

University of Nebraska - Lincoln
College of Engineering
Chemical and Biomolecular Engineering
PhD Student Handbook

For additional information, please consult the UNL Graduate Bulletin:
<http://www.unl.edu/gradstudies/bulletin>

Please direct specific questions to:

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DEPARTMENT DESCRIPTION

The Department of Chemical and Biomolecular Engineering offers research and instruction leading to a master's degree in chemical engineering and a doctorate in engineering with a specialization in chemical and biomolecular engineering.

The chemical and biomolecular engineering faculty are actively involved in research related to biomolecular engineering, biomedical engineering, nanotechnology, polymers, composite materials, catalysis, and solid phase reactions. Graduate coursework is offered in the advanced fundamentals of applied mathematics, chemical reaction kinetics, numerical methods, thermodynamics, transport phenomena, biomolecular engineering, and polymers.

The scope of chemical and biomolecular engineering work is far-reaching. Engineers are involved in a range of industries including manufacturing, healthcare, environmental health, and biotechnology. Graduates are among the highest paid within engineering disciplines.

GRADUATE PROGRAM CONTACTS

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Campus Address
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FACULTY RESEARCH AREAS

Vitaly Alexandrov

First-principles based computational modeling of materials properties, electronic structure, electron/ion transport, defects in solids.

Chris Cornelius

Material Interrelationships between Structure, Physical Properties, and Transport of Natural and Synthetic Polymers, Ionomers, Hybrid Organic-Inorganic Materials, and Sol-Gel Glasses.

Yasar Demirel

Energy, Thermodynamic Analysis of Energy Systems, Sustainable Energy Management, Renewable Energy and Storage, Enhancement of Heater Transfer.

Srivatsan Kidambi

Neural and Stem Cell Tissue Engineering, Nanoscale Drug Delivery Systems for Gene Therapy, Novel Thin Films for Sensor Applications.

Gustavo Larsen

Ti-Containing Gels; Inorganic Oxide Materials; Molecularly Imprinted Oxides; Catalytic Nanofiber Design.

Yuguo Lei

Use engineering expertise and human pluripotent stem cell (hPSC) biology to resolve unsolved human health problems; Develop new concepts and technologies for addressing the significant challenges in the process from benchtop to bedside for hPSC-derived cells.

Hossein Nouredini

Enzyme Immobilization; Enzyme Reactions; Renewable Resources.

Wei Niu

Apply metabolic engineering principles and synthetic biology tools to the microbial synthesis of industrial or other value-added chemicals from renewable feedstocks; develop new enzyme catalysts and auxiliary functional proteins for efficient and green synthesis of pharmaceutical precursors and energy molecules.

Ravi Saraf

Electronic Skin; Electronics on Bacterium; DNA and Protein Chip.

Anuradha Subramanian

Bioseparations; Tissue Engineering.

Kevin Van Cott

Functional Proteomics; Protein Biochemistry.

William Velander

Plasma-Derived Medicines; Hemophilia Treatment; Coagulation Science; Transgenic Production of Biopharmaceuticals.

Hendrik Viljoen

Solid Phase Reactants; Thermal Stresses and Crack Development; Piezoelectric Sensors; Point-of-Care Diagnostics; Theoretical Investigation of Errors in Polymerase Chain Reaction Process.

EMERITUS FACULTY**Jennifer Brand**

Emeritus

Supercritical Processing; Boron Carbide Devices; Polymers for Harsh Environments

L. Davis Clements

Emeritus

James Hendrix

Emeritus

Lee Lauderback

Emeritus

Delmar Timm

Emeritus

Composite Materials

ADMISSION REQUIREMENTS

The Department of Chemical & Biomolecular Engineering adheres to the [Admissions Policies of UNL Graduate Studies](#). Prospective students are required to submit all documents by the specified application deadlines, and meet the minimum entrance criteria outlined on the [Application Checklist](#).

Incoming Students with a Chemical Engineering Background

An undergraduate degree in Chemical Engineering from an ABET-accredited (or equivalent) program is considered the necessary previous experience for direct admittance into the PhD program.

Incoming Students Without a Chemical Engineering Background

Students without an undergraduate degree in Chemical Engineering are encouraged to apply to the Chemical Engineering PhD program. Research by the faculty covers a broad scope of technical fields: applied mathematics, materials science and engineering, applied physics, polymer science, biotechnology, optics, biomedical engineering, biochemical engineering, and catalysis. Each applicant in this situation will be evaluated on a case-

by-case basis, and the applicant is encouraged to talk with faculty about their research interests and how they can be assimilated into the program with the least amount of problems.

The College of Engineering requires that a PhD student must pass a Qualifying Examination within 3 to 4 semesters of enrolling in a PhD program (see *Qualifying Examination for PhD Candidates*). Thus the applicant should be aware of this deadline, as he/she must demonstrate a mastery of basic chemical engineering principles within 4 semesters of enrollment.

There are two options available:

1. Apply immediately to the PhD program, enroll in courses, and take and pass the Qualifying Examination by the end of the 4th semester or second year.
2. The applicant may instead apply to the Chemical and Biomolecular Engineering department's MS program, take the necessary background coursework to enable success on the Qualifying Exam, and then apply to the PhD program.

Detailed Background Information

The list below describes program eligibility for students with different backgrounds.

Prior Degree Obtained

Program Eligibility

BS Chemical Engineering

Masters: Granted full graduate standing and may immediately begin MS course work.

Direct to PhD Option: Provisional admission to our PhD program with full graduate standing granted after successful completion of the following steps:

1. Take and successfully pass (grade of B or better) the core courses of the MS Chemical Engineering program (12 credit hours). The core courses must be taken the first time they are offered. Typical length of completion is one academic year.
2. Pass the Qualifying Examination.

Students who choose to take the Direct to PhD Option bypass the MS thesis requirement.

BS Scientifically Related Field

Examples of scientifically related fields include, but are not limited to; other engineering majors, biochemistry, chemistry, biology, physics,

and pre-med programs. All other admission criteria must be met.

Masters: Provisional admission to the MS program with full graduate standing granted after successful completion of undergraduate deficiencies. Required deficiency courses are individually specific and the student's advisor may require a student without a chemical engineering background to take, or test out of, undergraduate courses. After the student is admitted, he/she may request an advising appointment with either his/her assigned faculty advisor or the graduate chair, to outline a specific program of studies based on your educational background.

Direct to PhD Option: Provisional admission to our PhD program with full graduate standing granted after successful completion of the following steps:

1. Successful completion of undergraduate deficiencies. Required deficiency courses are individually specific and the student's advisor may require a student without a chemical engineering background to take, or test out of, undergraduate courses. After the student is admitted, he/she may request an advising appointment with either his/her assigned faculty advisor or the graduate chair, to outline a specific program of studies based on your educational background.
2. Take and successfully pass (grade of B or better) the core courses of the MS Chemical Engineering program (12 credit hours). The core courses must be taken the first time they are offered. Typical length of completion is one academic year.
3. Pass the Qualifying Examination.

Students who choose to take the Direct to PhD Option bypass the MS thesis requirement.

**MS or MEng
Chemical
Engineering**

PhD: Provisional admission. May immediately begin PhD course work including electives and dissertation hours. Full graduate standing granted after successfully passing the Qualifying Examination at the beginning of the second semester of enrollment.

**MS Scientifically
Related Field**

Examples of scientifically related fields include, but are not limited to; other engineering majors, biochemistry, chemistry, biology, physics, and pre-med programs. All other admission criteria must be met.

PhD: Provisional admission to our PhD program with full graduate standing granted after successful completion of the following steps:

1. Successful completion of undergraduate deficiencies. Required deficiency courses are individually specific and the student's advisor may require a student without a chemical engineering background to take, or test out of, undergraduate courses. After the student is admitted, he/she may request an advising appointment with either his/her assigned faculty advisor or the graduate chair, to outline a specific program of studies based on your educational background.
2. Take and successfully pass (grade of B or better) the core courses of the MS Chemical Engineering program (12 credit hours). The core courses must be taken the first time they are offered. Typical length of completion is one academic year.
3. Pass the Qualifying Examination.

GENERAL OFFICE PROCEDURES

Department office hours are from 8:00-5:00pm Monday through Friday. The department staff is responsible for support of operations that pertain directly to the functions and procedures of the department office. Office staff is not to engage in work relating to individual faculty/student research or projects unless directed and approved by the department chair.

Offices and Supplies

Graduate student/Post-Doc offices are furnished with 8 desks. Although these offices are not always full to capacity, the possibility exists for 8 occupants to be assigned to an office. Graduate and Post-Doc computers are furnished by the student or the student's graduate advisor, or the department in some cases.

As a courtesy to your office mates, please keep your area neat (not necessarily spotless or uncluttered, just tidy). Make sure food is not left open. When you graduate, please remove all of your personal possessions from your office, including food, cups, plates, utensils, and appliances.

Copying Services

The Office Assistant is available to help with departmental copying projects. To ensure that your copying needs are met by your deadline, please send by email or give the copy assignment to the Office Assistant **24 hours in advance of your deadline**. Particularly at the beginning and end of a semester, the Office Assistant has many responsibilities and sometimes cannot complete an assignment to copy multiple chapters of a textbook. The department copier is to be used **only** for department-related business. Copy paper is provided **only** for department-related business.

Refreshments

The department currently provides coffee and tea for faculty, staff and students, as well as condiments and plastic utensils. Please bring your own cup(s)! **The department does not supply cups**, except for department meetings, seminars and events. Making coffee and tea is up to the person who wants it. If you see that the coffee pot is empty, please make another pot. Do not ask the staff to make coffee for you.

Department staff does not place personal meal orders for faculty and students, including student group meetings. Faculty and/or students should make these arrangements and submit the receipt according to the expense reimbursement procedures. A department staff member will make arrangements for food delivery for department events **as long as they has 3-4 days' prior notice (this is a UNL food service policy)**.

Janitorial Services

UNL Custodial Services provides daily cleaning of bathrooms in Othmer Hall, weekly sweeping and mopping of hallways, labs and service corridors, and emptying of trash in all offices on Wednesday evenings. Trash pick-up in labs varies according to the needs of the lab. Lab trash must be autoclaved. The UNL custodians are not required to touch lab trash that has not been autoclaved.

Custodial Services does not dispose of recycling materials. We encourage recycling, especially of paper. If you participate in recycling, the staff can show you where to take it when your container gets full. If your trash receptacle has the standard recycling sticker on it, Custodial Services will not empty it. Please make sure you are putting your trash in a designated trash can.

Carpeting is vacuumed periodically, and the carpets are steam-cleaned once per year. Dusting/cleaning of furniture or equipment is not provided by UNL services. Faculty, staff, post-docs and students are expected to dust/clean their own offices and labs as they feel it is required or needed.

Purchasing Procedures

Before you order anything or use a service that requires payment with university funds, you must complete a **purchase order request form** and have it signed by your supervisor. You can ask Aaron Howell for a blank purchase form.

FUNDING

Assistantships

A teaching assistantship in an academic department provides a stipend to a student who is typically assisting in the department's teaching program. A graduate teaching assistant

is required to spend 13-19.6 hours per week (.33 to .49 FTE) during the academic year, engaged in teaching activity (grading, assisting a professor with a course, etc.). The teaching assistant is expected to continue working towards the advanced degree while being a teaching assistant.

The Graduate Council recommends that all departments require graduate teaching assistants to participate in workshops for teaching assistants. Graduate assistants may be expected to provide their academic adviser with a written report of their academic progress at the conclusion of the period for which the teaching assistantship is awarded.

All international graduate students who wish to be employed as teaching assistants at UNL must attend the Institute for [International Teaching Assistants](#). The Institute is an intensive training program held the last week of July and the first week of August.

Because of the potential for the exploitation of graduate students, any assignment of responsibilities, such as teaching a course, must be associated with a fair and reasonable compensation. This principle precludes a graduate student from “volunteering” for any significant service to the department without an appropriate stipend.

A research assistantship provides a stipend to a student who is typically assisting a professor with a research project, enabling the graduate student to work towards an advanced degree. Work required by the graduate research assistantship that is not directly related to the student's own program shall not exceed 13-19.6 hours per week (.33 to .49 FTE). Students receiving research assistantships may be expected to provide their academic adviser with a written report of their academic progress at the conclusion of the period for which the research assistantship is awarded.

Eligibility

To hold a graduate assistantship a student must be admitted to a department or area with a specific graduate degree objective and must be enrolled for credit during the tenure of the assistantship.

Individual departments make assistantship appointments. Students interested in being considered for assistantships in their major should indicate that on the [Application for Admission](#). Further inquiries should be directed to the graduate chair or the chair of the student's prospective department.

The responsibilities of the graduate assistant and the method by which the student will be evaluated should be provided in writing to the student by the immediate supervisor at the beginning of the assistantship.

Benefits

Tuition remission of up to 12 hours per semester is provided as a benefit of eligible assistantships. Students holding eligible assistantships are provided basic individual student health insurance coverage with related benefits. The University subsidizes part of the [student health insurance](#) premium for eligible graduate assistants.

Eligibility for assistantship benefits must meet all of the following criteria:

1. A continuous appointment for four full months within the semester dates.
2. The stipend meets the minimum salary level set by the University.
3. The assistantship or combination of assistantships in one or more departments totals at least 13.33 hours per week employment.

If a graduate assistant resigns or terminates their assistantship during the semester before four full months of consecutive service (e.g., 120 consecutive days within the semester dates, August-December OR January-May) all benefits will be lost and the student will be responsible for the total tuition payment and health insurance premiums.

Departments may differentiate graduate teaching assistantship stipends by graduate student status (master's or doctoral-level, first year or experienced) or by number of hours of work required by the assistantship. Within departments and within each level of differentiation, stipends should generally be equivalent. Guidelines used to determine stipend levels should be available to students through the department or graduate committee chair.

Summer Assistantship Appointments

If a graduate assistant, while on an appointment during both semesters of the preceding academic year, was paid a stipend meeting the minimum qualification for summer tuition, the student is not charged tuition for the first 6 hours during the summer sessions. If such a stipend met the next level of qualification, the student is not charged tuition for the first 12 hours during the summer sessions. (Specific dollar amounts are available each year from the Office of Graduate Studies.)

A student on a non-benefits eligible graduate assistantship is charged tuition at resident rates if the stipend received is equal to, or greater than, the total of the amount set by the University for the relative summer session.

FELLOWSHIPS

University fellowships are awarded on a competitive basis in recognition of a student's demonstrated scholarship, scholastic and creative promise, and/or financial need. There is no service or work requirement associated with fellowship awards. A student holding a fellowship or a traineeship must be a full-time student during the period of appointment.

To be eligible a student must be admitted to a department or area with a specific graduate degree objective and must be enrolled in graduate academic course work. *Students enrolled in certificate-only programs with no degree objective are ineligible for fellowships.* International students must have completed one year of study at a US institution of higher education to be eligible for any of the [current graduate student](#) fellowships. Employees of the University of Nebraska, other than graduate assistants, are not eligible to receive a fellowship.

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See also: [UNL fellowships for current UNL graduate students](#) and [externally-funded fellowships](#).

Types of fellowships

Tuition Fellowships remit tuition for the full or partial cost of graduate courses according to the specific fellowship guidelines for the term of the award. Recipients of tuition fellowships are responsible for university program and facilities fees unless specifically included in the award announcement. Recipients must be admitted to a graduate program with a specific graduate degree objective.

Full Support Fellowship Awards from Graduate Studies (Presidential and Fling Fellowships) provide stipend payments for recipients of these awards. Fellowship recipients are required to be full-time students (at least 9 credit hours or have an approved full-time graduate status form) during the period of appointment and may hold another major fellowship. They may not engage in remunerative employment, including a graduate assistantship or traineeship.

Partial Support Fellowship Awards. Some fellowships provide partial support; students with these fellowships may hold other fellowships and assistantships.

Other information

The fellowship award should not in any way affect the amount of a graduate assistantship salary unless there is an accompanying real decrease in the teaching or research assignment and the corresponding FTE. Because of the potential appearance of a possible conflict of interest, employees of the University of Nebraska (other than graduate assistants) are ineligible for fellowship stipend awards.

Continuation of graduate fellowships may be denied to recipients under the following conditions:

- failure to satisfy Scholastic Grade Requirements as specified in the UNL Graduate Studies Bulletin;
- violations of the Code of Conduct as specified in the UNL Graduate Studies Bulletin; or
- failure in qualifying examinations, preliminary examinations, comprehensive examinations or failure to make satisfactory progress in a graduate program.

FINANCIAL AID

Loans and Need-Based Application Process

The [Office of Scholarships and Financial Aid \(OSFA\)](#) does not participate in the granting of fellowships or assistantships but does maintain current information on other forms of financial support available to students.

To apply for Federal Work-Study, Federal Perkins Loans, Federal Stafford Loans, Unsubsidized Federal Stafford Loans, submit a Free Application for Federal Student Aid (FAFSA) to the processing center as soon as possible after January 1. Federal Perkins Loans and Federal Work-Study are awarded on a first-come, first-serve basis to domestic students with a completed financial aid file as long as funds are available. (International students are ineligible to apply for federal loans.)

To have a completed file, a student must:

1. Submit a FAFSA to the processing center.
2. Be admitted to a degree program (contact OSFA for exceptions).
3. If you are transferring to UNL or if you attended another postsecondary school as an undergraduate, submit a financial aid transcript to OSFA from all schools attended. A financial aid transcript is required even if you did not receive financial aid.
4. Submit all documentation requested by OSFA as required for verification.

To receive financial aid you must be making satisfactory progress toward a degree. Maintaining satisfactory progress at the University of Nebraska-Lincoln (UNL) requires you to successfully complete a minimum number of hours according to the [Minimum UNL Attempted Credit Hours Completed Table](#).

In addition, you must complete your degree prior to reaching the maximum credit hour limit in the [Maximum Total Credit Hours Attempted Schedule](#).

FULL-TIME STATUS

Graduate students are considered full time when registered for 9 credit hours during an academic semester or at least 6 credit hours during the summer, whether or not the student holds a graduate assistantship.

Students in a thesis-option masters degree program (Option I) or doctoral student in candidacy, may request to be [full-time certified](#) each semester they are under enrolled for the time limit allowed for their degree.

In order to be eligible to utilize the full-time certification, the student must be currently registered for at least one credit hour and have been registered at least half time (i.e., at least 4 credits) in the fall and spring terms prior to the initiation of the full-time certification status. Masters students may utilize the full-time certification not longer than 12 months; doctoral candidates may utilize the full-time certification not longer than 24 months.

RESIDENCY AND TIME REQUIREMENTS FOR DOCTORAL STUDENTS

All doctoral students need to establish academic residency to ensure their doctoral program is reasonably compact, continuous, and cohesive, and that a substantial portion is in fact done at and under close supervision by the University.

- No additional hours over and above those for the required program of studies will be needed to fulfill academic residency.
- For a student beginning a doctoral program in the University of Nebraska system with a bachelors degree, the academic residency requirement is 27 hours of graduate work within a consecutive 18-month period or less, with the further provision that 15 of these 27 hours must be taken after receiving the masters at UNL.
- For a student beginning a doctoral program in the University of Nebraska system with a masters degree from another educational institution, the academic residency requirement is 27 hours of graduate course work within a consecutive 18-month period or less.
- For a member of the University staff who is engaged at least half time in instruction or research in their major area, or a person employed in their major field, the residency requirement is 24 credit hours of graduate work within a consecutive two-year period with the further provision that they take at least 12 of these after receiving the masters degree at UNL. For important registration restrictions, refer to [University Staff Exemption](#).
- In exceptional circumstances, where it is clear that the purpose of residency will be fulfilled although the above formal conditions are not met, the student's Supervisory Committee may, with the approval of the Dean of Graduate Studies, designate an alternative procedure for satisfying the residency requirements.

VISA PROCEDURES FOR INTERNATIONAL STUDENTS AND EMPLOYEES

It is the responsibility of the visa holder to keep documentation of residence status current. The department staff does not initiate renewal or application processes for visa holders.

Any international employee whose documentation falls out of status while employed at UNL will be terminated effective the date of expiration of the visa. At that time, the employee cannot work in any capacity anywhere on campus until he/she has completed the renewal process and has received official written verification of having returned to current status. The employee cannot continue working while waiting for expired documentation to be renewed, with the expectation of being paid retro-active to the date the visa expired. The law is firm in this, and it is strictly upheld by the University. Salaries and wages will not be paid to anyone whose documentation is not valid and current.

INTERNATIONAL GRADUATE STUDENTS are responsible for maintaining their visa status and working with the **International Student Services Office (ISSO)** to renew documents. **PLEASE keep track of your expiration dates!** Besides being disruptive to payroll procedures, it is very upsetting for any student who must interrupt their course of research or study to follow the expensive and complicated procedures for regaining visa status.

POST-DOCTORAL ASSOCIATES are responsible for maintaining their J-or H-Visa status. **The department staff does not initiate renewal procedures.** If your visa is **within 4-5 months of the expiration date**, speak with your supervisor to decide the next course of action. **It is crucial that you make these arrangements 4-5 months before your visa expires!** If your supervisor wants to continue your employment, you (and your supervisor) are responsible for giving an account number and the start and end dates of employment to Nicole **4 months prior to the expiration date of your visa.** Once she has this information, she will initiate the necessary paperwork to renew your visa and payroll status.

DEPARTMENTAL CORE GRADUATE COURSES

Core courses are required to be taken by all students studying for a PhD in chemical and biomolecular engineering. Eligible students must enroll in the core courses the first time they are offered. The core courses are:

1. CHME 845 Advanced Chemical Engineering Kinetics
2. CHME 835 Transport Phenomena I
3. CHME 825 Theoretical and Applied Thermodynamics for Chemical Engineers
4. CHME 815 Advanced Chemical Engineering Analysis
5. CHME 836 Transport Phenomena II

ACADEMIC ELIGIBILITY

A minimum grade of B is required for graduated credit in 800-level courses with 400 or lower counterparts within the student's major department or area. A grade of B- is not acceptable. A minimum grade of C or P (pass) is required for graduate credit in 800-level courses in minor, collateral, or supporting areas of work. A grade of C- is not acceptable. A minimum grade of C or P (pass) is required for graduate credit in 900-level courses, or 800-level courses without 400 or lower counterparts. A student failing to receive a minimum acceptable grade for graduate-level credit may not continue his/her program of studies without permission of the supervisory group or the departmental graduate committee concerned, which may require a special examination to determine the student's qualifications for further work.

All candidates for graduate degrees must maintain a 3.0 “B” grade point average (GPA) overall. Failure to maintain this average in graduate study requires that you be placed on probation. Enrollment for one semester of probation is usually permitted to remedy an unsatisfactory GPA. If a student fails to make satisfactory progress toward the degree, permission may be denied to continue the program. This decision may be reached by the student’s advisory committee or the Chemical Engineering Graduate Program Chair and recommended to the Graduate School.

