MECHANICAL AND AEROSPACE ENGINEERING, PHD

Young Bai Moon, Chair, 263 Link Hall, 315-443-2341; fax: 315-443-9099, ybmoon@syr.edu

Shalabh C. Maroo, MAE Graduate Program Director, 251 Link Hall, 315-443-2107, scmaroo@syr.edu

Faculty

Jeongmin Ahn, Benjamin Akih-Kumgeh, Jackie Anderson, Michelle Blum, Edward A. Bogucz Jr., John F. Dannenhoffer III, Alexander Deyhim, Bing Dong, Victor Duenas, Matthew Erdman, Zhenyu Gan, Kasey Laurent, Xiyuan Liu, Aoyi Luo, Shalabh C. Maroo, Young Bai Moon, Anupam Pandey, Quinn Qiao, Utpal Roy, Amit Sanyal, Mehmet Sarimurat, Roger Schmidt, Wanliang Shan, Ian Shapiro, Yiyang Sun, Yeqing Wang, Jianshun S. Zhang, Teng Zhang, Fernando

The Department of Mechanical and Aerospace Engineering offers graduate programs leading to the following degrees:

- Master of Science (M.S.) in Mechanical and Aerospace Engineering
- Doctor of Philosophy (Ph.D.) in Mechanical and Aerospace Engineering

It also participates in a college-wide master program leading to the degree:

- Master of Science (M.S.) in Engineering Management

Admission Requirements

Admission to the Ph.D. program will be considered if three conditions are met. First, a sufficient level of academic and professional achievement must be documented by transcripts of the student's prior academic performance (a GPA of 3.33/4.0 or better is expected), GRE Quantitative score of 700+ (155+ on the new scale) and an acceptable GRE verbal score, and letters of recommendation and other supporting information. Second, the focusing of the student's efforts in one area of specialization should be clear from the student's transcript and statement of purpose. Third, a faculty adviser must be willing to supervise research in the student's area of specialization. Prior completion of a M.S. degree and/or an M.S. thesis may be required by individual faculty advisers.

Application Procedure

Online application is the preferred method of applying to graduate programs at Syracuse University. Applications submitted online can be processed faster and more efficiently than those filed on paper. Access the online application.

You will receive an e-mail or postcard from Syracuse University when your application has been received and processed. Find out more information on the application process.

Student Learning Outcomes

1. An ability to define the goals of scholarly work clearly
2. An ability to conduct independent scholarly work
3. An ability to select methods appropriate to the goals and apply these methods effectively
4. An ability to achieve the goals independently and contribute substantially to the fields of Mechanical and Aerospace Engineering
5. An ability to communicate scholarly work effectively

Program

A program of study is individually designed by each student in consultation with his or her adviser. A student entering the Ph.D. program with a master's degree or an equivalent degree (approved by the Graduate Affairs Committee) is expected to complete 18 credits of 600 or above level of course work and a Ph.D. dissertation (of 0 credits), depending on how many credits can be transferred over from the Master's degree. All students must petition to transfer their Master's degree to the PhD program during their first semester of their doctoral studies. Students wishing to proceed directly to the Ph.D. degree from a bachelor's degree must complete a program of 48-credit course work (with no more than 9 credits of courses at 500 level[1] and a Ph.D. dissertation (of 0 credits) depending on how many credits can be transferred over from the Master's degree. All students must petition to transfer their Master's degree to the PhD program during their first semester of their doctoral studies. Of the 18 credits of course work beyond the MS degree, 3 credits can be MAE 990 Independent Study. Under special circumstances, a student may petition for an additional 3 credits of MAE 990 Independent Study. Students interested in MAE 990 Independent Study must work with the Faculty Sponsor to fill out form "Proposal for Independent Study Course", and this form must be approved by the Department Chair. A GPA of 3.33 or higher is expected for a Ph.D. student. Full-time Ph.D. students must also attend the MAE graduate seminars every semester (MAE 995 Graduate Seminar: 0 credits; graded as A-F, based on attendance). Graduate courses can be found in the Course Catalog (https://syracuse-next.courseleaf.com/graduate/engineering-computer-science/#coursestext (https://coursecatalog.syracuse.edu/graduate/engineering-computer-science/#coursestext)), using the search engine.

