

# Graduate Student Handbook

## Department of Chemical Engineering University of Arkansas

### General Information, Admission and Degree Requirements



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Chemical Engineering Graduate Program Information:  
<http://chemical-engineering.uark.edu/academics/graduate-program/index.php>

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University of Arkansas general website: <http://www.uark.edu/>

The Graduate School website: <http://grad.uark.edu/>

Information for International Students:  
<http://graduate-and-international.uark.edu/international/index.php>

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## **ADMISSION**

The following procedures are for applicants wishing to enter the graduate program in chemical engineering that already have a BS or an MS degree in chemical engineering. **Applicants that do not have a chemical engineering degree should skip the section “Getting Into the Graduate Program if Without a Chemical Engineering Degree”.**

There are three types of graduate Chemical Engineering degrees offered: a non-thesis MS, a thesis-based MS and a PhD. The non-thesis MS has a different application procedure from the two research-based degrees. Also, there is no funding available for the non-thesis MS, you must pay your own tuition and living expenses.

### **Admission Requirements**

The admission requirements are available here: <https://chemical-engineering.uark.edu/academics/graduate-program/index.php>

Some additional details about the requirements are as follows:

- A grade point average of 3.0 out of 4.0 earned in a BS chemical engineering degree, to be completed before you start grad school here. If your previous school uses a grade scale not based on 4.0, the University of Arkansas Graduate School will convert your grades to a 4.0 scale upon submission of your application.
- GRE is not required for admission to the Chemical Engineering Graduate program. However, several internal fellowships do require the GRE. For more information about the requirements of those fellowships visit: <https://graduate-and-international.uark.edu/graduate/costs-and-funding/fellowships-scholarships/doctoral-fellowships.php>
- The English language proficiency requirements can be found here: <https://international-admissions.uark.edu/graduate-studies/english-proficiency.php>

### **Application Procedure for a Non-Thesis MS**

Contact [cheggrad@uark.edu](mailto:cheggrad@uark.edu) to apply. The deadline for domestic students to apply to enter in the Fall semester is July 1 and for the Spring semester, Dec 1. For international students it is April 1 for Fall semester and Oct 1 for Spring semester since they will need to obtain a visa. The priority deadline for funding for the Fall semester is January 15 and September 15 for the Spring semester.

### **Application Procedure for a Thesis MS or a PhD**

To enter the research-based graduate program you must first submit a complete application to the graduate school: <https://applygsie.uark.edu/apply/>. When the complete application is received, you are then considered for acceptance into the Chemical Engineering Department.

You can view the department faculty's research areas at: <http://chemical-engineering.uark.edu/research/index.php>

The complete application consists of a resume containing all required information, a statement of purpose no longer than two pages, transcripts from all undergraduate and graduate institutions attended, and three letters of reference. Unofficial transcripts are acceptable for the submission of the application, however official transcripts are required for enrollment. The deadline for domestic students to apply to enter in the Fall semester is July 1 and for the Spring semester, Dec 1. For international students it is April 1 for Fall semester and Oct 1 for Spring semester since they will need to obtain a visa.

## **FINANCIAL AID**

### **Teaching Assistantships and Research Assistantships**

Financial aid typically comes in the form of a graduate assistantship which can be in two different types: teaching assistantship or research assistantship. Typically, students are supported on a departmentally funded teaching assistantship for the first semester. During this semester they are required to find a research mentor for continued funding in the remaining semesters. The assistantship pays all tuition and provides a living stipend paid monthly directly to the student. The yearly (12-month) stipend for MS students is \$18,000 and for PhD students is \$26,600 before the candidacy exam and \$29,000 after successful completion of the candidacy exam.

The student pays university fees. The following website is a good resource for estimating the expenses of attending graduate school: <https://treasurernet.uark.edu/Estimator.aspx>

Note: strong preference in funding is given to PhD students over MS students. There is no financial aid available for the non-thesis MS program.

According to 1987 changes in the tax laws, all assistantships and fellowships are taxable income.

### **Merit-Based Fellowships for Incoming Doctoral Students**

The Graduate School offers two levels of competitive merit-based fellowships to provide financial support to outstanding incoming doctoral students. To qualify for these fellowships, incoming doctoral students must be nominated by the Chemical Engineering Department. For more information, please contact the Office of Graduate Fellowships at [gradfunding@uark.edu](mailto:gradfunding@uark.edu).

The fellowships are:

**Doctoral Academy Fellowships (DAF) - \$12,000 per year added to base stipend plus tuition for up to 4 years**

**Distinguished Doctoral Fellowships (DDF), \$22,000 per year added to base stipend plus tuition for up to 4 years**

Details about the deadline and requirements for these fellowships can be found at the following website: <https://graduate-and-international.uark.edu/graduate/costs-and-funding/doctoral-fellowships.php>

It is important to note that neither fellowship pays university fees. Both fellowships must be applied for before starting on the University of Arkansas campus. The department is required to nominate you for these fellowships (i.e. you cannot apply for them on your own).

Other Fellowships and Scholarships are available in the Graduate School: <https://graduate-and-international.uark.edu/graduate/costs-and-funding/fellowships-scholarships/index.php>

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## **Procedure for Applying for Financial Aid**

**You don't need to apply for financial aid. All thesis-based MS or PhD students who are accepted for study are automatically considered.** There are no additional forms to fill out and no letters of recommendation are needed.

If you are accepted into our graduate program and are not offered funding at that time, feel free to contact individual professors with research interests similar to yours to see if they have any extra money in their private research funds. Our faculty and their research areas are listed at <http://chemical-engineering.uark.edu/research/index.php>

## **COURSEWORK**

The coursework requirements are satisfied by a combination of departmental and approved non-departmental courses, thesis and dissertation hours, and seminars. The specific selection of courses should be made in consultation with your research advisor. No course taken for undergraduate credit may be used for graduate credit. It is recommended to complete all the coursework in the first 2-3 semesters in order to focus on research and the thesis.

You must have a cumulative GPA of at least 2.85 in order to graduate. Any semester in which your semester GPA is below 2.85 does not constitute acceptable progress and your grades must improve to stay in the program. Two consecutive semesters with averages below 2.85 may be grounds for termination from the program. No class with a D or F can count for graduate credit.

The complete University of Arkansas Schedule of Classes is at: <http://registrar.uark.edu/>.

### **Course Designations**

At the University of Arkansas, undergraduate level courses are identified as follows:

**1000, 2000, 3000 and 4000** (such as CHEG 2133 or MATH 4163):

1000 and 2000, 3000 level courses can never be used for graduate credit

4000 level courses can be used for graduate credit for MS students, but not PhD students

In order to register for these courses, you will need to fill out an Out of Career Registration form:

<https://graduate-and-international.uark.edu/resources/forms/registration/out-of-career-reg-grad.pdf>

In order to receive credit for 4000 level courses you will need to fill out the following form:

<https://graduate-and-international.uark.edu/resources/forms/registration/3000-4000-retro.pdf>

**5000 and 6000** are graduate-level courses and can be used for graduate credit.

**Lecture Course** - A course with lectures, homework, and exams or projects. Most of these carry 3 hours of credit, but there are a few 4 hour classes in this category.

**Non-Lecture Course** - A course that requires your participation but not like a traditional lecture course. Examples include:

CHEG 600V: Master's thesis. No grade is given in this course, there are no class meetings and nothing to hand in. It is used to reflect time spent on research on Master's degree projects. V = number of hour credit such as 6003 for three hours.

CHEG 700V: PhD Dissertation. No grade is given in this course, there are no class meetings and nothing to hand in. It is used to reflect time spent on research on PhD degree projects. V = number of hour credit such as 7003 for three hours.

CHEG 5801 is a seminar course where you'll hear about the various graduate research projects and outside speakers and will have the opportunity to report on your own work.

## **Grad Course Checklist: PhD**

The official list of courses is listed in the Graduate School Catalog at:

<http://catalog.uark.edu/graduatecatalog/programsofstudy/chemicalengineeringralphmartindepartm-entofcheg/>

This website provides the requirements that you will be held to for graduation.

The following is intended to summarize the requirements for students entering with a BS CHEG degree but should not be taken as the official course requirements.

**MATH 5423 Introduction to Partial Differential Equations**

**CHEG 5113 Transport Process I** (MATH 5423 is prerequisite or corequisite)

**CHEG 5133 Advanced Reactor Design**

**CHEG 5333 Advanced Thermodynamics**

**CHEG 6123 Transport Processes II**

**Chemical Engineering Electives - 3 hrs.**

Any 5000 or 6000 level CHEG course.

**Electives - 12 hrs.**

5000 or 6000 level; must be approved by your advisor. Must be a lecture course, not a special project, seminar or independent research topic.

**CHEG 5801 Graduate Seminar – every semester**

**CHEG 700V Dissertation - 39 hrs.**

You must take at least one hour of CHEG 7001 every semester after you become a PhD candidate. This is a Graduate School rule that they take very seriously.

**Students entering with an MS degree**

If you enter our PhD program and already have an MS in Chemical Engineering, the department's Graduate Coordinator will subtract your MS courses from the above requirements up to a total of 30 credit hours, thus lowering the hours you need at Arkansas to complete your PhD. Students entering with a non-CHEG MS degree will also have elective courses considered to count toward their PhD elective hours.

## **Grad Course Checklist: Thesis MS**

The official list of courses is listed in the Graduate School Catalog at:

<http://catalog.uark.edu/graduatecatalog/programsofstudy/chemicalengineeringralphmartindepartmentofcheg/>

This website provides the requirements that you will be held to for graduation.

The following is intended to summarize the requirements for students entering with a BS CHEG degree but should not be taken as the official course requirements.

**MATH 5423 Introduction to Partial Differential Equations**

**CHEG 5113 Transport Process I** (MATH 5423 is prerequisite or corequisite)

**CHEG 5133 Advanced Reactor Design**

**CHEG 5333 Advanced Thermodynamics**

**CHEG 6123 Transport Processes II**

**Chemical Engineering Electives - 3 hrs.**

Any 4000 or 5000 CHEG level course. The 4000 level classes must be approved for grad credit. For 4000 level courses the following form must be completed BEFORE taking the course:

<https://graduate-and-international.uark.edu/resources/forms/registration/3000-4000-retro.pdf>

**Electives - 6 hrs.**

4000, 5000 or 6000 level. Must be a lecture course, not a special project, seminar or independent research topic. These may be CHEG core courses that you didn't take to satisfy the core requirement. Other courses must be approved by your advisor.

**CHEG 600V Thesis - 6 hrs.**

**CHEG 5801 Graduate Seminar - every semester**



## **Grad Course Checklist: Non-Thesis MS**

The official list of courses is listed in the Graduate School Catalog at:

<http://catalog.uark.edu/graduatecatalog/programsofstudy/chemicalengineeringralphmartindepartmentofcheg/>

This website provides the requirements that you will be held to for graduation.

The following is intended to summarize the requirements for students entering with a BS CHEG degree but should not be taken as the official course requirements.

**MATH 5423 Introduction to Partial Differential Equations**

**CHEG 5113 Transport Process I** (MATH 5423 is prerequisite or corequisite)

**CHEG 5133 Advanced Reactor Design**

**CHEG 5333 Advanced Thermodynamics**

**CHEG 6123 Transport Processes II**

**Chemical Engineering Electives - 9 hrs.**

Any 4000 or 5000 CHEG level course. The 4000 level classes must be approved for grad credit. For 4000 level courses the following form must be completed BEFORE taking the course:

<https://graduate-and-international.uark.edu/resources/forms/registration/3000-4000-retro.pdf>

**Electives - 6 hrs.**

4000, 5000 or 6000 level.

Must be a lecture course, not a special project, seminar or independent research topic.

**CHEG 5801 Graduate Seminar - every semester**

## **Coursework Loads**

To continuously receive a graduate assistantship, you must be enrolled as a full-time student. The number of credit hours needed to be enrolled as a full-time student are:

Spring or Fall Semesters: 6 hours minimum, 15 hours maximum  
Total for Summer Semesters: 3 hours minimum, 9 hours maximum

You may find additional information about graduate assistantships in the Graduate School website:  
<https://graduate-and-international.uark.edu/graduate/costs-and-funding/graduate-assistantships.php>

If you are not on any kind of financial aid but, instead, are paying for your education out of your own pocket, the requirements are relaxed and there is no minimum.

If you are a PhD student, you have to be enrolled every semester and take at least one hour a semester of Doctoral Dissertation (CHEG 700V) each time.

These course load hours include all courses, lecture and non-lecture. For the spring or fall semesters, a course load of 9 hours of lecture courses is normal but 12 is reasonable, although it may be difficult to perform much research with that amount of homework and exams. It is recommended that students complete all of their coursework as early as possible. MS students should complete them in about a year and PhD students in about two years.

## **Extra Coursework**

You may not take courses beyond the minimum degree requirements without the approval of both your research advisor and the graduate student coordinator.

## **RESEARCH PROJECTS**

Your research advisor and you will work closely together to help plan your overall program and coordinate the course work and research activities. Frequent contact between you and your advisor is necessary to ensure the success of your project. The research can be either analytical or experimental in the MS program but an advanced-level experimental or theoretical component is required for PhD students. Research, by nature, cannot be precisely programmed. The first experimental design and/or technique is frequently unsuccessful, requiring the application of different procedures. You are therefore encouraged to initiate your research activities early in your graduate residency.

Soon after you and your advisor choose a research topic, the two of you will select a research committee consisting of faculty inside and outside of the Chemical Engineering Department. The recommended committee makeup is as follows:

MS: at least three members:

- the advisor
- one other CHEG professor
- one professor from outside of the Department

PhD: at least five members:

- the advisor
- two or three other CHEG professors
- one or two professors from outside of the Department

Extra members are fine. Any committee member not affiliated with the University of Arkansas must be approved by the Graduate School. While the recommended committee composition shown above should be followed, it is known that situations may arise where not enough CHEG faculty have the necessary research expertise to be part of a specific committee. In this type of case, the graduate coordinator may approve deviations of the composition of the graduate committees, but the number listed must be satisfied (i.e. 3 for MS and 5 for PhD). No later than the end of the first year you, along with your advisor's help, should propose the research project to the committee for their approval and suggestions. The day-to-day performance of the research project will be supervised by your research advisor.

A written thesis or dissertation must be prepared to provide a detailed documentation of the research activities and their results. This document is prepared in accordance with Graduate School format and procedures, and must be comprehensive in covering the work that was done from problem definition, through experimental procedure, to results and discussion.

Finally, your committee gets back together so you can present the results of your work in an event called your thesis or dissertation defense. They may require some changes to your thesis or dissertation document before passing you. Although it rarely happens, it is possible to fail this oral examination and have to go back to the lab for more work, followed by another defense in front of your committee.

### **Thesis and Dissertation Preparation**

Thesis and dissertation preparation should be done carefully to ensure that the final document meets Graduate School specifications, described at: <https://graduate-and-international.uark.edu/graduate/current-students/thesis-dissertation-info/index.php>

## **GETTING YOUR DEGREE**

We want you to complete your graduate degree without undue delay and move on to the first phase of your career as an MS or PhD chemical engineer. To help ensure that, there are certain milestones and objectives that you need to meet in order to make acceptable progress.

