

If there is an immediate danger, the person(s) identifying the situation should contact the police or fire department directly by phone (dial 911) or by pulling an alarm to summon aid. For a limited emergency (Level I or II), the person discovering the incident reports to the emergency plan primary contact (Yen Cone in 302 Roberts) who will notify the appropriate campus unit such as the University Police, Physical Plant, or the Department of Environmental Health and Safety. In case of building evacuation, assemble on the lawn outside Mueller Hall or the parking lot (C12) behind Roberts by the Burke-Gilman Trail.

For a community-wide event (Level III), the emergency plan primary contact or alternate will establish contact with the UW Emergency Operations Center (UW Police) and Physical Plan Communications.

Important: If you hear an alarm, you should evacuate immediately following the route on the building evacuation plan. Close doors behind you and bring your belongings with you, if there is time, depending on the emergency.

Gas Leaks

General

Gas leaks can present several hazards simultaneously. Gases and some liquids can present toxic health hazards as well as fire and explosion hazards. The total hazard condition must be assessed in determining what emergency procedures are to be followed. Notify others in the laboratory that an emergency situation exists or is developing. Request assistance as it seems appropriate. Leaks of flammable gases or release of vapors can produce explosive mixtures in the air. Extinguish any open-flame devices and shut down spark-producing electrical equipment in the area.

Reporting

Any incidents must be reported to the building coordinator, Yen Cone. If Yen is not available, please contact Karen or Tuesday. One of them can begin evacuating and cordoning off the hazard area immediately if such action is warranted. Materials producing explosive mixtures in air — call the University Police at 911 using a land line. Toxic or corrosive gases or chemicals — the University Environmental Health and Safety department can advise with these incidents — call EH&S at 543-0467. In case of any spill requiring cleanup assistance, call the Seattle Fire Department HazMat team at 911.

Evacuation

Since in most instances only sections of the buildings need to be evacuated, the evacuation directive is spread by the building manager. Follow directions as to safe refuge areas and stay there until the hazardous condition is corrected.

Guidelines for Spills

Laboratory personnel must comply with the following procedures for cleanup and waste disposal. Custodial Services personnel have been instructed not to remove any material which is not prepared in accordance with these procedures, or appear to be hazardous and to report discrepancies to their supervisors. The reports will be referred to Environmental Health and Safety, 3-7262, for resolution. Note: No list of examples can be complete. Know your chemicals, handle them appropriately. Call Environmental Health and Safety, 5-2848, for assistance as needed.

Mercury Spills

Mercury should be cleaned up immediately by using either the mercury vacuum or mercury absorbs powder and sponges. The mercury absorbs powder and sponges, available in most common area labs, are used to clean up small, thermometer sized spills. For large spills, the mercury vacuum is available in Bagley 36. In case of spills larger than 5 ml, it is required to contact EH&S at 5-2848 for assistance and inspection of the spilled area.

Hydrofluoric Acid Spills

There are two HF spill kits available, one in Rob 214 and one in Mueller 166. The kits contain a converter, neutralizer, absorbent, dustpan and broom, and instructions. Use these spill kits for any spill smaller than one liter. For larger spills contact EH&S at 543-0467. HF is extremely hazardous and HF fumes can become carcinogenic – if you must use this in the lab read all relevant safety information/SOP's before proceeding. Do not let HF touch your skin. Seek medical attention.

Chemical Spills

General

In the event of a large hazardous chemical spill, notify all personnel in the immediate area and evacuate the lab. If the hazard is great, e.g. the spill is of great volume or is fuming; notify the proper authorities at 911 and 5-2848. If the spill is manageable at the site then clean up as directed below. Know the chemical to use.

Cleanup

Wear an apron, splash goggles, and protective gloves located in lab safety cabinets.

For most liquid chemicals, with the exception of Hydrofluoric Acid and Mercury (see above), spillage can be cleaned by using the polyzorb chemical spill pillows, located in the lab safety cabinets. These pillows have the capacity to absorb up to 250 ml each. The used pillows are to be bagged, sealed, and labeled according to what they were used to absorb. These labeled bags are to be disposed of by means of the Environmental Health and Safety's Hazardous Waste Collection Request Form. The Hazardous Waste Collection Request form can be obtained from the safety coordinator. The waste should be kept in a fume hood until pickup by EH&S.

Spill-X chemical neutralizers are available in Mueller 152. These powders will neutralize specific acids, bases and solvents, which are listed on the back of each bottle. Use these powders to neutralize any spillage that cannot be picked up by the polyzorb pillows and clean up with a broom and dust pan. After the chemical has been neutralized and picked up, use a mop bucket to clean up around the spill area. Use large amounts of water to dilute any remaining chemicals. Only after the cleanup is complete should the protective equipment be removed. Also, adequately ventilate the area for some time after the cleanup.

Reporting

As mentioned above major spills should be reported to EH&S immediately and all spills should be reported for pickup of the waste. Equally important is the notification of the person in charge of the lab so that cleanup supplies can be replaced in the event of another spill.

Guidelines for Disposal of Waste

Identification of Hazardous Waste

Many chemicals are considered to be "hazardous waste" by the Washington State Department of Ecology and cannot legally be washed down the sink or be disposed of with ordinary waste. Any compounds having one or more of the following general characteristics will require special disposal methods:

- Moderately and highly toxic compounds.
- Carcinogens and suspected carcinogens.
- Pesticides.
- These metals and their salts :arsenic, barium, cadmium, chromium, lead, mercury, selenium & silver.
- Flammable compounds (including most solvents).
- Corrosive compounds (primarily strong acids and bases).
- Strong oxidizers.
- Explosive and highly reactive compounds.

Another aid in identifying chemical waste is the Chemical Waste Management section of the Lab Safety Manual. This section has a wide range of information on identifying what wastes are hazardous and non-hazardous, techniques to minimize the amount of waste generated and how to dispose of different types of waste.

Disposal of Non-hazardous Waste

Specific information about the disposal of non-hazardous chemicals can be found in the Chemical Waste Management section of the Lab Safety manual.

Disposal of Mercury and Contaminated Solids

Mercury contaminated solids collected and properly packaged (bagged and boxed) will be picked up by EH&S using the [Hazardous Waste Collection Request Form](#).

Disposal of Chemicals and Contaminated Waste

Compounds which exhibit one or more of the above characteristics will be collected by Environmental Health and Safety, with the following exceptions:

Small quantities (less than 25 mL) of acids and bases can be disposed down the sink if they have been diluted with a 10 to 1 ratio of water and if the pH lies between 5.5 and 12.0. Note: this does not apply to HF. If the pH level is outside of this range after dilution, then the solution can be neutralized using another mild acid or base. Complete instructions can be found in the Chemical Hygiene Plan in the Chemical Waste Management Guide.

- It is not acceptable to dispose of volatile solvents by evaporation even in a fume hood. They must be picked up by EH&S.
- In order to get EH&S to pick up any waste, it must be packaged correctly. Bottles must have a screw top lid and be in good condition. If the waste has been placed in a box, make sure that it is protected from being dropped and has been securely closed.
- Label the container with a Hazardous Waste label (available online at www.ehs.washington.edu). Please fill in all required information on the Hazardous Waste label. The composition of the waste should be clearly written on the label (e.g., Potassium Dichromate Solution, approximately 5%). This information is essential for Environmental Health and Safety to determine the proper disposal methods for the waste. Vague descriptions (e.g., "Non-volatile Organic Solvent") are not adequate.
- Use EH&S Hazardous Waste Collection Request Form to get material picked up by EH&S.
- Please note that all pickups should be made at the lab generating the waste. Do not bring chemical waste to the storeroom or loading dock for pickup.

Radioactive Waste - Consult [UW Radiation Safety Manual](#) or if in doubt, contact Environmental Health and Safety, 3-7262. Accumulate as instructed, place filled and labeled carton at appropriate pickup site, or call for assistance.

Special Problems

Needles, scalpels, razor blades, and syringes - Package in puncture-proof (i.e., sealed cardboard box) containers, identify and dispose of in appropriate sharps (not lab glass) waste containers. These containers can be purchased through South Campus Stores. Properly labeled containers (sealed) will be picked up by custodial services.

Laboratory glass, plastic ware, and materials which can puncture, cut or scratch (e.g., pipettes, vials, tubing, broken flasks, etc.) - Rinse free of toxic, pyrophoric, and corrosive materials. Package in puncture-proof containers and tape with special "Laboratory Glass" tape; label with P.I.'s name, and the room number of the lab. Deposit in appropriate waste containers. Approved containers are available from UW Stores.

Empty glass or plastic chemical bottles - Remove caps, rinse residue and write "empty" on the label before depositing in "laboratory glass" boxes.

Conservation of Utilities & Supplies

Economy in the use of research supplies is a responsibility of each individual. Research supplies are one of the largest items of expense in the department, and all must cooperate in keeping expenditures at reasonable levels at all times. The cases listed below are a few examples where cooperation on the part of the graduate student, faculty, and staff can affect significant savings.

Use of Gases

Compressed gases, natural gas, and others vary in cost. Piped utilities should be turned off when not in use. Cylinder gases are particularly costly and special care needs to be taken in their use. Also, demurrage charges accumulate monthly on the tanks and, therefore, it is extremely important to return the tanks when they are not being used.

Liquefied Gases

Liquefied gases (N₃ and O₂) are very expensive. Conserve by sensible practices as much as possible. If you must use a warm Dewar, let the liquid gas flow slowly until the vessel is cooled. As soon as the Dewar is cooled, the flow of liquid can be increased.

Gas Cylinder Valves

Gas cylinder valves used with corrosive gases require special attention. After each use the needle valve or other metallic device used as a junction between the cylinder valve and the apparatus must be removed and thoroughly cleaned. This means in many cases that the valve should be disassembled, cleaned and reassembled. A partial list of corrosive gases:

- Hydrogen halides, halogens, boron halides, nitrogen oxides (except N₂O).

Failure to practice this care of the equipment results in subsequent faulty function, "frozen" valve stems, and so on. Often the equipment is rendered unsafe because the force necessary to remove the valve is enough to damage both the exit valve and the cylinder.

Paper Recycling

A paper recycling program is in progress on the campus and is supported by the department. This program is sponsored by Physical Plant, which collects many types of paper products.

Use of Water

Water should never be left running unless it is for a specific purpose, particularly if the laboratory is unattended. Any flood is an EMERGENCY as water may run between floors and ruin items in labs or offices under you. It may be only an inconvenience in your own laboratory, but it could endanger thousands of dollars in damage of books or equipment on the floors below.

Room Floods

If you discover a flood, whether it is in your own laboratory or not, you have the primary responsibility for taking action to reduce it immediately. Any financial loss due to a flood that results from a research group's activity must be borne by the group.

- Find out where the water is coming from and shut it off.
- Shut off power if lack of water can cause a dangerous situation.
- Obtain the closest help available. A dedicated wet vacuum cleaner ready to use is available in the machine shop or custodial closet in Mueller.
- Locate the student or faculty member in charge of the flooding laboratory as soon as possible. S/he will assume responsibility at arrival.
- Notify the building administrator (Yen Cone) as soon as possible. Plastic film is available for covering equipment and desks in rooms below. If the flood occurs after service hours and you need more help, call the University Police (3-9331) or the technician in charge of the room at the phone number posted on the door.

Experiments using continuous water

If an experiment is to carry on unattended with running water, it is best to use copper tubing with proper fittings. If you must use hose in the system, use Synflex; it is less subject to embrittlement and failure than rubber tubing and slips less but does require surveillance. Do not use un-reinforced hose on hot water under pressure.

If you find it absolutely necessary to have water running while the laboratory is unattended, it is strongly recommended that you install a water flow device that can shut things off in case of a system failure. These units are commercially available and the small investment could be valuable insurance against a possible accident for which your group would be financially liable.

Do not place rags or other such material in sinks to avoid splattering, particularly where water aspirators are used. This practice can lead to serious floods. Instead use a small bottle with the bottom removed.

Hoods

Hoods should be used when noxious gas is being handled or evolved. They are not to be used as permanent storage places, and apparatus set up in a hood should be removed as soon as the operation is completed in order that the hood is available for other use and/or for emergency. NOTE: Hoods operate most efficiently with the door approximately 9" above the sill. This height also best contributes to room ventilation. Fume hood exhaust fans usually operate 24 hours a day since frequently more than one hood or room is served by each. If hood controls are available in labs you are using, do not operate them without permission of the person responsible for the room.

Radios, CD Players, Computer Audio

Radios and other sound should not be audible to a class, seminar or other meeting nor disturb other building occupants. Operation must be discontinued at once upon complaint of a disturbance.

Lab Orientations

You will be oriented and asked to sign lab specific arrangements acknowledging that you understand the rules and agree to follow the guidelines.

Composite/Process/Machine Shops and Safety

Safety

Safety is the number one concern in the department, in the laboratories, in the classrooms, and in the offices and other common areas. It is important that all safety precautions are observed and that the following guidelines and procedures are understood and followed. *Each laboratory has a lab safety manual specifically designed for that lab. Familiarize yourself with the manual and follow the directions therein.*

Reporting Emergencies

To call an ambulance, summon police, or report fire, use the campus emergency number 911 (or 222 if busy). Tell the operator the nature of the emergency, its location, and your name. Do not leave the phone until the call has been acknowledged, you have answered any questions posed by the operator, and you have received any instructions (i.e. meet emergency personnel at a specific place).

Evacuation: Teaching Assistants, Research Labs

Whenever the general evacuation (fire) alarm sounds, teaching assistants are to instruct their sections to turn off all flames and electrical equipment (except in instances where electrical shutdown will increase fire or ventilation hazard). Teaching assistants should be familiar with the two most direct routes from their instructional laboratories to the outside and should be prepared to point them out to their laboratory students. Classroom instructors and laboratory teaching assistants are responsible for the designation of two or more students to assist any wheelchair students to the nearest fire protected stairwell or wheel ramp. Blind and other handicapped students needing assistance shall be assigned guides. Researchers should turn off all flames and electrical equipment except where prudent and evacuate the building. Emergency evacuation assembly location is in the large C12 parking lot next to the Burke Gilman trail and/or the front lawn of Roberts Hall.

Safety Equipment

First aid kits are available in each common lab near the lab safety cabinet. Other first aid supplies for individual research laboratory kits may be purchased from central stores or commercial suppliers. Please notify the laboratory technician whenever first aid supplies are used. Emergency showers are provided in the halls throughout the buildings. Eyewash stations are located periodically in the laboratories and are to be used to rinse out the eyes in the event of chemical or foreign object contamination.

Accident Reporting

Accident reports must be submitted via [the Online Accident Reporting System](#) if anyone is injured. For accidents in undergraduate labs the teaching assistant will prepare the report.

Safety in the lab

- Protect yourself; wear goggles and a lab coat
- Pay attention to what is going on around you
- Familiarize yourself with specific lab safety guidelines
- As TAs and RAs, pay attention to your students – enforce safety rules
- Keep locked doors locked (avoid theft)
- Work in teams in the lab, especially after hours

The Mechanical Engineering student shop is for use of faculty, staff and students of Materials Science and Engineering and other Engineering Departments; however, for safety and security reasons please observe the following guidelines:

1. The scientific technician is on call daily for equipment instruction and tool check out.
2. The technician is partially supported through cost center revenues; therefore, if you need assistance for extensive consultation or fabrication (i.e., 1/4 hr. or more), please supply a budget number for recharge purposes.
3. All users must have proper training on equipment before it is used. The technician is in charge of the shop and must be notified before anyone new to the shop uses equipment. If you have not been trained, s/he will arrange for proper training.
4. For safety and security reasons, prior approval for shop use is required. It is against University policy for anyone to work in the shop without proper supervision. If you must work on weekends or after normal business hours, it is required that you have at least one other person in attendance to be able to assist you in case of an emergency.
5. Equipment and tools can be used free of charge; however, you are liable for equipment and tool breakage. It is also requested that you furnish your own supplies or provide a budget number for replacement of supplies used.
6. Specific shop safety regulations are posted inside the shop on the door. Please read them.

7. Students may not use the ME machine shop until they have an approved ME Shop Training Affidavit on file.

You may be asked to read and sign rules for shop use and safety training.

Equipment and Supplies

Lab Equipment List

The technical staff keeps a computer inventory listing of UW inventoried equipment and a separate department level partial listing of non-inventoried equipment and consumable supplies. These databases contain information as to the equipment's custodian, location, where purchased, price, etc. The inventory is updated and added to as equipment and/or supplies are purchased and when you advise the staff that you have moved an inventoried item. Please contact the Scientific Instructional Technician if you have questions concerning where to find equipment, where to obtain routinely used supplies, their costs, and so on.

Teaching Lab Supplies

TAs will consult with the course faculty and develop a list of supplies needed for the upcoming quarter and provide that list to the technical staff member assigned to the laboratory in question as much in advance of the need for those supplies as possible. The tech staff member shall assist the TA in ordering any special supplies of a unique nature required for the course by advising the TA of proper sources, probable lead times, and answering questions about our ordering policies and procedures. The generation and submission to the administrative coordinator of the actual paperwork shall be the TAs responsibility. Technical staff will procure the routinely used common supplies.

Computer Labs

Contact: Laszlo Szeleccki

MSE Department Computer Labs:

Grads – Roberts Hall #131

Undergrads – Mueller Building #178

- Each of the Labs has a code entry system installed. See Laszlo for more information, if you missed the orientation.
- Our student computers require login with your [UW NetID](#) (UW email prefix) and password. Only MSE students have access.
- At login you will need to follow this login method: “netid\UWID” into the “name” field and your UW NetID password for the “password” field. On the Apple computers, just use the Guest account.
- Each lab has a list of available software on the wall. To access these programs, you must Remote Desktop to the COE Remote Desktop Server. Instructions for the Remote Desktop connections are posted inside the lab. Installation of any software is restricted, but can be requested.
- We have a web based resource scheduling system for your needs. You can use it to schedule departmental equipment. To access it, go to the MSE Department website.

Computer usage on campus is restricted to registered students only. No relatives, friends, outsiders are allowed to use UW resources. Temporary WiFi access can be granted through a Visitor Permit, which has to be initiated by the hosting individual. This option is available on the UW-IT web page.

If you set up a new computer, or laptop, or change the operating system of an existing one, make sure you have the following:

1. UW-approved virus checker
2. System updated with patches and fixes from the vendor
3. Limit the number of Admin accounts,
4. Admin and all other accounts have strong passwords.

Additional Tips

- You can always bring your new, or used computers to my office, along with the legally licensed software, if you'd like it to be properly installed. I'd be glad to do it.
- Don't give your password to anyone; lock your door, if you step out; use a password protected screensaver!
- If your computer gets compromised, or infected, or behaves slowly and strangely, update your virus checker and run a full scan in SAFE mode by using the F8 key boot option, in MS Windows. On a Mac, hold the Shift key at boot, to go to Safe mode. Disconnect the computer from the network, disable network shares, disconnect any devices, take note what was installed recently, or what was changed in the configuration, to help further inspection.
- If the network port in your room doesn't work, it could have been blocked by UW-IT. To unblock it, you have to clean the infected or compromised computer and go to UW-IT website with the same computer and search for the 'unblock' page.
- Remember: computer use is regulated by state and federal laws.
- Also see Ethics in Computer and Network Use on the UW website

Academic Policies and Procedures

Graduate Program Coordinator (GPC) and Assistant (GPA)

The MSE GPC is Prof. Christine Luscombe. The GPC's responsibilities include the following:

- Oversees the advising and counseling of graduate students.
- Ensure that new students and others receive special attention as appropriate.
- Admit students into the MSE graduate program.
- Oversee the appointment of Chairperson and Members of the Supervisory Committee for each student.

Graduate Program Assistant (GPA)

The MSE GPA is Karen Wetterhahn. The GPA advises and counsels students, often in coordination with the GPC. She also handles grad program administrative duties and helps MSE grad students with procedures such as course registration and submission of Graduate School forms and petitions.

Academic Advising

The faculty advisor for graduate students is an MSE faculty member who helps the student select courses of study and monitors progress toward the degree. The GPA advises students who have not been assigned to a research group. Once a student joins a research group, the research (faculty) advisor then becomes the student's academic advisor.

Seminars

The MSE Department has a regular seminar of speakers scheduled on Monday afternoons which graduate students are expected to attend. Many other departments and programs on campus also have regular seminars at which MSE students are welcome, especially Chemistry, Nanotechnology, Chemical Engineering, Physics, Bioengineering, Mechanical Engineering and Electrical Engineering. Many are posted in the department; information is also available on the department's websites.

Graduate Student Appointments

The MSE Department has limited [RA and TA positions](#) that are reserved for doctoral students.

Payroll for Doctoral Graduate Student Appointments (RA, TA)

- Complete payroll paperwork with Donald or Anthony in Roberts 302 Fiscal Services
- Two paydays per month: 10th and 25th
- Autumn quarter payroll cycle is September 16 to December 15
- First payday for Autumn quarter is October 10
- Last payday for Autumn quarter is December 24
- Academic year appointments of 3 quarters end on June 15, are paid on June 25
- Academic year appointments of 4 quarters from 9/16 to 9/15

- Payments can be set up via direct deposit, look for your deposit information in your MyUW account, under ESS. They can also be set up in the form of checks and picked up with the administration staff.

CRITERIA FOR APPOINTMENT AND REAPPOINTMENT

A. GENERAL

The policies of the Department of Materials Science and Engineering regarding the appointments of graduate students to Teaching Assistant (TA), Research Assistant (RA), and Graduate Staff Assistant (GSA) positions conforms to the [UW policies for Graduate Student Appointments](#). International TAs (ITAs) must meet University English proficiency requirements before being considered for TA positions. Additional policies and procedures for all appointments are defined in the information below.

B. NUMBER OF AWARDS AVAILABLE

The number of Graduate Student Service Appointments available for award varies from quarter to quarter depending on the current level of funded research and on the current level of state support. However, as a general indicator, over the past few years, in each quarter there have been approximately 38 RA positions (usually at the 50% level, 20 hrs. per week) and 9-10 TA positions. These are for a total student enrollment of about 65 doctoral students, of whom about 50 are full-time students.

C. APPOINTMENTS AND REAPPOINTMENTS

1. TA Positions

TA selections are made before the start of each quarter by the department associate chair following consultation with the department's Graduate Program Committee, the Undergraduate Program Committee, and the faculty members responsible for teaching the courses that will have TAs assigned to them. These graduate student appointments are made on a quarter-by-quarter basis. While some appointments are renewed in subsequent quarters, students should not assume that a TA appointment will continue for more than one quarter.

Most TA positions usually are awarded to students with some prior background in the department, but award offers may also be made to prospective new or incoming graduate students. The general policy is that long-time and PhD level students should not expect to be continually supported with TA positions, but instead should become associated with a particular faculty member and be supported as an RA.

TA selection - The Associate Chair, Fumio Ohuchi assigns TAs each quarter; positions may be 25% or 50% appointments. Since TA service usually reduces research productivity, strategize with your adviser at the beginning of the academic year to choose the best times for you to work as a TA. The MSE Department expects you to participate in [CIDR's TA training](#) and to use various tools available within the university to aid with and improve instruction.

2. RA Positions

All RA selections are made by the individual faculty members whose grants and contracts have funds for those positions. The continuation of these appointments depends on the continuation of the funding of the project, the satisfactory performance of the student, and the evolving needs of the research.

RA Responsibilities

Research assistants and associates engage in research on sponsored research projects or faculty member projects under the general supervision of faculty or other research staff. Appropriate activities may also include independent research under the guidance of a faculty member. They are full-time graduate students.

INFORMATION FOR TEACHING ASSISTANTS

Teaching assistants are adjunct faculty members who assist course instructors in some of the duties associated with teaching a class. The contribution of the TAs to instruction is critical to the success of the department's undergraduate program. Specific duties are assigned by the course instructor; the TA should contact the faculty member at least one week before the first day of instruction to begin planning the course.

1. General requirements and procedures

- Hold office hours: TA office space.
- Attend lectures.
- Plan your labs and quiz sections in advance. Work with Tuesday Kuykendall to coordinate your supply needs and lab space requirements. The technical staff can assist you if you plan ahead and tell them what is needed.
- Maintain weekly contact with the course instructor.
- Meet with instructor before the quarter starts to review grading responsibilities and policies.
- Students are to pay for their own photocopies. If you have a lot, take them to a copy center such as the Engineering Library Copy Center.
- Use the standard department lab write-up format (both a long form and a short form). Students receive instruction in the use of this format during their first quarter in the major courses; please use the standard format.
- You may be asked to perform assignments in addition to your regular TA duties, such as preparing posters, leading tours, speaking to student groups, filling in for others or preparing seminar coffee.
- TAs are paid for 20 hours a week; if your duties average more than 20 hours a week, please discuss this with Prof. Ohuchi.

2. Payroll periods

Autumn quarter payroll is September 16 through the last day of the quarter in December. Autumn classes begin the end of September and finals end mid-December.

3. Special considerations for laboratory TAs

- **You must be trained to use any mechanical equipment to be used in the class, and you must have gone through an MSE Department lab safety training session** (see T. Kuykendall for this training).
- You must train all students to use any mechanical equipment that they might need or want to use (note that the technical staff can help in this training--ask for help).
- You must train all students in lab specific safety measures (all MSE majors should have received general lab training during their first quarter in the major). This must include the location and use of the lab safety manual and other safety equipment in each lab room used by the class. Site specific training forms must be on file in the office for each student for each lab used during the quarter. Safety glasses are required in all labs except computing labs.
- **If your students need to use a lab after regular hours (after 5:00 PM), there are four important rules you are responsible to make sure are met:**
 - Students must have been trained to use the equipment.
 - There must be at least two people working together.
 - You must be available in the same building; the only exception is that you can be working in one of the Department's other buildings if you can give them a contact phone number (i.e., the 4th floor phone number).
 - If you cannot be available, the students must not be allowed to use the lab after hours.
 - You need to be sure your students keep all labs clean--this is for safety as well as a general courtesy to those who follow. If your labs are not clean and the students have left, you will be required to clean them.

4. Final Report

You will need to write a brief report at the end of the quarter. This report, which should go to Prof. Ohuchi and to the course instructor, may include:

- Suggestions for improvement of the course, quiz section and/or lab.
- Particular problems that you had relative to department personnel or equipment in carrying out your duties.
- Positive interactions with department personnel in carrying out your duties.

SUPPLEMENTAL INFORMATION

Do All TAs have the same responsibilities in this department?

Specific duties of a TA will vary according to the particular course and course instructor. You are advised to meet with the instructor of the course prior to the beginning of instruction in order to clarify his or her expectations for your role. In addition to this, you may want to set aside a regular time when you can meet with the course instructor during the quarter to discuss any organizational concerns and provide feedback on students' performance and attitudes towards the course.

What do I need to know if I'm teaching a laboratory section?

Generally speaking, TAs responsible for laboratory sections are expected to:

- Train students on the proper and safe use of laboratory equipment used in the course.
- Coordinate students' activities and facilitate students' learning within the lab.
- Grade all student laboratory reports and maintain the appropriate student records.
- Acquire the necessary laboratory materials prior to the scheduled lab activity.
- Ensure that the laboratory is always maintained in a neat and clean state.
- Give a copy of each completed lab exercise to Tuesday Kuykendall.

In order to feel confident in your role during the actual laboratory session, you will want to have a good 'working' knowledge of each laboratory exercise prior to the lab. It is a good practice to go through a dry run prior to each lab in order to troubleshoot problems with the exercise, instructions and/or equipment *before* students are introduced to the activity.

Some TAs may find that some lab development work is necessary or merited in order to arrive at a laboratory exercise that is both well organized and maximally illustrative of the concepts involved. Any development work that you wish to do should be discussed with the course instructor, if for no other reason than simply to provide communication. Any improvements made to laboratory exercises should be documented (on paper) and submitted to the course instructor in order to establish a record of course development efforts.

Your training on the appropriate laboratory equipment and information on standard lab procedures may be obtained by scheduling a time with **Tuesday Kuykendall**, Lab Manager. She may be reached in person at 156 Mueller Hall, by phone at 221-2678, or by email at tuesday@uw.edu. Instructional tips may be obtained by talking with experienced TAs within the department. Information on formal TA training and instructional resources may be acquired through the [Center for Instructional Development and Research \(CIDR\)](#).

NOTE: TAs are expected to provide safety instructions and information to all students enrolled in laboratory sections *prior* to performing any lab work. You should receive Lab Safety training through the University and the Department. Tuesday Kuykendall, the department's safety coordinator, is available to address any additional questions or concerns you may have regarding safety issues in the laboratory.

Do TAs have to attend lectures for the course?

You are highly encouraged to attend course lectures. Some instructors require it; others make it an optional part of your TA responsibilities. You should clarify the particular course instructor's expectations regarding this prior to the beginning of instruction. In any event, you are advised to attend at least several of the instructor's lectures at the beginning of the quarter to familiarize yourself with the particular content of the course, the instructor's teaching style, and how students seem to be receiving the course material during the lecture section.