[1] Of the 48-credit course work, 30 credits should be equivalent to the M.S. in Mechanical and Aerospace Engineering degree requirements.

Ph.D. Qualifying Examination

The MAE Department requires that each Ph.D. student pass a qualifying examination. The qualifying examination will have both written and oral components. The objective of the qualifying examination is to test the student's knowledge of fundamentals and preparedness to conduct dissertation research. Students who enter the MAE graduate program with a B.S. degree must take the written component of the qualifying examination at or before the completion of the fourth semester of their graduate study. Students who enter the Ph.D. program with an M.S. degree (or an equivalent degree) must take the written component of the qualifying examination at or before the completion of two semesters of their first registration in the program. The oral component of the qualifying examination must be taken no later than one year after passing the written examination. As a pre-requisite to the oral component of the qualifying examination, students who enter the MAE graduate program with a B.S. degree must complete a minimum of 30 credits after B.S. at the time of taking the oral component of the qualifying exam.

The written component of the qualifying examination will test the student's fundamental knowledge needed for doctoral study, in any two of the following nine topics: Mathematics, Controls, Dynamics and Vibration,

Fluid Dynamics, Heat & Mass Transfer, Manufacturing, Material Science, Solid Mechanics, and Thermodynamics.

The written part of the Ph.D. qualifying examination will be given twice a year: one at the end of the fall semester and the other at the end of the spring semester. In consultation with the adviser, an eligible Ph.D. student must formally apply to take the qualifying examination by notifying the chair of the Graduate Affairs Committee on or before September 30 if the student wishes to take the written examination in the Fall Semester of the same year, and on or before January 31 if the student wishes to take the written examination in the Spring Semester of the same year. In the notification letter, the student should specify his/her field of study/interest, the two topics in which s/he wishes to be examined, and include a copy of his/her transcript showing the current GPA. The notification letter must be approved by the adviser.

The Graduate Affairs Committee informs the student after the qualifying examination has been completed whether s/he has passed. In the event of failure, the student must petition the Graduate Affairs Committee within two weeks of failure notification to retake the written examinations once more in the following semester. If approved, the student can retake the failed topics in the second attempt, but is not allowed to change her/his topics from the first attempt. No student will be allowed to retake the written and oral components of the qualifying examination more than once. Failure to pass the examination in a timely fashion will result in dismissal from the Ph.D. program.

The student's adviser in consultation with the student will suggest a committee of oral examination for the Graduate Affairs Committee's approval. The oral examination committee should consist of 3 to 5 members with a majority of its members from the MAE Department, including the adviser. The student must provide a proposal for dissertation research to the members of the oral examination committee at least two weeks before the scheduled date of examination. The examination will typically take 2 hours to complete, in which the student will first make a 35-minute presentation of the research proposal followed by questions from each individual members of the committee. Based on the quality of dissertation proposal, presentation, and answers to the questions, the committee will deliberate and inform the student of the outcome of the examination, and report the outcome to the MAE Graduate Affairs Committee in writing.

* The current rule approved by the MAE Faculty on April 18, 2014, applies to students who enter the Ph.D. program in Fall 2014 and after.

Residency Requirement

The residence requirement is set by Academic Rules and Regulations of the Graduate School (https://coursecatalog.syracuse.edu/academic-rules/#:~:text=1601%20Residency%20Requirement).

Dissertation

Each student is required to prepare a dissertation of high quality in terms of substance, originality and relevance, on a topic chosen in consultation with the dissertation adviser. The dissertation defense shall be conducted according to the rules of the Graduate School. For the oral dissertation defense examination, a minimum of two committee members must be from the MAE Department. In preparing the dissertation, the student should comply with accepted standards of style and format. The examination committee may refuse to hold the examination until such standards are met.

Evaluation of Ph.D. Student's Progress

In the spring semester, the status of every Ph.D. student will be reviewed by the MAE faculty. The review will include a brief summary by the adviser of the progress made by the student and any current or potential problems. If the progress is unsatisfactory, the student will be given six months to address issues of concern. If the situation has not improved, the student will not be allowed to continue in the program and will be so informed in writing.