### **Coursework**

It is recommended that you complete your coursework as soon as possible. As a guideline for full-time students, you should be able to finish the 24 hours of lecture courses required for the MS degree in one calendar year or the 48 hours for the PhD in two years. Of course, specific research commitments, co-op assignments and other extenuating circumstances can force you to extend your classes beyond these times. Your committee will look to see if you are on schedule to finish your coursework in a timely fashion taking into consideration any other research and service tasks you may also have.

You must have a cumulative GPA of at least 2.85 in order to graduate. Any semester in which your semester GPA is below 2.85 does not constitute acceptable progress and your grades must improve to stay in the program. Two consecutive semesters with averages below 2.85 may be grounds for termination from the program. No class with a D or F can count for graduate credit.

### **Research**

As with coursework, the appropriate rate of progress in research depends on many circumstances such as funding, equipment issues, and the risks taken in the project's scope. Good research pushes the envelope of knowledge and technique, and this can sometimes cause unexpected delays. However, there are some milestones for which you should aim:

During your first semester:

- Select a graduate advisor and define a project topic

During your second semester:

- Select a research advisory committee
- Present your research proposal to your committee

After your proposal is completed, acceptable progress in research activities will be defined by your research advisor and your committee. There are many potential problems in any research program that can cause your intended schedule to be unavoidably delayed. If this is the case, your graduate advisor will inform the committee and these factors will be taken into consideration.

### **Proposal to the Student's Committee**

It is the policy of this department that all PhD graduate students present a written and an oral proposal to their committee for the purpose of defining their research program. The written part will constitute the exam for PhD candidacy, with the major professor and the committee determining what constitutes a "pass" for that test. After passing the exam, the major professor should inform the graduate coordinator and the coordinator will write the required memo to the Grad School declaring that the student is now a PhD candidate. Guidelines for the written proposal are provided in the appendix section of this handbook. Example of successful proposals are available here: [http://bluto/grads/candidacy\\_proposals](http://bluto/grads/candidacy_proposals)

### **Laboratory Safety Practices**

Chemical engineering research often involves handling and disposing of hazardous materials. Graduate students must follow safe laboratory practices as well as attend a basic safety training seminar before starting any laboratory work. To promote a culture of safety, the department maintains an active Laboratory Safety Committee composed of the department head, faculty, staff and a student member which meets each

semester. Students are expected to be responsive to the safety improvements suggested by the committee, to serve on the committee when asked, and utilize the committee members as a resource for lab safety communication.

Each semester, you will receive instruction in safety practices as part of your Graduate Seminar Course. The training covers general safety issues including: Hazard Awareness and Chemical Safety, the new Global Harmonization Standard (GHS) by OSHA, Safety Data Sheets (SDS), Chemical and Biological Waste Disposal, Emergency Preparedness, Accident Prevention, and Chemical Spill Response. You will be expected to take what you learn in safety training seminars into the lab and conduct your daily research activities at a level of safety performance equal to or exceeding standards common in the U.S. chemical industry. All general laboratory safety rules must be followed including wearing appropriate laboratory clothing such as long pants, closed shoes and safety glasses. **Violations of safety practices are absolutely unacceptable and may result in you losing lab privileges or even termination from the graduate program.**

The University of Arkansas also requires that each lab train its users in all safety procedures relevant to that lab. Upon joining a research group, be sure to ask about safety training specific to their research. Additional information can be obtained from the University's Environmental Health and Safety Website <http://ehs.uark.edu/>.

### **Assisting in Undergraduate Teaching**

Grading, overseeing lab sessions, and giving an occasional lecture when the professor is out of town are valuable services to the Department, a useful technical review for you, and good practice for a career in academia. All grad students are required to participate in these activities. Students in a Teaching Assistant (TA) position are required to work 20 hours a week towards their teaching assistant duties. Students in a Research Assistant position are required to work no more than 5 hours a week in their teaching duties. TA assignments are performed at the beginning of each semester by the graduate coordinator in consultation with the students and faculty.

### **Forms for the Graduate School**

There are multiple forms that the Graduate School requires throughout your time at the University. Links are provided in this handbook to many of these so you can download them. The Grad School changes the links from time to time and, if the provided links don't work, you can go to the Grad School's website and find the right path. Also, let the CHEG Graduate Coordinator know if a link in this document is bad so it can be fixed.

Most of these forms require signatures from various people:

“Chair of the Committee” = your research advisor

“Department Head/Chair” = Dr. Walters

“Graduate Coordinator” = Dr. Almodovar

“Office of the Graduate Dean” - you never need to get this one; the Grad School will take care of it

It would probably be a good idea to make a copy of any form you turn in to the Grad School in case it gets lost. If you want, the graduate coordinator can put it in your student file for safekeeping.

You can find most of their forms at: <http://graduate-and-international.uark.edu/graduate/current-students/forms.php>

More specific links are provided in the *Checklist for the MS* and *Checklist for the PhD* in the following sections.

### **Acceptable Progress Toward the Degree**

Acceptable progress toward degree completion is required to maintain a student's status in the department. Measures of progress include:

(1) Finding an advisor within four months after either entering the graduate program or after leaving another advisor's research group. Non-thesis MS students are advised by the Graduate Program Coordinator.

(2) Acceptable grades in coursework.

(3) Acceptable progress in research work toward a thesis or dissertation, if applicable.

Students who do not make acceptable progress toward degree completion by these standards will be informed of the actions they must take to remain in the program. Lack of a timely, adequate response to this communication may be grounds for dismissal by vote of the Graduate Studies Committee.

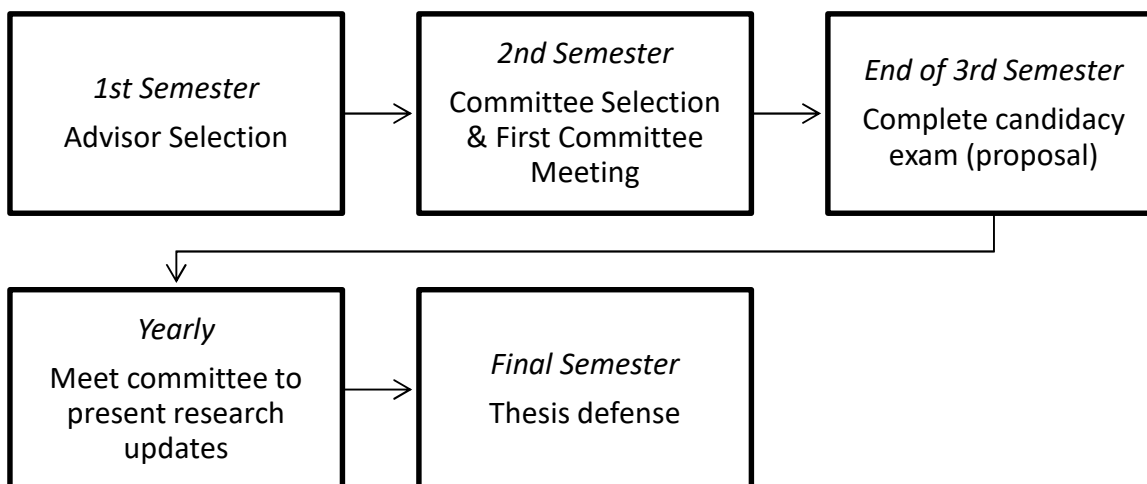
### **Annual Progress Evaluation**

Each year you'll meet with your advisor and your graduate committee to determine if your progress has been acceptable. If it is unacceptable, they will also tell you in writing exactly what you need to do to remedy the situation and to bring your performance up to a satisfactory level. In that case, a second special review will be scheduled six months later. If your performance has not sufficiently improved, you may be terminated from the program at that time. If you refuse to participate in the review process, you can also be terminated immediately. For thesis students, it is also recommended that you meet each year with your advisor and thesis committee. The form for the annual review can be found at: <https://graduate-and-international.uark.edu/graduate/current-students/forms.php>