In many instances, your knowledge of the students' lecture experience can help you better identify needs you might wish to address during your time with students during discussion/quiz and/or lab section. Also, being familiar with where instructors are in their lecture sequence allows you to prepare in advance for students' questions related to difficult concepts and make students feel as though you are 'in sync' with them while they are navigating the course.

What about grading?

The policy regarding grading varies from course to course and instructor to instructor. If you are responsible for a discussion/quiz section or laboratory section, you are, at minimum, expected to grade all homework, quizzes (if applicable) and laboratory reports for your section.

In addition to grading, you are expected to maintain the appropriate student records for your section. It is a good idea to set up a worksheet using a spreadsheet program where you can enter the grades for your section. Prior to doing this, you may want to coordinate with the course instructor to make sure you are using a software format (PC vs. Mac, EXCEL vs. Lotus, etc.) which is readily compatible with his or her own grade worksheet file. It is a lot easier to deal with end of quarter grading if you can provide the instructor with a hard copy of your grade worksheet and a disk containing the file so he or she can import into a master worksheet file on his or her computer.

It is a good habit to back up your work onto an additional disk in case there are problems with the hard drive or your original becomes damaged or misplaced. If you choose to set up a file on the hard drive of a computer, you are advised to use the Roberts Hall 4th floor computers or your own personal computer. No documents should be placed on the computers in the Graduate Computing Lab in Roberts 131. Avoid using the computers in Mueller Hall as undergraduates have access to these computers, thereby making student confidentiality difficult to maintain.

Some instructors will grade their own midterm and final exams. Others will expect the TAs to grade them. You should confirm the instructor's expectations regarding this prior to the beginning of instruction in order to arrange your schedule appropriately or negotiate for a different arrangement.

As a general rule, course instructors are responsible for the determination of final course grades. If possible, you should ask to review the final course grades before they are sent to the Academic Records Office. This will allow you an opportunity to discuss any cases where you might believe an inappropriate grade is being given to a student or students with whom you have had direct experience.

For TAs with laboratory sections, you are expected to inform students of the departmental lab report format, which should be used for all student lab reports. Consult with the course instructor to determine which format will be employed with the course (long or short form). Grading of laboratory reports should account for students' adherence with the stipulated report format.

Generally speaking, undergraduates are not 'graded' on attendance at discussion/quiz or laboratory sections. However, students should be told that students who regularly attend lab and quiz sections usually perform better in the course. Students who demonstrate responsibility in their personal habits towards coursework also positively influence the attitude of the TA who, in the end, can make a direct impact on the grade the student receives for the course.

Do I need to have office hours?

You are expected to hold regularly scheduled office hours so that students can contact you regarding problems or questions regarding the course. There is a TA Consultation area located near TA office space. Since several TAs schedule time there, you will need to coordinate schedules with other TAs who need to use the space. You should post a schedule of your office hours on the bulletin board just outside the consultation office. This provides students with easy access to your hours and helps to eliminate scheduling conflicts with others wishing to use the consultation room.

How do I arrange to put course material on reserve?

Typically, the course instructor will handle this administrative task. However, if you are called upon to put materials on reserve, go to the Circulation Desk at the Engineering Library with the title and author of each book or resource you wish to put on reserve. The process of getting materials on reserve may be facilitated if you locate the books within the library yourself and take them to the circulation desk when you are requesting the reserve service. At the beginning of the quarter, the turnaround time for placing materials on reserve can be quite lengthy (1-2 weeks). It is best to start the process as soon as possible. Also note that the Engineering Library holds two reserve lists: temporary and permanent.

Most materials are placed on the temporary list, which means they would be available for the current quarter only.

Can I copy library materials for my course?

Laws regarding copyright infringement are firmly established and held by the University. As such, none of the University Copy Centers will copy copyrighted published materials unless official written consent is given by the author of the book or journal and submitted to the Copy Center. You can obtain copyright consent forms from the Engineering Library Copy Center located on the 2nd floor of the Engineering Library. You are free to copy published materials at self-serve copiers for your own personal use without much concern. However, if you plan to distribute any published materials to your students without having first obtained the appropriate consent, you should be aware that in doing so you are violating copyright laws.

What is the policy on preparing and posting homework solutions?

This will vary according to the particular instructor for the course. You should confirm the instructor's expectations regarding this prior to the beginning of instruction. In some cases, instructors will prepare homework solutions. In other instances, you will be expected to do so.

Some instructors choose to post homework solutions in the secured glass case located just outside 153 Mueller Hall. You should discuss with the course instructor in advance which member of the course team (instructor or TA) will be responsible for maintaining the homework solution bulletin board. Other instructors prefer to place homework solutions in the Engineering Library Copy Center (2nd floor Engineering Library) so students may obtain personal copies.

Prior to taking material to the Copy Center, prepare a legible original or copy of the solution set. Verify that the deadline for students' submission of homework does not precede the date you plan to indicate for availability of the material. It is possible to post-date the availability date with the Copy Center (i.e., you can take the material into the Copy Center prior to the date you want it made available to students). A Copy Center form (available at the Copy Center) must be completed and submitted with all course materials placed with the Copy Center. It is a good idea to make sure you have at least one additional copy of the solution set in the event of mishandling by the Copy Center (a rare occurrence). The Copy Center can provide you with one or two complimentary copies if you request them at the time of submission. For large jobs, it is preferable that you give the Copy Center staff at least three or four days lead-time in order to have the material prepared for distribution to students.

How am I evaluated as a TA?

Students evaluate teaching assistants

TAs are evaluated using standard university evaluation forms distributed at the end of the quarter. You will receive the appropriate evaluation forms in your mailbox prior to the time they are to be completed by students. You should schedule a time during your lab or quiz/discussion section (preferably at the beginning of the section) when students may be allocated approximately 15 minutes to complete the evaluation forms. You are not to be present in the room while students are completing their evaluation forms. You should delegate one of the students in your section to collect the evaluation forms, place them in the accompanying envelope, and forward them to the appropriate campus location either in person or by campus mail.

Instructors evaluate teaching assistants

The course instructor evaluates the TA by observing performance at about mid-quarter. Instructors complete two evaluation forms, which they review with you: the MSE Department Evaluation form and the Grad School End-of-Quarter Report evaluation. The last form requires input from both the instructor and the TA. Both forms should be completed and returned to the Assistant to the Chair by the end of the quarter.

What do I do if I have more questions?

You may have any additional questions regarding your role as TA. For questions regarding labs and equipment, contact Tuesday Kuykendall. Current graduate students in the department with extensive TA experience are also an excellent source of support and information. The department chair/asst. chair and administrator are also available to assist you.

Although your TA responsibilities are important, your work as a TA should be balanced with your other needs and obligations. If you find that you are having difficulty fulfilling your TA responsibilities in your present arrangements, you can arrange a time to meet with Dr. Fumio Ohuchi, Asst. Chair, in order to discuss your concerns.

Funding Resources

The [College of Engineering](#) and the [UW Graduate School](#) have fellowship and award opportunities available on their websites. The GPA will also send out additional opportunities as they become available.

Students need to arrange their own source of funding for the Applied Master's Program and the BS/MS Program. Students in the BS/MS Program have the option for TA positions outside of MSE, but most are reserved for PhD Program students. For the PhD Program, you may have arrived with an RA or TA position; however, it is wise to keep informed of other funding sources. The department and college administer a few competitive fellowships, and UW campus research centers (such as Nanotech, UWEB and IGERT) provide internships and other opportunities. Federal awards such as NSF and DOE fellowships are prestigious and offer greater academic flexibility than a standard RA.

For the PhD Program, keep in mind that the department's offer of financial support (if any) does not guarantee continuous RA funding from a particular advisor. You may wish to change advisors, your advisor's proposal for renewed funding may be denied, and other circumstances may arise. You can apply for a TA appointment under circumstances like these, but there are not always enough TA positions for the number of applicants.

Some out of state students are able to establish [Washington State Residency](#) while in the program. However, the student must meet all requirements listed, with two examples of criteria: living in Washington for at least one year and gaining employment unrelated to your education.

This summary lists ways to fund your PhD graduate career. This includes the division of time between teaching and research. It also shows how to get the funding and where the funding comes from.

Teaching Assistant (TA)

50% teaching/grading/etc. & 50% research
Department funded

Research Assistant (RA)

100% research
Comes from: Industry funding/grants
Funding received by you and/or advisor

Fellowships/Scholarships

100% research
Obtained by you or by outside source

Student Assistant (SA)

50% advising/office/lab work &
50% research; program funded

Additional Funding Options: 3 ways to fund graduate school

The following lists contain resources that have been used by graduate students in the department for funding.

1. On Campus

- [UW Graduate Student Financial Aid](#)
- [The Graduate School webpage](#)
- [COE - College of Engineering](#)
- [UW Libraries - Grad Funding Info Service](#)
- [UW Nanotechnology Fellowship](#)
- [Merit Scholarships, Fellowships, Awards](#)

Listed below are URLs for various funding sources. Please review these sites for possible funding opportunities. In particular, NSF funds students who have entered their first-second year of grad work as long as they have not exceeded a certain number of credits.

2. Foundations / Companies

- [NSF - National Science Foundation](#)
- [NASA](#)
- [INTEL](#)
- [PNNL –Pacific Northwest National Laboratory](#)
- [DOE - Department of Energy](#)
- [NDSEG - National Defense Science and Engineering](#)
- [NPSC- National Physical Science Consortium](#)
- [DOT – Department of Transportation](#)

3. Additional Resource

- [Fastweb – online scholarship opportunities](#)

Travel to Conferences

The department encourages its graduate students to present their research at conferences. The [Graduate School Fund for Excellence and Innovation](#) can assist with a portion of travel for major national or international conferences so they may present papers or posters, or to serve as invited speakers. The maximum award amounts are \$300 for domestic travel and \$500 for international travel. Please pay attention to the application deadlines and see the GPA for assistance in submitting a travel application for Grad School support.

[GPSS also has travel grants](#) that you can apply to for additional support. The application and additional information is available on their website.

Finally, doctoral students should consult with their faculty advisor to see if they can provide additional financial support. Once you are ready to make travel arrangements, contact one of the fiscal staff to discuss the process (if using a faculty advisor budget) and reimbursement options after returning.

Continuation Policy & Maintaining Student Progress

Admission to the MSE Department and Graduate School allows students to continue graduate study and research at the University of Washington only as long as they [maintain satisfactory performance and progress](#) toward completion of their graduate degree program. In MSE each student is expected to adhere to degree program requirements including coursework, seminars and make satisfactory progress in research capability and achievements.

Unsatisfactory Performance and Progress / Probation procedures

The Graduate Program Coordinator and Graduate Program Advisor closely monitor student performance and progress throughout their time in the department.

The following conditions can lead to unsatisfactory progress and result in the actions outlined below.

1. Overall GPA falls below a 3.0.
 2. GPA is less than 3.0 for the PhD core courses: 510, 525 and 541 and less than cumulative 3.2 GPA for all three courses.
 3. Inability to pass program specific exams or complete in a timely manner.
 4. Failure to uphold research or general course capability, progress and performance.
- It is at the discretion of the faculty advisor if the student will receive funding support during unsatisfactory progress.

Unsatisfactory Progress Actions

1. **Warning:** The student and faculty advisor receive a letter from the GPC indicating the progress that is not being met and action that needs to be taken to avoid probation. This warning is not reported to the Graduate School.
2. **Probation:** If the deficiency is not corrected as indicated in the warning letter, the student will go on probation which generally lasts for three quarters. The student and faculty advisor receive a letter from the GPC indicating these specific quarters of probation and the final probation procedure if the situation outlined doesn't improve. The Graduate School is notified of this probation.
3. **Final probation:** If the probationary condition is not being met after at least one quarter of probation, the student can be recommended to the Graduate School for final probation. This letter from the GPC will indicate the final quarter that the student can be in the program which is generally quarter three as outlined in the probation letter.
4. **Drop:** After one quarter of final probation the student is often recommended to the Graduate School to drop the student. This is the final action taken for students who have not corrected the situation that caused the final probation to occur. If this occurs, this will take place during the final quarter the student is permitted to be a graduate student at the UW.
 - **Example of Timeline if condition fails to improve**
 - Warning Autumn 2017
 - Probation Winter 2018
 - Final probation Autumn 2018
 - Drop Winter 2019
 - This timeline is shortened if the PhD QE written is failed (see pages 34-35).
 - If student's progress improves the student can remain in the department and go off probation.

See additional performance and progress resources

[Grading system](#)

[Appeals and petitions](#)

[Graduate School Policies and Procedures](#)

[On Leave Policy](#)

Full-time enrollment is required of all graduate students receiving GSA (graduate student assistantships) funding. **Summer quarter enrollment** is also required for all students working as RA/TAs during summer and may be required for [some international students](#) depending on visa status.

On-leave status: This is an official designation for graduate students who have been given official permission to be away from campus and not enrolled in courses for one quarter at a time.

If a student fails to [officially go on-leave](#) AND pay the on-leave fee by the end of the applicable quarter he or she must apply for re-admission to the program **and pay a \$250 reentry fee**.

A student needs to request On-Leave status and gain approval from the department graduate program coordinator and his/her faculty advisor. In addition, each quarter the student is on leave, he/she must officially go on leave with the UW by submitting a request and payment via the Graduate School.

To be eligible for On-Leave status, a student must be in good academic standing and have registered for at least one quarter as a graduate student at the University of Washington immediately prior to going on-leave; international students must complete three consecutive quarters (please consult the International Student Services Office for eligibility). Students must request this leave on a quarterly basis and pay a non-refundable, quarterly fee.

On-Leave status entitles students to use the University libraries and maintain access to their email accounts. They are not entitled to Graduate Student Appointments, general and final examinations, thesis/dissertation filing, student insurance, or any form of financial assistance. Students may use the Hall Health Primary Care Center on a pay-for-service basis and can pay to use the IMA. Summer quarter "on-leave" enrollment is automatic for domestic graduate

students who were either registered or officially on leave the prior spring quarter. International students are allowed one quarter off per three quarters registered and this is generally designated to summer quarter. (If you have an RA appointment, you should check with your faculty advisor to find out if your appointment will extend into summer quarter.)

Reinstatement of students who have withdrawn from the university, or failed to go on-leave will be dependent upon the availability of a place in the MSE Department and upon the academic record of the student relative to that of other applicants being considered for admission at that time. An application for readmission carries no preference; it is treated as an application for initial admission and requires payment of the application fee.

Drops, Withdrawals, Forfeitures & Refunds

In general students have until the 7th calendar day of the quarter to make changes to drop classes or completely withdraw without additional penalties. See the complete [UW procedures](#) about schedule changes or complete withdrawal from the UW. Please also inform Karen Wetterhahn when making any changes to your status. International students should also contact ISS if going on leave or withdrawing to find out how this will affect their immigration status. If you are a [financial aid recipient](#) you will need to see a Financial Aid Counselor in Schmitz 105.

Grievances and difficulties

Difficulties involving a specific class need to be resolved with the faculty member involved directly if possible. The next level of concern should be discussed with the departmental advisor, the graduate program coordinator, or the department chair since many problems can be resolved by one of these people. Concerns or problems that may go beyond what a specific department might resolve can be taken to the [Graduate School](#), the [University Ombudsman](#), and the [Office of the Dean, College of Engineering](#) as appropriate.

Check-out Procedures

Contact: Tuesday Kuykendall/Andrea Neubert/Karen Wetterhahn

Students graduating or leaving the Materials Science and Engineering Department for a period of greater than one quarter must check out. All researchers are required to clean up their work areas, return high pressure gas tanks to gas storage shed, properly dispose of all chemical waste and reagents, return all surplus supplies to the lab manager and return all equipment withdrawn or transfer formal responsibility to another person and return all keys. Students should also meet with Karen Wetterhahn for any additional academic or administrative items they still need to complete. Please use the form on the following page for check-out and submit this form to Karen Wetterhahn prior to your departure.

UW MSE Checkout Form (can be completed by email)

Please check with all the offices listed below as you are preparing to leave the department. Return the completed form to the GPA or other staff in 302 Roberts to be put in your academic file.

NAME _____ DATE _____

___ Lab technician (no missing equipment or tools)

___ Business Office (notify payroll coordinator, return keys, and receive deposit refund)

___ Faculty Supervisor (leaving no personal property in lab, returning/reset any lab equipment or tools)

___ Computer Support (clear computer lab and room access after saving any personal documents)

___ Graduate Program Adviser (clear any last minute grade or degree requirements)

HOME/PERMANENT ADDRESS: We occasionally need this information to forward first-class mail or relay phone or email inquiries. If you cannot provide this information now, please supply the information as soon as available. Be sure to pick up change of address cards at the U.S. Post Office to have your mail forwarded to your new location when possible.

Street address:

City, State, Country:

Phone: _____

Email: _____

Name and address of employer if known:

Program Information

PhD Program - Doctor of Philosophy

Please see complete [Doctoral Degree Policies and Requirements](#) that are required by both the MSE Department and the Graduate School. More detailed department specific information is listed in the information that follows.

GENERAL REQUIREMENTS

All students entering the MSE Program are expected to develop a background equivalent to a BS degree in Materials Science and Engineering. This is evaluated upon entry; students receive guidance on means to enhance their knowledge in areas where there may be deficiencies. Specific program pre-requisites, which may be satisfied after entry into the program, are:

Knowledge of fundamentals of Materials Science and Engineering equivalent to MSE 170

Knowledge of crystallography equivalent to MSE 331

Background in materials properties equivalent to MSE 362 and MSE 351

Knowledge of kinetics equivalent to MSE 322

Understanding of thermodynamics equivalent to the level of MSE 421

If a Faculty Advisor isn't already arranged, all new students should meet with each faculty member in the department (or related engineering department) to discuss research interests and available funding opportunities. Each student should have a faculty advisor before the end of the first quarter and inform the Graduate Program Adviser of this arrangement. Finding an advisor is the responsibility of the student.

The Doctor of Philosophy (PhD) degree requires proficiency in MSE knowledge and demonstrated ability for independent work and original thought, paramount requirements for the degree. The PhD degree is not conferred on the basis of academic coursework alone. To qualify for the degree, the graduate student must:

A) Demonstrate general scholastic proficiency in the field of materials science and engineering and related areas through a program of approved courses and special examinations.

B) Successfully complete a research program that makes a contribution of knowledge and demonstrates the student's ability to complete an independent research investigation.

C) Prepare a written dissertation which is based on the research program and which meets acceptable standards of writing skill.

Successful completion of the PhD qualifying exam is required for formal admission to the PhD program. Following this exam, students will earn a master's degree as well (if all other conditions are met). It is important that all prospective PhD students observe the normal progress expected toward the degree, which is reviewed annually by the MSE Graduate Program Coordinator (GPC) and the Grad Program Advisor (GPA).

COURSE REQUIREMENTS

A minimum of 24 course credits are required for the PhD degree, which includes at least 18 500-level (or approved 400) academic course credits and 6 credits of MSE 520 seminar. Numeric grades are required for at least 18 credits of 400-500 level coursework. MSE departmental requirements are generally met with: 9 cr. MSE Core + 6 cr. MSE Seminar + 9 cr. MSE Optional (or approved non MSE) + 30 600 research + 36 MSE 800 dissertation credits=90 total.

If a relevant Master's Degree was earned at another university, you may petition to have up to 30 credits transferred to the UW. The petition needs to be submitted after completing at least one quarter. In this case, 60 credits will be required at the UW upon graduation. The GPA should be contacted to submit this petition.

The department also requires that all entering graduate students have an understanding of thermodynamics equivalent to the level of MSE 599G. If the student does not have two undergraduate thermodynamics courses upon entry to the graduate program, then MSE 599G is required for the MS and PhD degrees.

Students having teaching assistant responsibilities that conflict with the scheduled seminars (MSE 520) are excused from seminar for those periods but are still expected to satisfy the 6-credit seminar requirements. The student's faculty advisor must continually meet with the student to discuss the student's course plan in and out of the department to make sure that the student's program of study meets educational goals.

RESEARCH REQUIREMENTS

Faculty Advisor for the PhD Program

The dissertation research problem is selected by the student following identification of a faculty advisor and selection of a research topic. The faculty advisor, who is the formal dissertation advisor for the student, must be one of the regular, research or adjunct faculty members of the MSE Department. The student's program of courses must be discussed with and approved by the faculty advisor, who becomes the chair of the PhD supervisory committee. A faculty advisor must be confirmed by the end of the student's first quarter in the department.

Choosing a Research Group

Coursework and extra-curricular activities are important, but for most students research determines the quality of the graduate school experience. Therefore, choosing a research adviser is probably the most important decision you will make in graduate school, important for both you and your adviser. Some factors you should consider in making the choice:

- Nature of the research project (fundamentals or applications)
- Research group size, makeup and resources (including equipment)
- Personality match and working style of the adviser including communication style
- Adviser's academic and scholarly reputation
- Adviser expectations for research productivity
- Project's funding stability
- Post-graduate careers of adviser's former students
- Advice from current graduate students and faculty members

Of these, the first tops the list for most students. Fortunately, all students and advisers are different, and every adviser will be a good match for certain students. And, most students will be compatible with more than one adviser. Some additional considerations:

- During the course of your graduate career you will develop communication skills that are essential in any career. Does the adviser provide opportunities for poster presentations? Will you present talks at group meetings, on campus, at technical meetings, or in a journal club?
- Companies and universities both value instructional skill. How will your adviser help you become a better teacher? Will you be mentored as a TA?
- How will the adviser react when you are discouraged?
- How will the adviser stretch you? Help you excel beyond your expectations?
- How long do the adviser's students take to finish on the average?
- 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. Graduate education is so different from undergraduate experiences that students seldom have an adequate basis for choosing a research project. We strongly suggest that you keep an open mind about this choice until after you have evaluated the possible projects carefully. If and when you have questions about this process, please feel free to talk with the graduate program coordinator, the department chair or assistant chair, or any MSE faculty member.

Supervisory Committee

The doctoral supervisory committee consists of a minimum of **four** members, preferably with at least two from the MSE department and at least three of whom including the Chair and the Graduate School Representative (GSR) must be members of the [Graduate Faculty](#) with an endorsement to chair doctoral committees. A majority of the members must be members of the Graduate Faculty. The [GSR](#) must be a productive scholar in his or her own research area that may differ from that of the student's dissertation project. You will work with your faculty advisor as you establish this committee. After this committee is set up, you need to contact Karen Wetterhahn to officially have this established with the Graduate School.

EXPECTED TIMELINE

The expected time frame for full-time doctoral students is five years and broken down as follows. **Graduate students may not be considered to be in good standing if these time frames are not adhered to per these guidelines.** The following is a standard schedule for a full-time (requires at least 10 cr. per quarter) enrollment.

Following this standard schedule, the credits add up to:

9 credits required core courses; 9 credits optional courses; 6 credits seminar + 421 if missing two thermodynamics courses upon admission. Remaining credits are generally research at 600 (prior to passing QE) and 800 level (after passing QE) to meet a total of 90 minimum credits (30 of which can be for a master's earned elsewhere, subject to department approval). Additional coursework can be completed while in consultation with the faculty advisor.

1st year

Courses: Take background courses, core courses, department seminar series, and optional courses selected with faculty adviser.

Research: Selection of faculty adviser should be completed by the end of the first quarter; begin research with guidance of faculty adviser.

PhD Quarterly Sample Outline

First Autumn Quarter

MSE 510	Bonding, Symmetry & Crystallography	3
MSE 520	Department Seminar	1
MSE 599G	Thermodynamics (if required)	3
MSE 5__	Elective Course Requirement	3
MSE 600	Research	1 or more

Select research adviser

First Winter Quarter

MSE 541	Defects in Materials	3
MSE 5__	Elective Course Requirement	3
MSE 520	Department Seminar	1
MSE 600	Research	3 or more

Select research project

First Spring Quarter

MSE 525	Kinetics	3
MSE 520	Department Seminar	1
MSE 5__	Elective Course Requirement	3
MSE 600	Research	3 or more

First Summer Quarter

MSE 600	Research	2
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2nd year

Courses: Additional courses for PhD used to broaden base of study and lend support to the major field. See faculty advisor for these recommendations.

Research:

Second Autumn Quarter

MSE 520	Department Seminar	1
MSE 5__	Any remaining Elective Course	3
MSE 600	Research	1 or more

+ **Complete written qualifying exam (QE)**

Second Winter Quarter

MSE 520	Department Seminar	1
MSE 600	Research	1 or more

Electives needed to expand background and research area

+**Complete QE process (report and presentation) & submit master's degree request (if applicable)**

Second Spring Quarter

MSE 520	Department Seminar	1 (6 credits required for Ph.D.)
MSE 600/800	Research	1 or more

Electives needed to expand background and research area

+**QE written, if not already completed**

Subsequent Quarters

MSE 600 until QE passed and supervisory committee formed; MSE 800 after QE and until graduation

3rd year

Third Autumn Quarter

Establish Supervisory Committee (see criteria above)

3rd/4th years

Complete General Examination

General examination and advancement to candidacy—the student will be examined orally on topics related to his or her general area of research interest and specifically on the proposed plan of research. The examination may also cover any areas of deficiency noted in the qualifying exam.

4th/5th years

Complete Final Examination

Establish Reading Committee, usually 3 selected from Supervisory Committee members

Final examination (dissertation defense)—The PhD final examination consists of a public presentation and defense of the thesis research. This is normally in a general seminar format with questions from the audience followed by a private discussion and question period with only the supervisory committee, other graduate faculty and the candidate present.

Materials Science and Engineering Graduate Course Planning* 2017-18

*This course plan is subject to change.

The three required core courses are offered every year (shown in bold).

Optional courses are required as specified in the Graduate Program Guidelines.

Non-required courses are offered annually or every other year – see [quarterly time schedule](#).

Required Courses

MSE 510 Bonding/Symmetry/Crystallography (Autumn) Krishnan

MSE 541 Defects (Winter) Yang

MSE 525 Kinetics (Spring) Brush

Optional Courses

Any 500 level MSE (or approved relevant to MSE) courses except MSE 520 and the core courses

Policy Regarding MSE 600 and 800

All entering graduate students will enroll first in MSE 600 for research credits. Grades will be assigned for these credits after passing the qualifying exam and will then proceed to take MSE 800 credits.

Additional information regarding MSE 600, 700 and 800:

MSE 600 is for research for all entering graduate students. Your faculty advisor can advise you how many research credits to enroll in each quarter. An N grade will be assigned at the end of each quarter until the program qualifying exam is complete. N signifies a continuing course; the grade posted at the end of the program is reflected back on all prior N graded quarters under that course number.

MSE 700 is for thesis credits. The majority of doctoral students will complete a non-thesis masters degree along their path toward a PhD. Some scholarships require earning a thesis masters along the way. If so, you will need to enroll in MSE 700 instead of MSE 600.

MSE 800 is for research of students who have passed the PhD qualifying exam and the PhD supervisory committee has been officially established by the graduate school. An N grade is usually given each quarter until the dissertation is complete. N signifies a continuing course; the grade posted at the end of the program is reflected back on all prior N graded quarters under that course number.

QUALIFYING EXAM (QE) PROCEDURES

Basics: Students must have an understanding of the concept of structure-properties-processing relationships in a general sense plus specific knowledge in their area of interest/expertise within MSE. Before taking the QE, students must have completed the MSE Core Course requirement (MSE 510, MSE 541, and MSE 525) with an overall minimum GPA in these courses of 3.2 and a minimum grade of 3.0 for each course. Students must also have 1 year of research experience before taking the exam. The exam consists of three parts: written exam, oral exam and portfolio & evaluation.

A. Written exam: This exam is offered two times a year, generally in early autumn and spring quarter. The GPA will send an announcement at least one month prior to the exam to confirm this information. The written exam consists of 4 questions. Problems 1-3 are from each of the core courses (510, 525 & 541). Problem 4 is based on elective courses. Since these courses can vary, the student will choose to answer one question based on the following topics: mechanical properties, functional materials & properties, biomaterials or polymers. The exam time is 3 hours.

Procedures for completing the written exam

- Students must take this exam at the start of year 2 in the PhD Program.
- The GPA will send out a QE Study Guide & application at least one month prior to the exam date.
- Students will be graded by faculty who teach the various courses. Grades will then be reviewed by the MSE Graduate Committee.
- The GPA will email the results to the students approximately one month following the exam.

Policies for passing the written exam

- If the student fails the exam, it can be taken a second time AND the student is required to meet with his/her faculty advisor to discuss how this will affect their progress. The student will receive notice that they are on academic warning and on academic probation the following quarter.
- The second attempt for the QE should happen within 6 months of failing the first time. If the test is failed a second time, the student will go on final probation and may be dropped the following quarter.
- A third retake will only be allowed under exceptional circumstances and the student must write a letter to the MSE Graduate Committee to request the test be taken a third time. It is at the discretion of the faculty advisor if the student will receive funding support during final probation. If permission is granted to take the test a 3rd time, the student will be on probation leading up to the third attempt, final probation during the quarter they are

completing the test for the third time. If the student fails the exam after three times, they will be dropped from the program the quarter following this failed exam. The third attempt for the QE is required within 6 months of failing the second time.

- Students who do not take the QE in the autumn quarter of their second year will also receive notice that they are on academic warning, followed by one quarter of probation, one quarter of final probation, and may subsequently be dropped from the program.

B. Oral Exam: This exam is designed to test the student's ability to identify a problem, ask appropriate research questions, use appropriate methods to analyze data, and summarize results. The responsibility for assessing the student's capability in research lies with the student's faculty advisor.

This required part of the exam should take place within six months of passing the written examination and must follow these guidelines.

- The written research report should be approximately 25 pages (Double spaced) in length including figures, but excluding references. This written report should include an introduction, research objectives, results and discussion, future work and references and should be given to the faculty committee at least a week before the presentation. Formatting guidelines for this report are provided on pages 44-45.
- The oral presentation generally lasts about one hour (30 minutes for the student's presentation and 30 minutes for the question and answer period). The student is responsible for scheduling a meeting room for this oral presentation.

The faculty advisor and two other MSE faculty members sit in on the presentation and assess the student's ability to conduct research. The student's faculty advisor chooses the second faculty member, usually one who will later serve on the PhD supervisory committee. The third member is assigned in alphabetical order by the GPA and is present to act as an independent observer. Please contact the GPA to receive this information.

Following the presentation, the faculty member will write a formal letter assessing the student's research abilities based on the written and oral presentations above and on their overall interaction with the student. This report from the advisor and the other two faculty members needs to be presented in two sections:

- A review and report on the oral presentation to be signed by the faculty advisor.
- Faculty Advisor's own personal comments on the student's progress and achievements.

The additional faculty members must either concur with this report or write a separate report. These reports will justify why the student should be judged as qualified or not for entry into the PhD program.

C. Qualifying Portfolio and Evaluation: A portfolio is submitted to the faculty advisor and GPA *after* completion of the written and oral presentation and must include the following:

- [QE Cover Memo](#) found on the MSE website.
- Written research report, detailed above. May include a copy of slides from the student's oral presentation.
- Email received with verification of passing the written exam
- A list of graduate courses completed and grades received
- List of all publications if applicable
- Copy of one major publication and/or technical report, if applicable
- Date for when your faculty advisor will submit his/her letter on your research ability (It is the student's responsibility to follow up with their advisor to ensure this is submitted.)

The student should submit this portfolio to the Graduate Program Advisor by email. The portfolio will then be reviewed by the MSE Graduate Committee. The Graduate Committee may agree or disagree with the advisor/faculty member recommendation. The GPC writes to the student with results and the GPA will email you the letter. Details of the evaluation are provided to the student by the faculty advisor. Students receiving an RA/TA salary and pass the exam, advance to the [Predoc RA/TA I salary](#).

Timeline for the Qualifying Exam

The Graduate Committee recommends that the student take the written QE in the Fall of their 2nd year. The portfolio may be submitted to the Graduate Committee any quarter, but within six months of passing the written QE. **The portfolio must be completed and submitted within three years after entry into the graduate program.** Extensions past this deadline must have prior approval from the Graduate Committee. Faculty advisor feedback is encouraged at each step of the QE process.

MASTERS OF SCIENCE (MS) DEGREE PROCEDURE

After passing the Qualifying Exam the student can earn a non-thesis master's degree in MSE, along the pathway toward the PhD. The 36 course credits must be met and successfully passing the Qualifying Exam (written, oral & approval of your portfolio). The student needs to submit a master's degree request via [MyGrad Program](#).

GENERAL EXAMINATION PROCEDURE

The PhD General Exam should be completed during the 3rd or 4th year of your PhD Program. The General Examination policies are set by the Graduate School, and the goal of this exam is to ensure that you are on track to obtaining a PhD. **It is your responsibility to know the complete [Graduate School requirements for the General Exam](#).** This information is to serve as a guide.

A General Examination may be scheduled if: (a) the student has completed 60 credits (some of these credits may be taken the same quarter of the exam); (b) all required program examinations that do not need Graduate School approval have been completed and; (c) all members of the supervisory committee agree that the student's background of study and preparation is sufficient and have approved the student to schedule a General Examination. At least four members of a supervisory committee (including the Chair, Graduate School Representative, and one additional Graduate Faculty member) must be present at the examination. The Graduate Committee recommends that the supervisory committee be set during the Fall quarter of your 3rd year, and that the General Examination take place during your 3rd or 4th years of your PhD. At the end of the General Examination, the Supervisory Committee will provide feedback to you about your progress, and about areas that you can improve upon.

The exact format of the General Examination will be set by the students' Supervisory Committee according to the rules set by the Graduate School. Here are suggested guidelines from the Graduate Committee of the MSE department:

1. A written research report should be submitted to your Supervisory Committee **at least 1 week prior to the General Examination**. It is recommended that the written research report be 50 pages in length. This written report should include an introduction, research objectives, results and discussion, future work and references. Suggested guidelines for this report are provided on p.46-47.
2. The oral presentation generally lasts at least one hour (30 minutes for the student's presentation and 30 minutes for the question and answer period). The exam is a public exam, and you should expect an audience during your oral presentation. After the presentation, there will be time for questions from the general audience. Subsequently, there will be a closed door session with just the Supervisory Committee.
3. If the General Examination is satisfactory, the supervisory committee members who participate at the examination sign the warrant and return it to the Graduate Program Advisor by the last day of the quarter (last day of finals week). If an examination is unsatisfactory, a supervisory committee may recommend that the Dean of the Graduate School permit up to a maximum 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.

Registration as a graduate student is required the quarter that a General Examination is completed. When the Graduate School approves candidacy, a student is identified and designated as a candidate for the appropriate doctoral degree. 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. Students receiving an RA/TA salary and pass the exam, advance to the [Predoc RA/TA II salary](#).

GENERAL EXAM, REQUIRED STEPS TO OFFICIALLY SET UP WITH GRADUATE SCHOOL

- Meet with your faculty advisor to establish your Supervisory Committee.
- Provide your Supervisory Committee members to the GPA to have this committee officially set up with the Graduate School.
- Contact your committee to find an agreeable date, time and meeting room for the exam.
- Go to [MyGrad Program](#) and select the option to set up your General Exam at least two weeks prior to the exam. You will then enter the meeting date, time and room location.
- The Graduate Program Advisor will approve this request and the committee will receive official email notification of your exam.
- Post [Degree Exam Notice](#)

FINAL EXAMINATION PROCEDURE

A Final Examination may be scheduled if: (a) a student passed a General Examination in a previous quarter; (b) a Reading Committee is officially established with the Graduate School; (c) the Reading Committee has read an entire draft of the dissertation and; (d) 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, Graduate School Representative, and one additional Graduate Faculty member) must be present at the examination.

It is the student's responsibility to know the complete [Graduate School requirements for the Final Exam](#). It is anticipated that the student will complete this exam around their 5th year in the program. The exact format of the Final Examination will be set by the students' Supervisory Committee according to the rules set by the Graduate School. Here are suggested guidelines from the Graduate Committee of the MSE department:

1. The [Dissertation](#) should be submitted to your Reading Committee **at least two weeks before your exam date**.
2. The oral presentation generally lasts at least one hour (30 minutes for the student's presentation and 30 minutes for the question and answer period). The exam is a public exam, and you should expect an audience during your oral presentation. After the presentation, there will be time for questions from the general audience. Subsequently, there will be a closed door session with just the Supervisory Committee.

If the Final Examination is satisfactory, the supervisory committee members who participate at the examination sign the warrant and return it to the GPA by the last day of the quarter (last day of finals week). This warrant remains in your student file within the department. Any members of a supervisory committee who participate at an examination but do not agree with the majority opinion are encouraged to submit a minority report to the Dean of the Graduate School. If an examination is unsatisfactory, a supervisory committee may recommend that the Dean of the Graduate School permit a second examination after a period of additional study.

Registration as a graduate student is required for the quarters that a Final Examination is taken and the dissertation is submitted. The degree is conferred at the end of the quarter in which the student's dissertation is accepted by the Graduate School.

Final Steps to complete by the end of the quarter you intend to graduate:

1. Bring the [Doctoral Dissertation Reading Committee Approval Form](#) and Warrant for Doctoral Degree form (obtain from Karen) to your final exam and have committee members sign it following your final exam, or at a later date if they need more time.
2. Complete the [Survey of Earned Doctorates \(SED\)](#). Save the Certificate of Completion and submit it to the Grad School by email to uwgrad@uw.edu.
3. Submit your Reading Committee Approval form AND dissertation electronically **by the last day of the quarter (11:59pm at that latest)**.

If you fail to complete steps 1-3 by the last day of the quarter as intended you have two options:

1. Pay a \$250 [Graduate Registration Waiver Fee](#) that will allow you 2 more weeks following the last day of the quarter to complete the steps listed above. Qualifying students who pay this fee will graduate in the quarter following the fee payment period.

OR

2. Register for the following quarter and complete all final steps at the end of the upcoming quarter.

Applied Master's Degree (MS) Program

MASTER OF SCIENCE (MATERIALS SCIENCE AND ENGINEERING)

Degree Requirements

All Master's Program students must earn a minimum of 36 credits to complete the credit based degree requirements. At least 18 of these credits need to be completed via traditional coursework and 3 credits of department seminars. The other 15 credits can be met with research/thesis (MSE 600 or 700) credits. There is a minimum of 9 MSE 700 credits that must be completed to earn a thesis masters degree.

In addition to the course requirements, all students are required to complete a final paper and presentation during their final quarter prior to graduation. Additional requirements must be met to earn a thesis masters degree.