GRADUATE STUDENT ORIENTATION

Graduate student orientation will be held at least once per year. It is mandatory for all new graduate students to attend orientation. Students will meet faculty and staff and learn about current research in the department. Orientation will also include:

- degree requirements and deadlines
- University and department resources
- laboratory safety

ACADEMIC SUPERVISORS

Temporary Supervisors

New graduate students may be assigned a temporary supervisor for the first semester or until a research supervisor is determined. Students should talk with their temporary supervisor when making decisions concerning registration. Usually students on assistantships will be registered for the core courses and may need to add one additional class to their schedule to maintain full-time status. During this time it is the student’s responsibility to schedule appointments with faculty members to identify available research projects.

Changing Supervisors

Students will not be permitted to change supervisors after their first academic year without written permission from the graduate chair and their original research supervisor.

SEMINAR REQUIREMENTS

Attendance at all chemical engineering department seminars is required for all chemical engineering graduate students. The faculty member in charge of the seminar program for the year will circulate a list of the seminars at the beginning of the semester. Any absences from the departmental seminars must be approved by the Graduate Chair in advance.

STEPS FOR SUCCESS IN PH.D. PROGRAM:

YEAR-1 (admitted in fall semester)

1. Incoming Ph.D. students take core CHEME graduate classes.
 - a. Transport
 - b. Reaction Kinetics
 - c. Thermodynamics
 - d. Advanced Mathematics

Please note that classes are offered in the Fall and Spring semesters as per class schedule. Graduate students are expected to take and successfully complete these classes in the first two years at UNL. A grade of B or better is required in all CHEME core classes.

YEAR-II

2. Take written qualifiers before the last week of the Spring semester of your second year in the department. Qualifiers have to be completed before the completion of 4- semesters at UNL as a Ph.D. student. Exact dates will be communicated by the graduate chair.

YEAR-III

3. Take oral comprehensive: on a topic directly related candidate's doctoral thesis. A NIH or NSF styled proposal is expected with substantial preliminary data.

YEAR-IV to YEAR-V

Complete and meet all requirements for a Ph.D.

QUALIFYING EXAMINATION

Students must pass a written qualifying examination to remain the Chemical Engineering PhD program. The student must **pass the examination by the end of the fourth semester or the end of the second year** of his or her program. The first semester of the program is defined as the semester in which a graduate course is taken as a Ph.D. student. An announcement of the Ph.D. Qualifying Examination registration will be posted at the beginning of the semester. The student should register for the examination with the department's graduate secretary on or before the posted deadline. The examination date will be set by the Graduate Committee Chair.

The Qualifying Exam will be composed of four parts: transport phenomena, thermodynamics, kinetics and mathematics. The four parts of the examination will each last at least three hours in length and will be distributed over a period of three or four days. To pass the examination, a student must demonstrate sufficient mastery of the subject material to satisfy the examining committee which is composed of faculty from the department. All four parts of the Qualifying Exam must be passed in order to continue in the PhD program. If the student fails four or three parts of the exam, they will be dismissed from the PhD program. If the student fails only one or two parts, the student will have an opportunity to retake the failed sections. If the student fails again, they will not be able to continue in the PhD program.

If a student fails the qualifying exam, he or she may complete their graduate work with a Masters degree.

SUPERVISORY COMMITTEE

In order to assure that students are under careful advisement and mentoring throughout their careers, **a Supervisory Committee is established before a doctoral student has accumulated 45 credit hours** including any transfer hours but excluding research or language tools. The Supervisory Committee must be appointed prior to the approval of the program of study. It is the responsibility of the student and their research supervisor to identify potential members of the Supervisory Committee.

The Supervisory Committee consists of at least four resident Graduate Faculty members.

- All professors on the Supervisory Committee must either be on the graduate faculty or be non-graduate faculty approved to perform specified Graduate Faculty duties.
- The Supervisory Committee must include at least one Graduate Faculty member external to the chemical engineering department. If the student is pursuing a minor, the Graduate Faculty member from the minor department may serve as the outside representative.

Once the committee has been formed, an [Appointment of Supervisory Committee form](#), signed by the Graduate Committee Chair, should be filed with the Office of Graduate Studies.

Changes to Supervisory Committee

Changes to the Supervisory Committee may be made if the Supervisory Committee chair leaves the employ of the University, or retires or is otherwise unable to serve on the Committee. The Office of Graduate Studies must be notified immediately and a change in the Supervisory Committee made as follows:

- If the student has achieved Candidacy, the former chair who has left the employ of the University may continue to serve as co-chair of the Supervisory Committee, with the approval of the departmental Graduate Committee and the UNL Dean of Graduate Studies. A second co-chair must be appointed who is a resident Graduate Faculty member.
- If the student has not yet achieved Candidacy, a new chair of the Supervisory Committee who is a resident Graduate Faculty member must be appointed immediately, with the agreement of the departmental/school Graduate Program Committee and the UNL Dean of Graduate Studies.
- If a member of the Supervisory Committee other than the chair leaves the employ of the University, or retires, a replacement should be appointed who is a resident graduate faculty member. In certain circumstances where special and needed continuing expertise is involved and the faculty member is willing to continue serving, he/she may continue as a member of the Supervisory Committee, with the approval of the Supervisory Committee Chair and the concurrence of the UNL Dean of Graduate Studies.

Graduate faculty who have retired and been appointed to emeritus status may co-chair the supervisory committees of doctoral students with a resident graduate faculty member. Emeritus faculty may continue to serve as members of committees.

Changes may be made to a Supervisory Committee any time prior to the submission of the Application for Final Oral Exam using the [Change of Committee form](#).

Courtesy Members

The UNL Graduate Faculty welcomes associations with faculty members from other institutions who might contribute unique expertise to our doctoral programs. These external experts are given courtesy membership on a doctoral student's committee. Courtesy members

- must hold a doctoral degree appropriate to the discipline and have academic accomplishments comparable to the criteria for UNL Graduate Faculty;
- are appointed as voting members of the Supervisory Committee;
- must be willing to participate in the student's doctoral program in a manner consistent with this role;
- may serve as one of the two appointed readers; but may not serve as committee chair, co-chair, or outside representative;
- are not granted blanket status and must be approved separately for each supervisory committee upon which the individual is nominated to serve;
- only one courtesy member may serve on each supervisory committee, and the committee must also include a minimum of four members of the University of Nebraska Graduate Faculty.

Appointment of a courtesy member is accomplished by the submission of the [Courtesy Committee Member form](#) signed by the Supervisory Committee chair and Graduate Committee chair. A current CV from the courtesy member should be submitted with this form (the CV may be e-mailed to graduate@unl.edu-use "Courtesy Member CV" in the subject line).

PROGRAM OF STUDIES

The Program of Studies should be filed in the Office of Graduate Studies with at least half of the program of courses remaining (45 credit hours) to be taken for the student's doctoral program.

The Program of Studies should

- be filed in the Office of Graduate Studies within the same semester as the appointment of the Supervisory Committee;
- **contain at least 90 semester credit hours including a minimum of 12 or a maximum of 55 hours of dissertation research;**

- include any departmental language or research tool requirements, and the general area of research for the dissertation;
- reflect a major from the list of approved doctoral programs. At least half of the graduate work, including the dissertation, will be done in this field.

The Supervisory Committee will determine what course work taken prior to filing of a Program of Studies, including hours earned toward the masters degree(s), will be accepted as part of the 90-hour program.

- The Supervisory Committee is not obligated to reduce the doctoral Program of Studies by applying course work completed prior to its appointment.
- Prior course work should be assessed in relation to its contribution to framing a research foundation for the doctorate. Each course accepted must be determined to be current and relevant in relation to the desired degree.
- No graduate credit will be accepted from a previously awarded doctoral degree at any institution, including UNL.
- The time limit on granting the doctoral degree is eight years from the time of filing the student's Program of Studies in the Office of Graduate Studies.

Any subsequent change in the program is approved by the Supervisory Committee and the action reported to the Office of Graduate Studies in writing.

EXPECTATION FROM ALL PH.D. GRADUATE STUDENTS

1. All PhD graduate students must publish their research work in peer-reviewed journals.
2. It is expected that 3 peer-reviewed journal articles, preferably as first author, will be published or submitted for publication prior to the thesis defense.
3. Student should aim for archival and flagship journals from ACS, BMES, AVS, AIChE etc.
4. Please avoid publishing in online access journals that do not have a published impact factor or those not having a stringent peer-review procedure. Please do not aim to publish in journals that have an impact factor less than 2.0
5. One national presentation either oral or poster is also required.

EXPECTATION FROM ALL M.S. STUDENTS

6. All graduate students must publish their research work in peer-reviewed journals.
7. It is expected that 1 peer-reviewed journal article, preferably as first author, will be published or submitted for publication prior to the thesis defense.
8. Student should aim for archival and flagship journals from ACS, BMES, AVS, AIChE etc.
9. Please avoid publishing in online access journals that do not have a published impact factor or those not having a stringent peer-review procedure. Please do not aim to publish in journals that have an impact factor less than 2.0.

10. One national presentation either oral or poster is also required.

COMPREHENSIVE EXAMINATION AND ADMISSION TO CANDIDACY

When a student has substantially completed studies in the doctoral program (PhD, EdD, DMA), he/she must pass a written comprehensive examination, in the major and minor fields of study.

1. The Supervisory Committee arranges for written or oral examinations at least seven months prior to the final oral examination (dissertation defense).
2. The written comprehensive examination is not a repetition of course examinations but is an investigation of the student's breadth of understanding of the field of knowledge of which his/her special subject is a part.
3. At the discretion of the Supervisory Committee, an oral comprehensive examination may be required. The oral examination may include the minor or related fields in addition to the major field of study. If an oral exam is required, this is considered a part of the comprehensive exam requirements to be met before candidacy can be achieved.

When the student has passed the comprehensive examination, satisfied language and research tool requirements of her/his approved program, and removed any provisional admission requirements, the committee will recommend to the Office of Graduate Studies the doctoral student's admission to Candidacy by filing the [Application for Admission to Candidacy](#) for the doctoral degree, noting the dates of completing the comprehensive examination(s).

The Application for Candidacy must be filed **at least seven months prior to the final oral examination (dissertation defense)**.

Following admission to Candidacy the student must register for at least one credit hour during each fall and spring semester until he/she receives the doctoral degree, even if the student has already met the total dissertation hours on their approved program of study. Failure to register during each academic-year semester will result in termination of the program of study.

Should the Supervisory Committee determine the student has failed the comprehensive examination, a letter must be submitted by the chair of the Supervisory Committee to the Dean of Graduate Studies stating the conditions under which the student may attempt another examination, or part thereof. Additional attempts may not be earlier than the following academic term or summer. Typically, but upon the discretion of the Supervisory Committee, only two attempts to pass the comprehensive examination will be permitted.

APPLICATION FOR DEGREE

The UNL form *Application for Degree* must be filed at the beginning of the semester or Summer session in which graduation is planned. A non-refundable application fee is also

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required at the time of submission. This form can be found online at <http://www.unl.edu/gradstudies/current/degrees#doctoral>.

DISSERTATION

The dissertation is of no fixed length. It should treat a subject from the Candidate's special field, approved by the Supervisory Committee. It should show the technical mastery of the field and advance or modify former knowledge, i.e., it should treat new material, or find new results, or draw new conclusions, or it should interpret old material in a new light. Each candidate for the degree shall submit with the dissertation an abstract of the same, not exceeding 350 words in length including the title.

For specific formatting guidelines required by the Office of Graduate Studies, [the Guidelines for Preparation of an Electronic Dissertation](#) should be consulted. Style guidelines are determined by the student's specific discipline.

