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GRADUATE PROGRAM REQUIREMENTS

for the degree of

Master of Engineering

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## A. INTRODUCTION

This guideline describes the requirements for the degree of Master of Engineering (ME) in the Department of Chemical Engineering. The students in this program need to meet all requirements listed in this guideline as well as the Graduate Catalog published by the Graduate School to fulfill the requirement of the ME degree. The Graduate Catalog (<http://graduateschool.ufl.edu/academics/graduate-catalog>) describes the more general requirements for this degree program. A student must follow the general rules set forth in the Graduate Catalog published in the academic year of the student's first admission.

The ME degree program is a graduate degree for students without a bachelor degree in chemical engineering. Such students include those with undergraduate degrees in science and in other engineering disciplines. This degree program provides the students a curriculum to gain necessary chemical engineering background knowledge at the undergraduate level and further offers courses for the students to develop an in-depth knowledge of chemical engineering fundamentals at the graduate level, to emphasize a specific specialization area of chemical engineering, and to acquire basic experience in research or industrial practice through a short internship.

## B. ADMISSION TO THE PROGRAM

Students seeking the ME degree must have completed a bachelor degree in a field different from chemical engineering with a GPA of 3.0 or higher. They must have completed calculus and differential equations with a minimum GPA of 3.0 in these courses. A perspective student also needs to have a quantitative GRE score of at least 150 and verbal GRE score of at least 140. In addition, an international student also needs to submitted a satisfied TOFEL score or equivalent English language evaluation that pass the minimal admission standard of University of Florida.

## C. PROGRAM REQUIREMENTS for MASTER OF ENGINEERING (ME)

**Course Requirements** - a curriculum with necessary chemical engineering background knowledge at the undergraduate level is necessary before the ME students further pursue in-depth knowledge of chemical engineering fundamentals at the graduate level. The required undergraduate curriculum includes: ECH 3023 Mass & Energy Balances, ECH 3101 Process Thermodynamics, ECH 3264 Elementary Transport Phenomena, ECH 4504 Chemical Kinetics and Reactor Design, and ECH 4403 Separations and Mass Transfer Operations. The credits of these courses won't be counted toward the ME degree.

The ME degree program requires a total of 30 credits of graduate courses. Among the 30 credits, at least 15 credits must be taken from the chemical engineering core courses, including two Basis courses of Chemical Engineering, Mathematical Basis (ECH 6847) and Continuum Basis (ECH 6270), one graduate level kinetics course, Kinetics (ECH 6506) or Pharmacokinetics (BME 6644), and a graduate level lab course, Advanced Chemical and Biological Processing Laboratories (ECH 6937). The remaining credits can be taken in chemical engineering related courses offered by the Chemical Engineering Department or by other departments, allowing the students to develop a specialization focus. The students are also encouraged to take a maximum of 9 credits from either a research project in the chosen area of specialization or an internship with a partner industry or a government laboratory facility through Individual Work (ECH 6905). Please note, the maximal credits for Individual Work (ECH 6905) and Departmental Seminar (ECH 6926) together cannot over 9 credits. All the credits must be in courses numbered 5000 or above (graduate level courses). If need, please seek guidance from the master program coordinator to choose the most suitable schedule for your study.

ECH 6905 Individual Work is the course to carry out Research Project or an internship with industry or a US government laboratory. Please make sure that you DO NOT register for Master Thesis Research (ECH 6971) for these credits.

***International Students*** - International students are required to register for at least 9 credits in both Fall and Spring semesters, except in the last semester of their program in which they need to only register for the number of credits required to meet the graduation requirements. However, a minimum of 3 credits is required in the graduation semester.

***All students need to register for at least 3 credits in the semester in which they graduate.***

Research and/or Internship - The ME program can include a maximum of 9 credits of research activities (ECH 6905) to give the students experience in carrying out academic research. Alternatively, these 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 activities undertaken under the 9 credits of research or internship is required. The report must bear the joint signatures of the student and of the research or internship adviser and must be submitted to the Graduate Advisor for approval by the end of the term of the research and/or internship. Guidelines for preparing the report are provided below.