### **Dissemination of Work**

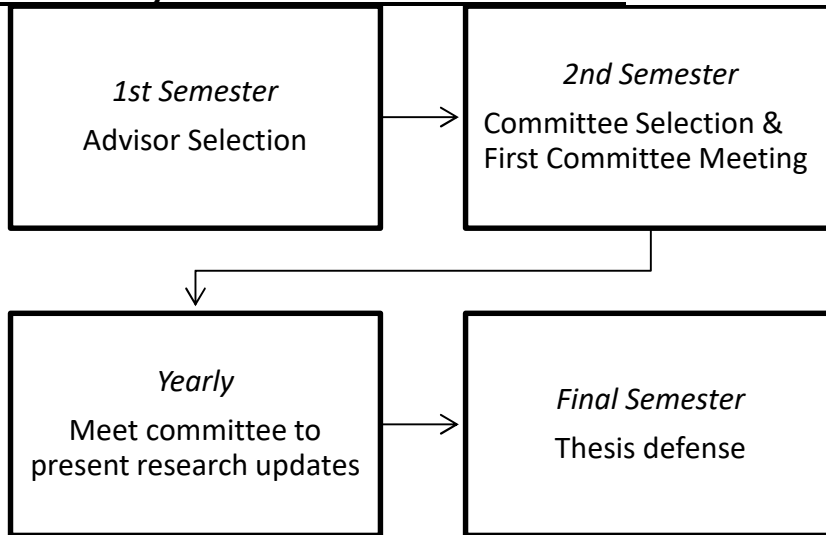
Thesis-based MS students and PhD students are expected to disseminate their work. Options for dissemination include: presentations at regional, national, or international meetings/conferences; conference proceedings; peer-reviewed journal articles; patents; etc.

### **Milestones Summary for PhD Students**



\*note: semesters refer to Fall or Spring.

**Milestones Summary for thesis-based MS Students**



\*note: semesters refer to Fall or Spring.

## **DEGREE REQUIREMENTS FOR THE PhD**

The PhD in Chemical Engineering program consists of the following components:

- coursework
- assisting in departmental teaching
- proposal of your research plans to your committee
- research resulting in a successfully-defended dissertation

You should be able to finish the lecture coursework requirement in 2.0 to 2.5 calendar years by taking 9 hours each Spring and Fall plus 6 in the Summers. This leaves a couple of years at the end of your residency to dedicate for research activities.

Upon entering the PhD program you are a "PhD applicant" and, upon completion of all coursework and the proposal, you are a "PhD candidate".

### **Candidacy Exam**

Example proposals are available to current graduate students in the Departmental Server at the following location: [\\bluto\grads\candidacy\\_proposals](\\bluto\grads\candidacy_proposals)

### **Getting an MS on the Way to a PhD**

It is not necessary to obtain an MS degree in this department on the way to a PhD but it may be desirable for you and/or your advisor. This is a decision for the two of you to make. If a thesis MS in CHEG is sought, all requirements for that degree, as described earlier in this document, must be satisfied including defending your thesis in front of your committee and later having that thesis accepted at the Grad School. A non-thesis MS can be earned in the PhD program if you satisfy all of the requirements for the non-thesis MS degree as described later in this handbook. If you are on departmental funding, you need your committee's permission to get a non-thesis MS.

### **Checklist for the PhD**

- Select a graduate advisor during first semester. Complete the *Advisor Selection Form* available here: <https://chemical-engineering.uark.edu/academics/studentresources.php>
- Select a graduate advisory committee. For the PhD degree, this committee consists of at least five members: the advisor, at least two other CHEG representatives, and at least one representative from outside of the Department.
- Fill out the form for *Doctoral Committee*. This should be done during the first year. E-mail an electronic copy of the form (signed) to the grad coordinator.  
<http://graduate-and-international.uark.edu/resources/forms/doctoral-committee.pdf>
- Select a dissertation topic and title.
- Fill out the *Doctoral Thesis Title* form and submit it to the Grad School, preferably in the third year, but at least one year prior to the dissertation defense. E-mail an electronic copy of this form (signed) to the grad coordinator.  
<https://graduate-and-international.uark.edu/resources/forms/td-title.pdf>
- Present a formal proposal of research to your committee for approval and suggestions. This should be completed at the end of your third regular semesters (not counting summers). When you pass, have your advisor sign the Candidacy Exam Notification Form. <https://graduate-and-international.uark.edu/resources/forms/candidacy-exam-notice.pdf>. E-mail an electronic copy of this form (signed) to the grad coordinator.



- Apply for graduation at the beginning of your last semester: <http://registrar.uark.edu/graduation/applying-to-graduate.php>
- Consult the graduation checklist appropriate for your graduating semester: <https://graduate-and-international.uark.edu/graduate/current-students/graduation-checklists/index.php>
- Prepare the dissertation in accordance with the Graduate School format, described at: <https://graduate-and-international.uark.edu/graduate/current-students/thesis-dissertation-info/index.php>
- **Two weeks before your defense**, fill out the *Dissertation Defense Announcement* at: <http://graduate-and-international.uark.edu/graduate/current-students/dissertation-defense-form.php>

In addition, you will need to fill out the Chemical Engineering *Graduate Record of Progress* at:

<https://chemical-engineering.uark.edu/academics/studentresources.php>

- Submit your dissertation to your advisory committee at least one week prior to your defense.
- Pass the dissertation defense, and complete and file the form *Graduate Record of Progress Degree*. The entire committee will sign this. Additionally, each committee member must complete the *Evaluation of Graduate Educational Outcomes* form. Once you collect those forms from the committee, you must submit them to the CHEG Graduate Coordinator. The forms are in the appendix of this handbook and in the following website: <https://chemical-engineering.uark.edu/academics/studentresources.php>. These forms should be submitted to the Graduate Coordinator.
- The dissertation packet is submitted electronically to the Graduate School.
- Before leaving the University, you will need to complete the Graduate Exit Survey and the Laboratory Checkout forms. These forms can be found at the end of the handbook.

## **DEGREE REQUIREMENTS FOR THE THESIS MS**

The thesis MS in Chemical Engineering consists of the following components:

- coursework
- assisting in departmental teaching
- research resulting in a successfully-defended thesis

You should be able to finish the lecture coursework requirement in one calendar year by taking 9 hours in the Fall, 9 in Spring and 6 in summer. This leaves time at the end of your residency to dedicate for research activities.

### **Checklist for the Thesis MS**

- Select a graduate advisor during first semester. Complete the *Advisor Selection Form* available here: <https://chemical-engineering.uark.edu/academics/studentresources.php>
- Select a graduate advisory committee. For the master's degree, this committee consists of at least three members: the advisor, at least one other CHEG representative, and at least one representative from outside of the Department.
- Fill out the form *Master's Committee* and give it to the Grad School. E-mail an electronic copy of each form (signed) to the grad coordinator.  
[http://graduate-and-international.uark.edu/\\_resources/forms/masters-committee.pdf](http://graduate-and-international.uark.edu/_resources/forms/masters-committee.pdf)
- Select a thesis topic and title.
- Fill out the *Master's Thesis Title* form and give it to the Grad School. Do this preferably in the second semester, but at least one year prior to the thesis defense. E-mail an electronic copy of this form (signed) to the grad coordinator.  
[https://graduate-and-international.uark.edu/\\_resources/forms/td-title.pdf](https://graduate-and-international.uark.edu/_resources/forms/td-title.pdf)
- Apply for graduation at the beginning of your last semester: <http://registrar.uark.edu/graduation/applying-to-graduate.php>
- Consult the graduation checklist appropriate for your graduating semester:  
<https://graduate-and-international.uark.edu/graduate/current-students/graduation-checklists/index.php>
- Prepare the thesis in accordance with the Graduate School format, described at:  
[https://graduate-and-international.uark.edu/\\_resources/forms/thesis-dissertation-guide-01-2020.pdf](https://graduate-and-international.uark.edu/_resources/forms/thesis-dissertation-guide-01-2020.pdf)
- Submit your thesis to your advisory committee at least one week prior to your oral defense.
- Pass the dissertation defense, and complete and file the form *Graduate Record of Progress Degree*. The entire committee will sign this. Additionally, each committee member must complete the *Evaluation of Graduate Educational Outcomes* form. Once you collect those forms from the committee, you must submit them to the CHEG Graduate Coordinator. The forms are in the appendix of this handbook and in the following website: <https://chemical-engineering.uark.edu/academics/studentresources.php>. These forms should be submitted to the Graduate Coordinator.
- The thesis packet is submitted electronically to the Graduate School.
- Before leaving the University, you will need to complete the Graduate Exit Survey and the Laboratory Checkout forms. These forms can be found at the end of the handbook.

## **DEGREE REQUIREMENTS FOR THE NON-THESIS MS**

The non-thesis MS in Chemical Engineering consists of the following components:

- coursework, see page 9
- assisting in departmental teaching
- master's comprehensive examination (project) complete by date of graduation (required by the graduate school for the M.S. degree). See the graduate coordinator for details.

You should be able to finish in 1.5 - 2 years. Students in the non-thesis MS program who are not on funding (RA or TA) can serve as course graders and will be paid for their efforts.

Students on funding (RA or TA) must receive approval of their committee or, if they don't have a committee, of the Grad Studies Committee, to obtain this degree.

### **Non-Thesis MS Project**

The project for the non-thesis MS consists of the following:

- Literature review that is at least 10 pages long (not including cover page and reference page)
- Requirements: at least 11 pt font in Arial or Times New Roman, 1.5 lines spacing, margins of 1"
- Maximum of 6 figures with at least 1 that is not directly lifted from the source material (ex. a table summarizing the literature reviewed that is created by the student)
- Must address 2 out of the 3 following areas within their topic: chemical reaction, transport phenomena, and thermodynamics
- Must have at least 20 references from peer-reviewed journal articles or textbooks.

### **Checklist for the Non-Thesis MS**

- The Graduate Coordinator if your default non-thesis advisor unless you specifically request another advisor.
- Select a graduate advisory committee. For the master's degree, this committee consists of at least three members: the advisor, at least one other CHEG representative, and at least one representative from outside of the Department.
- Fill out the form *Master's Committee* and give it to the Grad School. E-mail an electronic copy of each form (signed) to the grad coordinator.  
<http://graduate-and-international.uark.edu/resources/forms/masters-committee.pdf>
- Apply for graduation at the beginning of your last semester: <http://registrar.uark.edu/graduation/applying-to-graduate.php>
- Consult the Graduate Coordinator to make sure that you complete the required project for the comprehensive exam.
- Consult the graduation checklist appropriate for your graduating semester:  
<https://graduate-and-international.uark.edu/graduate/current-students/graduation-checklists/index.php>
- Submit your project to your advisory committee at least two weeks prior to the graduation deadline.
- Pass and complete the form *Graduate Record of Progress Degree*. The entire committee will sign this. Additionally, each committee member must complete the *Evaluation of Graduate Educational Outcomes* form. Once you collect those forms from the committee, you must submit them to the CHEG Graduate Coordinator. The forms are in the appendix of this handbook and in the following website: <https://chemical-engineering.uark.edu/academics/studentresources.php>. These forms should be submitted to the Graduate Coordinator
- Before leaving the University, you will need to complete the Graduate Exit Survey and the Laboratory Checkout forms. These forms can be found at the end of the handbook.

## **GETTING INTO THE PROGRAM WITHOUT A CHEMICAL ENGINEERING DEGREE**

The Department offers Master's and PhD degrees for students who do not have a BS in chemical engineering but have a Bachelor's degree in another subject. This program enables a student to build on his/her background in other fields of engineering, mathematics, chemistry, physics, and the humanities or social sciences to obtain an advanced chemical engineering degree. However, the graduate degrees will be obtained without ever having achieved a BS in CHEG.

Students seeking admission to the program should have earned a BS in Chemistry, Math, Physics or related scientific field. The undergraduate degree program should include at least two semesters of calculus, two semesters of calculus-based physics, two semesters of general chemistry, a semester of organic chemistry and at least six hours of upper-level chemistry or physics. Students seeking admission to the program must have a GPA of at least 3.5 in their undergraduate degree programs.

This program is administered by CHEG Graduate Coordinator, Dr. Almodovar [jlalmodo@uark.edu](mailto:jlalmodo@uark.edu) and you should contact them for more information about it, especially if you do not meet all of the above requirement.

### **Approximate Completion Time from the time you enter the program.**

<b>PhD</b>	<b>5½ years</b>
<b>MS</b>	<b>2½ years</b>

*NOTE: You should understand that your participation in this program with a Bachelor's degree in anything besides engineering makes you ineligible to take the Fundamentals of Engineering exam and thus to become a licensed Professional Engineer. Only graduates from an ABET accredited BS engineering program (such as our BSChE program or any other school's ABET accredited BS in any field of engineering) are eligible to take the Fundamentals of Engineering exam.*

### **Progress Toward Degree**

#### **First Semester Coursework (MSChE or PhD)**

CHEG 2313 (Thermodynamics of Single Component Systems)

CHEG 2133 (Fluid Mechanics)

MATH 2584 (Elementary Differential Equations)

Graduate Elective

#### **Meeting of Graduate Committee to Discuss First Semester Progress**

If the student earns at least a 3.4 GPA, with no C's, in their first semester, they are qualified to continue in the program. If the student earns less than a 3.4 GPA or earns a C in one or more of the courses, additional courses will likely be required before the student is allowed to enter the graduate program. The number of undergraduate chemical engineering courses will not exceed the number of courses listed in the attached document of undergraduate courses required for chemical engineering. The student must earn at least a 3.0 GPA on all undergraduate chemical engineering courses to be admitted to the graduate program.

If the student is qualified to continue with the program, they will choose between the MSChE program and the PhD program. The requirements for the two programs are detailed below. If the student is not qualified to continue with the program, a plan of study will be developed for the student by the graduate program coordinator.

#### **PhD Program**

1. Upon satisfying the requirements of the first semester of the program, the student is eligible for departmental financial aid.
2. In the second semester, the student must take CHEG 3323 (Thermodynamics of Multicomponent Systems) and CHEG 3144 (Heat / Mass Transfer) and receive a B or better in both courses. If either of the courses is not offered in the second semester, the student must take them on the first date they are offered. These may not be counted for graduate credit.
3. The student may take, with advisory committee consent, up to six additional hours of graduate courses during this second semester.
4. The students who do not have an engineering degree from an ABET accredited school must take CHEG 4443 (Design II) for graduate credit before graduation. If the student has taken an

engineering design course before they may apply to the Graduate Program Committee for an exception.

**MScE Program**

1. In the second semester, the student must take CHEG 3323 (Thermodynamics of Multicomponent Systems) and CHEG 3144 (Heat / Mass Transfer) and receive a B or better in both courses. If either of the courses is not offered in the second semester, the student must take them on the first date they are offered. These may not be counted for graduate credit.
2. The student may take, with advisory committee consent, up to six additional hours of graduate courses during this second semester.
3. The students who do not have an engineering degree from an ABET accredited school must take CHEG 4443 (Design II) for graduate credit before graduation. If the student has taken an engineering design course before they may apply to the Graduate Program Committee for an exception.

**Financial Aid**

Students may go onto research assistantship at any time if they can find a research advisor willing to pay them. Departmental funding is given on a case-by-case basis.

## **Changing Advisors**

PhD students have the right to choose whether to continue to work with their advisors. Faculty advisors do not have control over a student's visa. Students do not lose their visa or their status if they decide to work with another advisor.

Faculty should be clear and transparent about their expectations.

If you are considering changing advisors, please come talk to the graduate coordinator or the department head before contacting potential future advisors.

It is important to remember that both students and advisors are unique individuals. Each transition should be thought of on a case-by-case basis.

**APPENDIX**

## CHEG Laboratory Check-Out Procedures for Departing Researchers

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Reason for leaving: \_\_\_\_\_

Laboratories Effected: (building & room number) \_\_\_\_\_

### I. Purpose

The intent of this program is to ensure that all hazardous materials used in laboratories and waste generated by researchers are disposed of properly when a research faculty, staff or student leaves CHEG UARK. Proper disposition of hazardous materials is the responsibility of the principal investigator. Proper disposition of hazardous materials is required whenever a responsible individual leaves UARK or transfers to a different laboratory.

### Regulatory Impact

If improper management of hazardous materials occurs, the responsible department and faculty advisor may be charged for any analytical and disposal costs associated with those materials. Mishandling of hazardous materials can result in citations, fines, and loss of the right to use hazardous materials. Please do not leave our department without handling your research equipment and materials appropriately.

### II. Closeout Procedures for Hazardous Materials in Laboratories.

*The responsible individual must complete the following steps. The checkout sheet must be completed and signed and will be kept on file in the CHEG safety files.*

#### A. Chemicals (attached pictures if helpful)

- Ensure that all containers of chemicals are labeled with the name of the chemical and other CHEG required information such as NFPA, date, & initials.
- All containers must be securely closed. (no parafilm or aluminum foil)
- Beakers, flasks, evaporating dishes, etc. should be emptied and cleaned.
- Hazardous chemical waste must be labeled with a Hazardous Waste sticker, filled out, and an on-line pick-up request submitted to UARK EH&S.
- Check refrigerators, freezers, fume hoods, and bench tops as well as storage cabinets for chemical containers.
- Determine which chemicals are useable or should be retained and transfer responsibility for these materials to another party who is willing to take charge of them along with the SDS. If a new user cannot be found, the materials must be properly disposed of through UARK EH&S.
- All other materials should be prepared for disposal. Refer to the UARK Chemical Hygiene Plan. This process can take some time and should be started at least a month before departure from the laboratory. Contact your CHEG Safety Coordinator, Dr. Rechtin, for help.
- Any containers whose contents cannot be identified must be analyzed before disposal can take place. The generator is responsible for arranging and paying for analysis of unknowns. UARK EH&S will not accept any unidentified chemicals. These chemicals



might need to be sent to a certified laboratory for analysis. CHEG Safety Coordinator, Dr. Rehtin will assist if requested.

- Please specify chemicals that will be left that are of concern or considered “highly hazardous”. Include location and approx. amounts.

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#### B. Misc. Chemical

Please list chemicals that are hidden, stored, or may not be obvious to lab personnel

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#### C. Gas Cylinders

- Remove gas connections, replace cylinder caps, and return cylinders to suppliers or transfer responsibility to another party.
- If cylinders are non-returnable, contact CHEG Safety Coordinator, Dr. Rehtin.

#### D. Microorganisms and Cultures

- If an autoclave is available, decontaminate waste and dispose of in regular trash.
- If any material cannot be decontaminated, place it in a biohazard bag for incineration. Fill-out on-line pick-up form on UARK EH&S website.
- Clean incubators, drying or curing ovens, refrigerators, and freezers.
- If samples need to be saved, locate appropriate person to take responsibility for them and notify your Faculty Supervisor or Department Head if appropriate.

#### E. Other Areas of Concern

##### Controlled Substances

Controlled substance permits are issued by the U.S. Drug Enforcement Agency (DEA) and are issued to individual researchers. Abandonment of a controlled substance is a violation of the DEA permit under which it was held. If the responsible individual wishes to transfer ownership of the controlled substance to another person, he or she must obtain permission from the DEA office. If controlled substances are found for which the licensee is unknown, contact DEA at the above number. In most instances, if the controlled substance is to be disposed of, local law enforcement will assist with the disposal. Notify Department Head and DEA upon the disposition of controlled substances.

- Check if this section applies to you.

##### Shared Storage Areas

One of the most problematic situations is the sharing of storage units such as refrigerators, freezers, cold rooms, stock rooms, waste collection areas, etc., particularly if no one has been assigned to manage the unit. Departing researchers must carefully survey any shared facility to locate and appropriately dispose of their hazardous materials.

- Check if this section applies to you.

Notify your lab manager or lab representative and CHEG Safety Coordinator, Dr. Rechten, when the laboratory is ready for inspection.

Inspected by: \_\_\_\_\_ Date: \_\_\_\_\_

Inspected by: \_\_\_\_\_ Date: \_\_\_\_\_

### III. Equipment in Laboratories. (Attach pictures if helpful)

- Equipment left for others. Please specify the item and location.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

If laboratory equipment is to be left for the next occupant, clean or decontaminate it before departing the laboratory. If exhaust or filtration equipment has been used with extremely hazardous substances or organisms, alert the Department Head and CHEG Safety Officer.

- Equipment to be discarded. Please specify item and location.

\_\_\_\_\_  
 \_\_\_\_\_

If laboratory equipment is to be discarded, be aware that capacitors, circuit boards, transformers, mercury switches, mercury thermometers, radioactive sources and chemicals must be removed before disposal. Contact James Cole since these items must also be removed from CHEG inventory and may require special procedures.

- Equipment potentially contaminated with radioisotopes or biohazards should be surveyed by UARK EH&S and CHEG safety.
- Equipment that is damaged or not working properly. Please contact lab supervisor, department head, and James Cole. Please specify the item and location.

\_\_\_\_\_

- Equipment potentially hidden from view, in storage, or use may not be obvious. Please contact lab supervisor, faculty advisor and James Cole. Please specify the item and location.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Information received by a lab manager or lab representative.

Verified by: \_\_\_\_\_ Date: \_\_\_\_\_

If equipment was borrowed from CHEG-Contact James Cole for equipment checkout.

J.C. Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**IV. Office (if applicable)**

Please have your office area completely cleaned, vacated, and inspected by a staff member.

List office room number and any equipment such as printers, video devices, iPads, or computers that will be left. Please have your files transferred to another source as the computer will be wiped.

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Staff Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**V. Meet with Financial Staff**

- Meet with Jeff Bowles about status change. He may have some questions.

JB Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**IV. Personal Items**

- Return any keys that were issued to you to the Key Office 575-2255.
- To avoid further billing for campus parking, please return your parking permit to the Transit and Parking Dept. 575-7275. You may be eligible for a partial refund if over \$25.
- Submit a "change of address" form to the Post Office (<https://moversguide.usps.com>). Be sure to pick up all remaining mail before you leave.
- Contact the main circulation desk of the library to make sure that all items have been returned before you leave campus.
- Your UARK email will be disabled within 30 days to one year depending on your status. Please arrange to forward all inbound email to an account on a service provider outside of UARK, e.g., a Google (Gmail) account. Effective immediately, please use your new e-mail address for all future correspondence.
- Provide a forwarding address (including your new e-mail address) as we would love to keep in contact with you.
- If you have an account at the UARK Credit Union or another bank, please be sure to provide them with a forwarding address.

**V. Faculty Supervisor Comments and Signature**

Please list any additional items that need to be addressed by the student before leaving.

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*I have read the above form, and my student has completed all of the required items. There is nothing else I require before the student leaves.*

Advisor Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**VI. Exit Interview**

If an exit interview is required for graduate students before leaving CHEG, please bring this form to your exitinterview and turn in copy to [tlutzrec@uark.edu](mailto:tlutzrec@uark.edu).

**Ralph E. Martin Department of Chemical Engineering Graduate Student Exit Survey**

Congratulations on your impending graduation! The Department values your input and requests each graduate to complete a Graduate Exit Survey and turn it into the Graduate Coordinator (Dr. Almodovar, [jlalmodo@uark.edu](mailto:jlalmodo@uark.edu)). Your responses will be kept confidential and used to provide anonymous information to the University of Arkansas and other organizations, such as the Graduate Program Review Team. The information you provide here is not only an important part of our review process but also helps improve our departmental graduate program. Please set aside 10-15 minutes in order to complete the survey.

**Personal Information**

Name: \_\_\_\_\_

Graduating Term and Year: \_\_\_\_\_

Degree(s): \_\_\_\_\_

Forwarding Address for After Graduation:

\_\_\_\_\_  
\_\_\_\_\_

Contact Phone Number: \_\_\_\_\_

Permanent e-mail address (not uark.edu): \_\_\_\_\_

Name of Advisor(s): \_\_\_\_\_

**Employment After Graduation**

I have accepted employment after graduation (circle one):   yes           no (skip next 4)

Company name: \_\_\_\_\_           Location: \_\_\_\_\_

Position Title: \_\_\_\_\_           Starting salary: \_\_\_\_\_

Circle all of the following that apply about the type of employment:

Academia

Biotechnology

Chemical

Consulting/design/construction

Electronics

Environmental

Food/consumer products

Fuels

Government Employment

Materials

Research &amp; Development

Other: \_\_\_\_\_

Circle all the following that are appropriate if pursuing additional schooling or training:

Graduate School

Professional school: health-related (e.g. medical school)

Professional school: non-health-related (e.g., law school)

MBA

Not applicable

Other: \_\_\_\_\_

I am interested in receiving information from the Department on job opportunities in the next few months at the email address I have provided. (circle one)    Yes            No

### **Evaluation of Overall Graduate Courses**

Please rate the following graduate core CHEG courses in terms of how much they increased your fundamental Chemical Engineering understanding.

	Poor	Average			Excellent
Advanced Thermodynamics	1	2	3	4	5
Advanced Reactor Design	1	2	3	4	5
Transport I	1	2	3	4	5
Transport II	1	2	3	4	5

Please rate the following graduate core CHEG courses in terms of how much they helped further your understanding of the principles used in your research.

	Poor	Average			Excellent
Advanced Thermodynamics	1	2	3	4	5
Advanced Reactor Design	1	2	3	4	5
Transport I	1	2	3	4	5
Transport II	1	2	3	4	5

Please rate your overall experience with elective courses that you took as part of your degree in terms of how much they increased your fundamental knowledge understanding.

Poor		Average		Excellent	
1	2	3	4	5	

Please rate your overall experience with elective courses that you took as part of your degree in terms of how much they helped further your understanding of the principles used in your research.

Poor		Average		Excellent	
1	2	3	4	5	

What course(s) would you recommend for other students to take as elective(s)?

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### **Graduate Program Objective**

The educational objective of our graduate program is to prepare students for advanced roles in the profession through a combination of planned coursework and research activities so that graduates are equipped to address present and future challenges in such areas as research, teaching, management, and entrepreneurship.

Would you add, remove, or change any part of this objective, particularly regarding how our educational objective meets your needs? (circle one)    Yes            No

If yes, please state your suggestions for change and state why you think the changes should be made.

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**Ethics and Professional Responsibility**

Please rate how informed you feel about your ethical and professional responsibilities as a researcher.

Not at all		Reasonably		Well-informed
1	2	3	4	5

Please rate how informed you feel about how to report or handle an ethical violation.

Not at all		Reasonably		Well-informed
1	2	3	4	5

Please rate how good you feel about the ethical and professional decisions that you made as a graduate student researcher.

Poor		Acceptable		Excellent
1	2	3	4	5

We all face situations that test our professional and ethical responsibility as engineers. Briefly describe a situation where your ethics and professional responsibility were tested during your time as a graduate student. How did you respond? How could you have responded better?

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**Effective Communication**

Please rate how confident you feel about your oral presentation abilities.

Not at all			Reasonably		Very confident
1	2	3	4	5	

Please rate how confident you feel about your written presentation abilities.

Not at all			Reasonably		Very confident
1	2	3	4	5	

Describe TWO examples of effective written and oral communication by you as a graduate student.

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Explain why you think written and oral communication is important in your professional development.

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**Arkansas Academy of Chemical Engineers Remote Mentorship Program**

The Arkansas Academy of Chemical Engineers sends its congratulations to you on earning your degree. For you, this is an exciting and very busy time! The Academy would like to offer its support to you via its Remote Mentorship program as a "lifeline" connection to an Academy member living or operating in/near your new location. Please indicate your interest in participating in the Remote Mentorship Program. Note that your contact information will be forwarded to our Academy coordinator.

(Circle one)      Sign me up!      No thanks.



### **Guidelines for the Proposal to the Student's Committee:**

This department's policy is that all Ph.D. graduate students present a written and oral proposal to their committee to define their research program. The written portion will constitute the exam for Ph.D. candidacy, with the major professor and the committee determining what constitutes a "pass" for that test. After passing the exam, the major professor will inform the graduate coordinator. The coordinator will write the required memo to the Graduate School declaring that the student is now a Ph.D. candidate.

This template serves as a guide for your Ph.D. proposal and may be modified to meet your committee's expectations. Forming your committee and presenting your research proposal the semester of or the semester after completing your required graduate courses is recommended. Your peers and advisors should proofread your proposal before submission to your committee. ***Committee members should receive a final copy of your proposal at least one week before your presentation.*** You must present your proposal at least one semester before your dissertation defense.

### **In brief:**

Your Ph.D. proposal proves your ability to conceptualize and plan academically relevant research. Your proposal will also allow you to hear constructive criticism from established professors. When writing and presenting, you should assume your committee has basic knowledge of your topic. The introduction or background section should focus on the lack of knowledge your research will address. Your proposal should be as concise as possible and have sufficient citations to support your claims.

Pre-meeting:

While not mandatory, scheduling a pre-meeting with your committee can be beneficial. In your pre-meeting, you can present a quick overview of your project and proposed work before you submit the official proposal. Generally, the pre-meeting is for the big picture, not the details. You will tell them WHAT, WHY, and briefly HOW.

### **Content:**

- **Introduction**

Here is the place to give a general overview of your topic. A good strategy is to structure the introduction in a way that your audience will be aware of:

- 1- A specific problem and how relevant it is;
- 2- The current solution to the problem, which of course, has gaps and room for improvement;
- 3- The proposed solution to this problem, which in this case, is your work.

- **Background**

In this section, you will give scientific details of topics one needs to know to understand why you chose certain approaches to solve the problem. If you are writing a background about three different topics that are not necessarily correlated, but they are all involved in your solution, don't hesitate to break them up into subsections. However, ensure that they follow a linear logic, so the readers will start to build a connection between them along the reading.

- **Hypothesis and Aims**

Here, you will tie the topics from your background to the problem explained in the introduction. It can be very brief (1 sentence with the hypothesis and a list of the specific aims), but this section must be clear. Important note: the hypothesis statement needs to be direct and clear, but the aims need to be necessarily specific. If you're saying you will improve a process, for example, you should give a number, a tangible indicator of improvement.

- **Objectives and Experimental Plan**

You can surely split this into two sections, but objectives and experimental plans are intrinsically related, and keeping them together might make it easier for the readers to follow. First, write a few sentences for the general objective, which will bring the hypothesis and the impact that this work will potentially have once completed. Then, if any of your experimental parts are used for all objectives, give the details before narrowing down the objectives.

After the general explanation, you will go for the subsections of your objectives (if applicable), giving more details about what and how it will be tested.

- **Preliminary Results and Conclusions** (if applicable)

This section is not required. Many students mistakenly think they are not ready to present their proposals because they do not have enough results. For the proposal, the committee will focus on the logic behind planning your work, making suggestions to make this path easier or more meaningful. However, if you have preliminary results, you can present and briefly explain them (not even close to explanations you will need to give for paper publications).

- **References**

Your reference section should include at least twenty different sources. It is recommended to use ACS or IEEE. A reference manager such as Endnote, Mendeley or Overleaf can help format your document.

## **Formatting**

It is recommended that your proposal follows similar formatting to your final dissertation paper. A detailed guide on preparing your dissertation can be found [here](#), or on the UARK graduate student graduation checklist page. For your convenience, the formatting section has been lifted to this document. (Accurate as of 12-10-2022)

Front Matter:

- Title Page (single space each section, evenly distribute sections down the page; see sample page for exact formatting)
- Abstract (500-word max, double space)
- Copyright (optional, single space, no lower than halfway down the page; see sample page for exact formatting)
- Acknowledgements (optional, double space)
- Dedication (optional, double space)
- Epigraph (optional, format according to your style manual)
- Table of Contents (main chapter headings and references at minimum; format per your style manual; starts with Intro/Lit Review/Chapter 1 as page 1)
- List of Tables/List of Figures/Abbreviations (optional)
- List of Published Papers (required if one or more chapters has been published or submitted for publication)

### Font Body:

- Introduction/Literature Review/Chapter 1 (double spaced)
- Remaining chapters/sections (double spaced)
- Bibliography/References/Works Cited (each entry single spaced, double spaced between entries)

### Back Matter:

- Appendix (if applicable; includes any supplemental information, i.e., research protocol approval letters, excess tables/figures, questionnaires, etc.)
- Vitae (optional; delete/black out personal contact information for identity protection) 11 pt. Arial *or* 12 pt. Times New Roman is strongly preferred, but another font equivalent in scale is acceptable at the discretion of the Graduate School reviewer. Decorative fonts and colored text are not acceptable.
- Use the same font/size *throughout the entire paper, including page numbers, headings, and table/figure titles/captions.*
- Footnotes should be sized per your style manual. Font size within a table/figure may be reduced (as long as legible in print and electronic formats) in order to accommodate margins or prevent splitting of table; if reduction isn't sufficient, a larger paper size should be used to accommodate table/figure

### Margins

- All pages of the thesis or dissertation must have 1 inch top, bottom, left and right margins
- Excepting the copyright statement page, every page of your document should begin at the top 1" margin (this includes title on title page, headings, lines of text, tables, etc.)
- White space at the bottom of a page is permissible for the purpose of keeping text with tables/figures, to prevent splitting a table, or to prevent orphaning a heading or single line of text

### Page Numbering

- Front matter should not be numbered or included in the Table of Contents
- Page numbering begins with the first page of the body of the document (Introduction/Literature Review/Chapter 1)
- Consecutive page numbering continues through to the final page of the document, including References and Appendices
- Only Arabic numerals (i.e., 1, 2, 3, etc.) are allowed
- HINT: Page numbers will default to Calibri; be sure to convert back to body text font

### Page Number Placement

- Page numbers can be placed top right corner or bottom right corner, or bottom center; choose one location and use consistently throughout paper
- Use default settings of .5" for both header and footer to assure correct placement at  $\frac{3}{4}$ " from bottom or top of paper
- On landscape pages, page number must appear in the same location with the same orientation as portrait pages (if you turned the page once counterclockwise to portrait; see example in Sample Pages)

- HINT: For landscape pages, use a text box (minus the border) to cover the existing page number. Place another text box in the correct position, add the page number, then rotate to the correct orientation or see Formatting Resources on page 7.

#### Tables/Figures

- Text *within* tables and figures can differ from the body of the paper in font/size, but must be legible both in print and electronic formats
- Color is allowed *within* a table/figure/image
- Titles/captions must remain same font/size as body of paper
- Titles/captions must be single spaced
- Charts, maps, graphs, diagrams, photographs, artwork, etc. should be labeled as figures
- Figure captions should be placed *under* the figure; table titles should be placed *over* the table
- Figures not created by the student should include a source credit as part of the caption
- If a table is too long for a single page, place "Table X (Cont.)" at the top left margin of the following page and repeat column/row headings before continuing table (see example in Sample Pages)
- If tables/figures can comfortably share a page with text or other tables/figures, without causing a split table, this is preferable in order to minimize white space
- Table title should always remain on the same page with the corresponding table
- HINT: Turn on the grid lines in the view tab to see where the figures/tables fit

#### Headings

- Front matter page headings should be consistent in placement, bolding, capitalization, underlining, i.e., all caps, all mixed case, all left justified, all center justified, etc.
- All body headings should be consistent in placement, bolding, capitalization, underlining, etc. as dictated by style guide (not required to match style/placement in front matter)

#### Headers/Footers

- Should not extend beyond the 1" allowable margin
- Running headers are not acceptable, regardless of style manual
- Set at .5" in order to assure correct placement of page numbers

#### Spacing

- Title page sections are single spaced and should be evenly spaced so that sections take up an entire page
- The body of the document is double spaced
- Abstract, acknowledgments, and dedication are double spaced
- Bibliography/references/works cited: single space each reference and double space between each entry
- Block quotes are indented and single spaced
- Table notes and figure captions are single spaced
- Footnotes are single spaced
- Bullet point items are indented and double spaced

- If tables/figures can comfortably share a page with text or other tables/figures, this is preferable in order to minimize white space, as long as it does not create a split table

#### White Space

- Minimize white space as much as possible
- White space in text of more than three double spaced lines is not acceptable, unless it appears at the end of a chapter
- A single heading/sub-heading at very end of a page (orphaned text) should be moved to the following page
- Acceptable when text is followed by table/figure, etc. that doesn't fit on same page; table title should always remain on the same page with the corresponding table

#### Justification

- Left justification of the thesis/dissertation is strongly preferred
- Full justification is *allowed only at the discretion of the Graduate School reviewer* (as long as unsightly spaces between words are not present in software's attempt to justify margins of a short line)

#### Color/Design

- Colored text is only allowed within images, tables, figures, graphs, computer code, etc. if student's committee considers it essential to the document
- Decorative lettering, lines, images, etc. are not allowed

#### Supplementary Material and Size Restriction

- The Supplementary Files step of the ProQuest submission process allows the uploading of supporting files like videos, sound clips and data sets
- Files are submitted to ProQuest along with the PDF version of your dissertation/thesis
- Multiple files are allowed; ProQuest asks that a description of each file (or set of files, if more appropriate) is *included in the abstract*
- The thesis or dissertation PDF along with any supplemental files cannot exceed 1000 MB total, *no exceptions*

#### Style Guide Requirements

- Use a consistent style throughout the master's thesis and doctoral dissertation
- Acceptable style manuals include but are not limited to: Chicago, APA, MLA
- Style manuals are available in the University Bookstore or in the University Libraries; also see examples here: <https://class.uark.edu/resources.php>
- Style manuals do not supersede *Guide* requirements but can address issues where the *Guide* offers no specific requirement. If your style manual doesn't address the issue at hand, defer to your advisor's recommendation.
- The Graduate School reserves the right to reject a thesis or dissertation if a style manual is not followed properly.