

COLLEGE OF ENGINEERING
DEPARTMENT OF CHEMICAL ENGINEERING

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GRADUATE PROGRAM REQUIREMENTS

for the degree of

Masters of Engineering

Fall 2013

A. INTRODUCTION

These guidelines describe the program requirements for the degree of Master of Engineering in the Department of Chemical Engineering. It is the student's responsibility to know and take appropriate steps to meet all program requirements in this document. General requirements for the various degree programs as well as descriptions of courses can be found in the University of Florida Graduate Catalog. A student is normally regulated by the rules set forth in the catalog published in the academic year of the student's first term.

The Masters of Engineering degree program in Chemical Engineering at the University of Florida is a non-thesis degree designed for students without an ABET-accredited bachelor's degree in chemical engineering. Such students include those with undergraduate degrees in science in other engineering disciplines. The program provides an opportunity to develop an in-depth knowledge of chemical engineering fundamentals through undergraduate and graduate coursework, to emphasize a specific specialization area, and to acquire basic experience in research or industrial practice through a short internship. Depending on prior course experience, students typically complete the program in 4 semesters (namely, Fall, Spring, Summer, and subsequent Fall semesters).

B. PROGRAM REQUIREMENTS for MASTER OF SCIENCE – NON-THESIS (MSNT)

Course Requirements - In addition to the necessary prerequisite chemical engineering undergraduate course (depending on the student background), the ME program requires a total of 30 credits of graduate courses. These must include the program basis courses ECH6847-Mathematical Basis of Chemical Engineering and ECH6270-Continuum Basis of Chemical Engineering, as well as one graduate kinetics or reactor design course. Six credits may be used to either carry out research (**ECH 6905 Individual Work**) in the chosen area of specialization or to conduct a faculty-guided internship with an industry or a government laboratory facility. Also ECH 6926 Graduate Seminar (1 credit) can be taken for three semesters for a maximum of 3 credits.

Required Courses :

ECH 3023 Mass & Energy Balances
ECH 3101* Process Thermodynamics
ECH 4504 Chemical Kinetics and Reactor Design
ECH 3264 Elementary Transport Phenomena
ECH 4403 Separations and Mass Transfer Operations
ECH 6270 Continuum Basis of ChE
ECH 6272* Molecular Basis of ChE
ECH 6506** Chemical Engineering Kinetics
ECH 6847 Mathematical Basis of ChE

* ECH 6272 or ECH 3101 is required. If ECH 6272 is not taken, the student must replace it with ECH 3101 and a graduate elective.

** Can be replaced by another graduate kinetics or reactor design course

All remaining credits can be taken in elective courses within chemical engineering (at least one) or in other departments, allowing the students to develop a specialization focus. Students can use 6 credits in a chosen department to obtain a minor. Chemical Engineering credits must be in courses numbered 5000 or above.

For work outside Chemical Engineering, 6 credits of courses numbered 3000 or above may be taken if part of an approved plan of study.

Program Schedule

FALL – Year 1	Credits	SPRING – Year 1	Credits
ECH 3023	4	ECH 3264	3
ECH 4504	4	ECH4403 or Graduate elective	3
ECH 6847***	3	ECH6506 or other grad kinetics course	3
ECH 6926	1	grad elective	3
		ECH 6926	1
	Total Semester Credits: 12		13

SUMMER – Year 1	Credits	FALL - Year 2	Credits
ECH 6905	6	ECH 6270	3
		ECH6272*** or ECH3101 + a graduate elective	3 (or 6)
		ECH4403 or a graduate elective	3
		graduate elective	3
		ECH 6926	1
	Total Semester Credits: 6		13 (or 16)

***The order of these two courses may be switched

Research and/or Internships (Elective)- The 6 credits of research activities are intended to give the students experience in carrying out academic research. Alternatively, these 6 credits can be used to carry out a 3-month internship with a sponsoring company or US government laboratory, based on the availability of such opportunities. A final written report describing the research activities is required for graduation. The final report serves as the required **written examination** for the ME degree. Guidelines for preparing the report are provided below.

The written report must outline the area of research and its importance, problem statement, background to the research area, specific tasks, methods, results, discussions, and potential future steps. A suggested page limit is 15 single-spaced, typed (10-point or larger font) pages, including figures and tables. The report should also include a title, a table of contents, references, and an abstract. Additional material such as submitted papers, detailed derivations, etc could be included as Appendices. The report should provide evidence for your ability to communicate effectively. The main body of the text would typically consist of the following:

1. **Introduction:** A concise overview of the research area and topic and their importance.
2. **Background:** Literature review and relevant background needed to place the study in the larger context and to highlight the relevance and the novelty of the research. This section should demonstrate your ability to critically read engineering literature.
3. **Problem description:** A description of the specific problem, objectives, and novelty of the research. This section should demonstrate your ability to formulate a problem.
4. **Methods:** A description of the theoretical and/or experimental work. This section should demonstrate your ability to solve engineering problems.
5. **Results and Discussion:** Description of the results accompanied by an analysis or discussion of the results. This section should demonstrate your ability to use the techniques, skills, and modern engineering tools necessary for engineering practice at an advanced level.
6. **Proposed Future tasks:** Details of the potential future research in the same area. This section should demonstrate your ability to identify new problems.
7. **Concluding remarks:** A brief summary of the work with details of what new has been accomplished in your research.
8. **References:** A list of references cited in the report.
9. **Tables & Figures:** Tables and figures used in the proposal should be integrated into the text.
10. **Appendices (if needed):** Submitted papers, detailed derivations, detailed experimental protocols.

ME students who do not do research or internship must submit a report on a chemical engineering related topic of their choice as a requirement for graduation. The report could be a literature review or a critique of a published journal paper. The report must be submitted to the Graduate Advisor before filing your degree application. A passing grade is required in the report to graduate.

ACADEMIC ACHIEVEMENT AWARD

The Academic Achievement Award is given to qualified students at the time of the admission. If you were not considered to be qualified for the award at the time of the admission, you are not eligible for this award after joining the program irrespective of your academic performance.

To maintain the AA Award you must keep a GPA of 3.0 or higher. If a student that has the AA award fails to maintain the 3.0 GPA after the first semester, the award may discontinue. The student can request the Graduate Coordinator to submit a petition on behalf of the student for continuation of the award if extenuating circumstances led to the poor performance.

If a student loses the AA award because of the GPA criterion but then performs extremely well in the subsequent semesters to raise the cumulative GPA above 3.0, a petition can be filed for reinstating the AA for the following semesters. If the award is reinstated, the credits that were not covered by the award due to poor performance will still count in the 36 credit limit for the award.

In each case, a petition has to be submitted by the Graduate Advisor to the College of Engineering so please contact him/her well in advance of registration if you require a petition. Please also note that you must take courses in College of Engineering (not including ABE) to qualify for the reduced tuition for the AA Award. Also note that the AA Award covers only 36 credits and if you exceed the 36 credit limit, you will need to pay the full tuition for the remaining credits.

C. OTHER POLICIES AND REQUIREMENTS

Safety: The Department of Chemical Engineering considers chemical laboratory safety to be both an educational objective and a laboratory imperative. All laboratory personnel (including graduate and undergraduate students, post docs, volunteers, hosted minors, and technicians) are required to take the on-line course EHS861: Chemical Hygiene Plan for Laboratory Staff. Subsequent training, based on the laboratory-specific Chemical Hygiene Program created for your research activities, will be provided by your research director. Annual training is required for all employees who generate or manage hazardous waste. Additional one-time or annual training may be required for researchers working in special-risk areas.

Concurrent degree program is simultaneous study on an individualized basis that leads to two master's degrees in two different graduate programs or two master's degrees in the same major. Such a program is initiated by the student and requires prior approval of each academic unit and the Graduate School. If the student is approved to pursue two master's degrees, no more than 9 credits of course work from one degree program may be applied toward the second master's degree.

Graduate students who wish to enroll in a concurrent degree program must obtain the appropriate forms from the graduate school. The graduate coordinator will sign these forms *only after consulting the chair*

and after the student's graduate adviser has given written approval for the student to enroll in the concurrent degree program. A copy of all communications regarding the application for the program will be maintained in the student's graduate folder with the Graduate Program Assistant (Shirley Kelly).

Minor is a block of course work completed in any academic unit outside the major, if approved for master's or doctoral programs listed in this catalog. *Minor work must be in an academic unit other than the major. If a student earns more than one course from an academic unit contributing to the major of another, the student is not eligible to earn a minor from the contributing academic unit.* If a minor is chosen, the supervisory committee must include a representative from the minor field. If a minor is chosen, at least 6 credits of work are required in the minor field. Two 6-credit minors may be taken with the major academic unit's permission. A 3.00 (truncated) GPA is required for minor credit. The minor appears on the student's transcript along with the program name and the degree awarded. The minor department may have other specific requirements in addition to those above so please contact the department if you are considering getting a minor.

Transfer of credit: Only graduate-level (5000-7999) work with a grade of B or better, is eligible for transfer of credit. A maximum of 15 transfer credits are allowed. These can include no more than 9 credits from institution/s approved by UF, with the balance obtained from post baccalaureate work at the University of Florida. Credits transferred from other universities are applied toward the degree requirements, but grades earned are not computed in the student's grade point average. Acceptance of transfer of credit requires approval of the student's supervisory committee and the Dean of the Graduate School.

Petitions for transfer of credit for a master's degree must be made during the student's first term of enrollment in the Graduate School.

Academic Honesty and Ethical Conduct in Research - All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. Students are expected to produce their own work in homework, projects, and exams. Unauthorized collaboration in take-home exams, projects, and individual assignments is a serious violation of the university honor code and could lead to a grade decrease, course failure, and loss of degree status.

Students are expected to maintain high ethical standards in the conduct and reporting of scientific and scholarly research. Students are responsible for ethical research conduct to the University, to the academic community, to those sponsoring the research, and to the community at large. Research Misconduct, including fabrication or falsification of data, or plagiarism in proposing, performing, or reviewing research or reporting of results, is a most serious offense that can greatly damage the welfare and reputation of the students, faculty, and the University. For more information regarding Research Misconduct, see <http://www.admin.ufl.edu/DDD/attach06-07/R10101-0704.pdf>

From the UF Student Handbook: "Plagiarism is not tolerated at the University of Florida. Plagiarism in a thesis or dissertation is punishable by expulsion. If the plagiarism is detected after the degree has been awarded, the degree may be rescinded. For a thorough discussion and the law, see www.rbs2.com/plag.htm. A briefer discussion and some tips for avoiding it are provided at www.indiana.edu/~wts/pamphlets/plagiarism.shtml.