Please see complete [Master's Degree Requirements](#) that are required by both the MSE Department and the Graduate School. The timeline for completing this program should be designed to accommodate the student's needs and in agreement with the faculty advisor. Most students complete the program in around 1 year though it can be extended to 2 years. Each student will work with a faculty advisor to complete a final project, thesis or engage in an internship.

Faculty Advisor Process

Each student should have selected a [faculty advisor](#) by the end of the first quarter. Students need to make appointments with faculty who perform research within their areas of interest. The department requires students to complete an [AMP Advisor Selection Form](#) as they meet with the various faculty. This document should be turned into the Graduate Program advisor by winter quarter. The earlier the student can identify a faculty advisor, the sooner he/she can begin enrolling in research/project credits and the more they can get out of their time in the program.

Course Planning

The 36 credits are distributed in the following manner:

- 3 required core courses MSE 570 and choose 2 from MSE 510, 525, 541 and 599 Thermodynamics
- 3 elective MSE courses at the 400 or 500 level (min 3 cr. each)
- 3 quarters of MSE 520, department seminar

The remaining credits can be a combination of MSE 598 project and MSE 600 research, as well as additional courses at the discretion of the student and faculty advisor's recommendations.

Applied Master's Program Quarterly sample curriculum

Autumn Quarter

MSE 570	Graduate Tutorial in Mat. Sci & Engineering	3
MSE 520	Department Seminar	1
MSE 599G	Thermodynamics (if required)	3
MSE 5__	Elective Course Requirement	3

Select faculty adviser; notify GPA

Winter Quarter

MSE 541	Defects in Materials	3
MSE 520	Department Seminar	1
MSE 5__	Elective Course Requirement	3
MSE 600	Research/Project	5

Select research project or internship plan; notify GPA

Spring Quarter

MSE 525	Kinetics	3
MSE 520	Department Seminar	1 (3 credits required for masters)
MSE 5__	Optional Course Requirement	3
MSE 600	Research/Project	5

Summer or Autumn Quarter

MSE 600	Project or internship	2+
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Internship option (in lieu of final project)

Students interested in pursuing the internship option should begin early to identify an appropriate internship opportunity. The UW provides many resources to help with this process within the Engineering and UW Career Centers. With proper design and mutual employer-faculty guidance, industrial projects can fulfill the final project requirement. The [CC@E - Student Services](#) is a resource for internships and career engagement opportunities. We also recommend students to seek out opportunities at various UW Career Fairs and through their own independent search. Internships are a fantastic opportunity that can lead to full-time employment following graduation.

Final Project

A project or internship plan must be approved by the faculty advisor prior to starting it. The student must submit a completed [Final Project or Internship Plan Form](#) to the Graduate Program Advisor by the start of the quarter that they intend to graduate. **A written report and an oral public presentation are required to graduate.** The written exam requirements are on pages 44-45.

The project or internship must be supervised by a UW MSE faculty advisor. The advisor will serve as the principal member of the [Supervisory Committee](#). It is recommended that this Committee consists of the faculty advisor and one other faculty member, generally from the MSE department. If the student elects to pursue the internship option, the Supervisory Committee may include a supervisor or equivalent from the student's employer.

The student, in consultation with the Supervisory Committee, establishes the examination date and place. The student is responsible for posting a [degree exam notice](#) with the exam date, place and project abstract at least one week prior to the master's degree examination. A copy of the notice must also be provided to the department's Graduate Program Advisor..

The master's degree examination shall be a public presentation that summarizes the project or internship undertaken. After the public project presentation, a closed examination session will be held with the examination committee and other members of the graduate faculty to address any further questions relating specifically to the project/internship and/or to the student's graduate and undergraduate academic background.

Submitting Master's Degree Request

The student needs to submit a master's degree request (select MSE degree ending in 80) at the start of the final quarter they intend to graduate via [MyGrad Program](#). The student must be registered at the university for the quarter in which the degree is to be conferred.

PhD Program Interest

Some students may wish to pursue a PhD within the UW MSE program after completing their master's degree. If this is of interest, the student should complete and submit a [formal application](#) to the department's PhD program adhering to the application deadlines. If the student has previously applied but was denied admission to the PhD Program, the student is strongly recommended to wait until the following year to submit their application after demonstrating substantial progress in the AMP. The exception to this recommendation is if there has been notable improvement in the student's GRE test results or the student has received advice from their faculty advisor.

Additional Steps for Thesis Master's

Students should establish with their faculty advisor if they will be completing a thesis or non-thesis masters by the time they start the master's program. The [master's thesis](#) should be evidence of the graduate student's ability to carry out independent investigation and to present the results in clear and systematic form. Students must register for a minimum of nine credits of thesis MSE 700 instead of the MSE 600 for non-thesis. The thesis research problem will be determined by the student and their faculty advisor. Please see pages 43-44 for preliminary guidelines of the paper. However, the thesis will be a more in depth report. It is similar to a PhD dissertation, but shorter in length. See your faculty advisor for additional recommendations prior to starting the thesis.

Final Steps to earn a Thesis Master's

1. Bring the [Master's Degree Reading Committee Approval Form](#) and Warrant for Master's Degree form (from Karen) to your final exam and have committee members sign it following your final exam.
2. Submit your thesis electronically AND the Reading Committee Approval Form by the last day of the quarter you intend to graduate (by 11:59pm)

**Report Guidelines for PhD Qualifying Exam, AMP & BS/MS (non-thesis) Final Paper
(Must be distributed to the committee at least 1 week prior to presentation)**

Title of Manuscript

By *Author(s)*

Supervisor:

((Abstract text. 12 point, double-spaced. Present tense, 500 words max))

Body of Paper

Do not exceed 25 pages of double spaced 12 point text, including figures and figure captions, and excluding references.

Approximately,

10 Pages of introduction, background, and motivation

10 pages of methods, results, and discussion

5 pages of future work with milestones and timeline for graduation (Gantt plot strongly recommended)

Please follow closely the following formatting

1. Introduction

2. First-Order Heading

Main Text Paragraphs. 12 Point, double-spaced. Please make the first reference to a display item bold (**Fig. 1**). Display

items should be inserted in the same page where they are first cited Equations should be inserted using Equation

Editor, not as graphics, and should be set in the main text

((Equation))

(1)

References should be superscripted and appear after punctuation.^[1,2]

Please define all acronyms.

2.1. Second-Order Heading

2.1.1. Third-Order Heading

((Number)). **Conclusions**

Acknowledgements

[1] ((Reference 1, Example for Journals: a) A. Author, B. Coauthor, *Adv. Mater.* **2006**, *18*, 1; b) A. Author, B. Coauthor, *Adv. Funct. Mater.* **2006**, *16*, 1.))

[2] ((Reference 2: Example for Books: J. W. Grate, G. C. Frye, in *Sensors Update*, Vol. 2 (Eds: H. Baltes, W. Göpel, J. Hesse), Wiley-VCH, Weinheim, Germany **1996**, Ch. 2.))

[3] ...((Please include all authors, and do not use 'et al.'))

((Insert Scheme here. Note: Please do not combine scheme and caption in a textbox or frame))

Scheme 1. ((Scheme Caption.))

((Insert Figure here. Note: Please do not combine figure and caption in a textbox or frame))

Figure 1. ((Figure Caption.))Reproduced with permission from [ref. no.]. Copyright Year Publisher. (delete if not applicable)

Table 1. ((Table Caption. Note: Please do not combine table and caption in a textbox or frame))

Head 1 [units] [a]	Head 2	Head 3 [b]	Head 4 [c]	Head 5 [units]
Column 1	Column 2	Column 3	Column 4	Column 5
Column 1	Column 2	Column 3	Column 4	Column 5

[a] ((Table Footnote.)) [b] ...

GENERAL EXAMINATION REPORT GUIDELINES

(Must be distributed to the committee at least 1 week prior to presentation. Students should also check with their advisors regarding the format of their report.)

Title of Manuscript

By *Author(s)*

Supervisor:

((Abstract text. 12 point, double-spaced. Present tense, 500 words max))

Body of General Paper

Do not exceed 50 pages of double spaced 12 point text, including figures and figure captions, and excluding references.

Approximately.

15 Pages of introduction, background, and motivation

30 pages of methods, results, and discussion

5 pages of future work with milestones and timeline for graduation (Gaant plot strongly recommended)

Please follow closely the following formatting

1. Introduction

2. First-Order Heading

((Main Text Paragraphs. 12 Point, double-spaced. Please make the first reference to a display item bold (**Fig. 1**).

Display items should be inserted in the same page where they are first cited Equations should be inserted using

Equation Editor, not as graphics, and should be set in the main text

((Equation))

(1)

References should be superscripted and appear after punctuation.^[1,2]

Please define all acronyms except IR, UV, NMR, and DNA or RNA.

2.1. Second-Order Heading

2.1.1. Third-Order Heading

((Number)). Conclusions

Acknowledgements

[1] ((Reference 1, Example for Journals: a) A. Author, B. Coauthor, *Adv. Mater.* **2006**, *18*, 1; b) A. Author, B. Coauthor, *Adv. Funct. Mater.* **2006**, *16*, 1.))

[2] ((Reference 2: Example for Books: J. W. Grate, G. C. Frye, in *Sensors Update*, Vol. 2 (Eds: H. Baltes, W. Göpel, J. Hesse), Wiley-VCH, Weinheim, Germany **1996**, Ch. 2.))

[3] ...((Please include all authors, and do not use 'et al.'))

((Insert Scheme here. Note: Please do not combine scheme and caption in a textbox or frame))

Scheme 1. ((Scheme Caption.))

((Insert Figure here. Note: Please do not combine figure and caption in a textbox or frame))

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Table 1. ((Table Caption. Note: Please do not combine table and caption in a textbox or frame))

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Column 1	Column 2	Column 3	Column 4	Column 5
Column 1	Column 2	Column 3	Column 4	Column 5

[a] ((Table Footnote.)) [b] ...