FINAL ORAL EXAMINATION

Once the candidate's studies have been completed and the dissertation accepted by the Reading Committee, a final oral examination may be scheduled and given by the Supervisory Committee

- the supervisor of the dissertation must review and approve the completed dissertation before the examination will be scheduled;
- the final oral examination for the PhD may not be scheduled unless a majority of the Supervisory Committee, including the Chair, are available for the examination. Exceptions may be made only by permission of the Dean of Graduate Studies.

An [Application for Final Oral Exam](#) should be filed with the Office of Graduate Studies no less than three weeks prior to the scheduled defense. The submission of the application form indicates that the committee chair and the readers (see Reading Committee) have read the dissertation, find it suitable for a defense and grant permission for the defense to be held.

The final examination for the doctoral degree is oral and open to members of both the University community and the public.

- The Supervisory Committee determines the defense's character and length. The examination may be devoted to the special field of the dissertation or to the Candidate's general knowledge, or it may be designed to test judgment and critical powers.
- During the dissertation presentation and general questioning all persons may be present.

- At the end of the public hearing there will be a closed questioning portion of the examination where all persons except the Candidate, Supervisory Committee, and invited faculty must be excused.
- The final oral examination over the dissertation may be waived only with the consent of the Graduate Dean.

The Supervisory Committee reports the results of the final oral examination to the Office of Graduate Studies.

- If the student has passed the oral exam, a Report of Completion is signed by all committee members present for the defense. This is included in the documents submitted by the student for depositing the dissertation.
- In the event that members of an oral examining committee are not unanimous regarding passing a Candidate, the student is to be approved for the degree if only one examiner dissents. However, in each case, the dissenting member of the committee will be expected to file a letter of explanation in the Office of Graduate Studies.
- If a student fails to pass the final oral examination for an advanced degree, his/her committee must file a report on the failure in the Office of Graduate Studies and indicate what the student must do before taking another examination. Another examination may not be held during the same semester or the same summer session in which the student failed.

DEPOSITING THE DISSERTATION

Following the successful completion of the oral examination, the student should consult the instructions received at the time of filing the Application for Final Oral Exam before submitting the required items in the Office of Graduate Studies, 1100 Seaton Hall.

Only abstracts/dissertations that meet all published requirements can be approved and stamped for depositing.

Before the degree is granted, each Candidate pays a processing fee, and if desired, an additional fee to cover the cost of registering a copyright.

PROCEDURE SUMMARY FOR Ph.D. DEGREE

Following is a summary of the procedures described above. A more detailed description can be found in the Graduate Bulletin. Students are responsible for following procedures and seeing that all forms are filed by the appropriate deadlines. The work required for the Ph.D. degree must be completed within eight consecutive years from the time of filing the student's program of studies. For forms and deadlines visit:

<http://www.unl.edu/gradstudies/current/degrees#doctoral>.

Degree Requirements

- **Beginning of program:**
 - Register for classes by consulting with your major supervisor or your temporary supervisor.
 - Attend the department's graduate student orientation.
 - Actively pursue finding a research supervisor if initially assigned a temporary supervisor by scheduling appointments with faculty members in the department.
- **By the end of the second semester in program:** Have a research supervisor and a dissertation project established.
- **By end of the third semester in program:** Take the Ph.D. Qualifying Examination.
- **Prior to the completion of 45 credit hours:** Appointment of the supervisory committee.
- **Within the same semester of the approval of the supervisory committee:** Devise and submit program of studies.
- **At least 7 months before final oral examination:** Pass Ph.D. Comprehensive Examination and apply for candidacy by filing *Application for Admission to Candidacy* form.
- **Graduating semester (See Graduate Bulletin for specific deadline dates):**
 - File the *Application for Degree* at the Office of Registration and Records.
 - After thorough review by your supervisor, present preliminary copy of dissertation to the Reading Committee.
 - Submit the form *Application for Final Oral Examination* with Reading Committee approval. Also submit a copy of the dissertation and abstract for preliminary review.
 - Present a preliminary copy of dissertation to all members of the supervisory committee.
 - Produce announcement for the dissertation defense and distribute to all departmental faculty and graduate students.
 - Present required oral defense of dissertation research.
 - Deposit final copies of the dissertation in proper form according to the Graduate Bulletin (digital and hard copies).

GENERAL INFORMATION

Academic Integrity

Academic honesty is essential to the existence and integrity of an academic institution. The responsibility for maintaining that integrity is shared by all members of the academic community. The University expects all graduate students to act at all times with unwavering integrity. As a graduate student, you have a responsibility to understand and to uphold the standards of the academic community. At UNL, you will be held to the highest standards of academic integrity.

The [Student Code of Conduct](#) outlines the University's expectations regarding academic integrity. In accordance with the established procedures as described in the Code, students who commit acts of academic dishonesty are subject to disciplinary action, and are granted due process and the right to appeal any decision.

Questions regarding the procedures for handling incidents of academic dishonesty may be directed to the Dean of Students, 106 Canfield Administration Building (0418), 472-2021, who is primarily responsible for administering the Student Code of Conduct.

Nondiscrimination Policy

It is the policy of the University of Nebraska to administer all of its educational programs and related supporting services in a manner which does not discriminate based upon age, race, ethnicity, color, national origin, gender, sex, pregnancy, disability, sexual orientation, genetic information, veteran's status, marital status, religion or political affiliation.

Any unwanted communication of a sexual nature, whether verbal, physical, written, or pictorial, which has the purpose or effect of intimidating the person receiving the communication, or any solicitation of sexual conduct of any nature when submission to or rejection of such contact is used as the basis for either implicitly or explicitly imposing favorable or adverse terms and conditions of academic standing constitutes sexual harassment and will not be condoned or tolerated.

Appropriate corrective action will be taken toward any student or employee who is found to have violated UNL's non-discrimination or sexual harassment policies. Further, UNL commits itself toward the assurance of non-retaliation toward the person suspecting or experiencing discrimination or sexual harassment.

If you suspect or experience discrimination, sexual harassment, or retaliation toward yourself or others, please keep records of specifics and report the conduct.

If you do not feel comfortable telling the person to stop the behavior, or if the behavior does not cease once you have made the request that it do so, you may tell an administrator, professor or counselor. These individuals are then required to pass the information on to the people who can take corrective action.

You may also contact the [Office of Student Judicial Affairs](#), 106 Canfield Administration Building South, (402) 472-2021, the [Office of Equity Access and Diversity Programs](#), 128 Canfield Administration Building North, (402) 472-3417, or the Director of the Office for Civil Rights, Department of Education, Washington, D.C. 20202.

More information regarding discrimination, harassment and avenues available is posted on most bulletin boards in buildings throughout the UNL campus.

Student Privacy Policy

The University of Nebraska-Lincoln defines the following student information as public directory information:

Student name, local address, permanent addresses, telephone numbers, year at the University (i.e. Freshman, Sophomore, etc.), dates of attendance, academic college and major field of study, enrollment status, (e.g. undergraduate or graduate; full-time or part-time), participation in officially recognized activities and sports, degrees, honors and awards received and most recent education agency or institution attended.

Directory information will be available to the public upon request and may be included in student directories published electronically and in hard copy. However, students have the right to have directory information withheld from the public, if they so desire. During the first two weeks of any semester, a student who wants all or any directory information to be withheld shall so indicate by completing a form obtained from the [Office of the University Registrar](#), 107 Canfield Administration Building South, (402) 472-3635. The student's request will be processed within a reasonable amount of time. Directory information already included in hard copy publications will be removed at the next printing of the hard copy publication.

You can view the official notice about the [Family Educational Rights and Privacy Act \(FERPA\)](#).

Sexual Harassment Policy

The University of Nebraska-Lincoln reaffirms that all women and men--administrators, faculty, staff and students--are to be treated fairly and equally with dignity and respect. Any form of sexual harassment is prohibited.

Sexual harassment is unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of sexual nature when:

- submission to such conduct is made either explicitly or implicitly a term of condition of an individual's employment or academic standing;
- submission to, or rejection of, such conduct by an individual is used as the basis for employment decisions or academic decisions affecting such individual, or
- such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working/academic environment.

Sexual harassment will not be condoned during the work or school day, nor will acts of sexual harassment be permitted outside the work or school environment if such acts affect the normal work environment or student/teacher relationship. UNL provides grievance procedures for violations of this policy. For further information, contact:

[Equity, Access, and Diversity Programs](#)

128 Canfield Administration Building
PO Box 880437
Lincoln, NE 68555-0437
(402) 472-3417

Appropriate corrective action will be taken in those instances where the foregoing policies have been violated. Any student or employee who is found to have violated any of the aforementioned policies will be subject to disciplinary action.

Further, UNL commits itself to a program of affirmative action to encourage the enrollment of minority and female students; to identify and eliminate the effects of any past discrimination in the provisions of educational and related services; and to establish organizational structures of procedures which assure equal treatment and equal access to the facilities and educational benefits of the institution for all students.

UNL complies with all applicable laws promoting equal educational and employment opportunity prohibiting unlawful discrimination, including those addressing the obligations of the institution under Title VII of the Civil Rights Act of 1964, as amended, Title IX of the Education Amendments of 1972, as amended, and Sections 503 and 504 of the Rehabilitation Act of 1973.

Information concerning violations of the policy and inquiries regarding UNL compliance with equal opportunity mandates, affirmative action, and other inclusions should be directed to:

[Equity, Access, and Diversity Programs](#)

University of Nebraska-Lincoln
128 Canfield Administration Building
PO Box 880437
Lincoln, NE 68588-0437
(402) 472-3417 U.S. and Canada
(800) 742-8800 (toll-free)

A formal discrimination grievance procedure is available at UNL for those seeking redress. Copies of the EEO Grievances Procedures are available from the Equity, Access and Diversity Programs Office and in most departments. Those wishing to file formal complaints outside UNL may contact the Equity, Access and Diversity Programs Office for appropriate names and addresses of external agencies to which such communications

may be directed. Students who believe that discrimination occurred within the educational setting may also contact:

Director, Office for Civil Rights
Department of Education
Washington, DC 20202

Campus Security

To request a key to any door in the department, employees and students must do two things: 1) Note the number of the door to which you are requesting the key, and 2) visit the Dept. Key Manager (Nicole, 207R Othmer Hall) with your UNL ID card and the door number. The Key Manager will submit your key request to the UNL Police Department, using your UNL ID number. If we already have a copy of your key, we will issue it to you right away. If we need to order a copy of the key, it will take 24 hours for UNLPD to make a copy for you. **Having said this, it is very important to remember to return your keys to the Key Manager when your employment at UNL ends!**

For after-hours access to Othmer Hall, please see the Key Manager, who will submit your request using your UNL ID number. It generally takes 24 hours to get Building Access.

Please remember to carry your keys with you whenever you are on campus. If you forget your keys (everyone does at one time or another), you may ask the department staff to let you into your office or lab during regular business hours. There are occasional incidents of break-ins and thefts across UNL campus. It is wise to keep your office locked at all times when you are not in, and to keep purses/backpacks stored securely out of sight.

Postal Service

All Department employees and graduate students are issued individual mailboxes which are located in the department office. The campus postal service delivers and picks up mail every other day (the campus postal process is rather slow because of this). Departmental and postal correspondence will be distributed to your mailbox.

Important things to remember about the University postal service:

- **Check your mailbox on a regular basis to reduce overflow**
- **The University postal service may be used *only* for business-related correspondence. Personal mail may not be posted or received through the University service.**

Email Service

Graduate students may contact the tech support office in the 501 Building to open a huskers.unl email account.

Finding Your Way Around

New students and employees to the department may ask any staff person for directions. Campus maps are available on the UNL website, and any one of us can help to teach you

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about locations and parking. There are shuttle buses that run between City and East Campuses on a regular basis during the semesters.

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