#### D. GUIDELINES FOR THE MASTERS OF ENGINEERING REPORT

The written report for the Masters of Engineering 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 the student's 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 the student's ability to formulate a problem.
4. Methods: A description of the theoretical and/or experimental work. This section should demonstrate the student's 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 the student's 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 the student's ability to identify new problems.
7. Concluding remarks: A brief summary of the work with details of what new has been accomplished in the student's 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.

## E. FINACIAL SUPPORT

ME students are not eligible for financial support by a Graduate Assistantship. However, a student who pays the out-of-state tuition may be considered to be granted the Academic Achievement (AA) Award, based on the individual's application package and the availability of the award.

*Academic Achievement Award* - If a student is receiving the AA Award from the College of Engineering, the student is not allowed to obtain other financial support from the department. To maintain the AA Award, the awardee must keep a GPA of 3.0 or higher and register for 9 credits.

If a student who has the AA Award fails to maintain the 3.0 GPA after the first semester, he/she will get a grace period of 1 semester if the GPA is greater than 2.5. In this case, no petition is required. If the first semester GPA is below 2.5, a petition is required explaining extenuating circumstances that led to the poor performance.

If the 2nd semester GPA is better than 3.0 but the cumulative GPA is below 3.0, the student needs a petition. If GPA in both 1st and 2nd semesters is below 3.0, the petition will likely be denied unless there are extenuating circumstances.

If a student loses the AA Award because of the GPA criterion but then performances extremely well in the 2nd or 3rd semester to raise the cumulative GPA above 3.0, a petition can be filed for reinstating the AA Award for the following semesters.

In each case, a petition has to be submitted by the department to the College of Engineering. Hence, please contact the master program coordinator in advance of registration if the student falls in any of the categories that require a petition.

Please also note that a student 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 3 semesters. Afterwards, the student will need to pay the full tuition for the remaining credits.

## F. OTHER POLICIES AND REQUIREMENTS

***Converting from ME degree to PhD degree*** - ME students who perform well can apply for admission to the PhD program. To be fully considered for entry starting in Fall semester, students are encouraged to apply before February 15 with the completion of the three Basis courses (Molecular, Continuum, and Mathematical Basis). Applications will be compared against the other PhD applicants and decisions will be made based on student credentials and the available projects. In addition to the typical credentials for admission (undergraduate GPA, GRE, etc.), the graduate recruitment committee will consider performance in the ME program and recommendations from UF faculty.

If admitted, such students will receive a Graduate Assistantship and a tuition waiver for the duration of their doctoral studies.

***Converting from ME to MS (Non-Thesis Option or Thesis Option) Degree*** - ME students can also change their degree program to MS or MSNT with approval from their research advisor and the master program coordinator. This conversion can occur only after an ME student makes up all the required undergraduate curriculum of chemical engineering courses.

*Concurrent Degree Program* - This program allows a student to simultaneously study on an individualized basis that leads to two master's degrees in different graduate programs. Joining 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 may be counted toward awarding the second degree.

Graduate students who wish to enroll in a concurrent degree program must obtain the appropriate forms from the graduate school. The master program coordinator will sign these forms only after the department chair has given 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 student advisor.

*Minor Degree* - Students can take a block of coursework in any master or doctoral program listed in the Graduate Catalog outside the major academic unit to gain a minor degree if approved by the major academic unit. If a minor is chosen, a representative from the minor academic unit must be included in the supervisory committee. If a minor is chosen, at least 6 credits of work are required in the minor field. Two 6-credit minors may be taken under the major academic unit's permission. A 3.00 GPA is required for the courses towards the minor degree(s). The minor program name and the degree awarded will appear on the student's transcript.

*Transfer of credit* - When a student transfers from other graduate institution, approved by the Graduate School, a maximum of 9 transfer credits are allowed. Only graduate-level (5000-7999) work with a grade of B or better is eligible for transfer toward the degree requirements; however, grades earned from these credits are not computed in the student's grade point average in UF. Acceptance of transfer of credit requires approval of the student's Supervisory Committee, the Chemical Engineering Department, and the Dean of the Graduate School. Petitions for transfer of credit for the MS degree must be made during the first semester of study.

*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](http://www.rbs2.com/plag.htm). A briefer discussion and some tips for avoiding it are provided at [www.indiana.edu/~wts/pamphlets/plagiarism.shtml](http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml).