Industrial and Manufacturing Engineering

Department Information

- **Department Chair:**
  Kambiz Farahmand, Ph.D.
- **Program Coordinator:**
  Canan Bilen-Green Ph.D.
- **Department Location:**
  202 Civil & Industrial Engineering Building
- **Department Phone:**
  (701) 231-9818
- **Department Web Site:**
  www.ndsu.edu/ime/ (http://www.ndsu.edu/ime/)
- **Application Deadline:**
  International applications due March 1 for fall; August 15 for spring and summer. Domestic applications due one month prior to start of semester. For assistantship consideration, fall applications due March 1; limited spring openings.
- **Credential Offered:**
  Ph.D., M.S.
- **Test Requirement:**
  GRE - General
- **English Proficiency Requirements:**
  TOEFL ibt 79; IELTS 6.5; Duolingo 105

The mission of the graduate program in the IME Department at NDSU is to advance knowledge and research of industrial and manufacturing engineering, strengthen and support industry, and enhance teaching. We currently offer two graduate degrees in Industrial & Manufacturing Engineering: 1) Master of Science (M.S.) and 2) Doctor of Philosophy (Ph.D.). The M.S. Program is a thesis-based master's degree program designed to equip students with the ability to analyze, design, and manage industrial and manufacturing systems as well as to enable students to develop scholarly abilities to further pursue a Ph.D. degree in industrial and manufacturing engineering (or in a related area). The Ph.D. program is a research degree, conferred in recognition of marked original research and high scholastic attainment in Industrial and Manufacturing Engineering. The Ph.D. degree is conferred after successful defense of an acceptable dissertation summarizing substantial results of a student's original research work. Areas of specialization for research include but are not limited to topics such as 3D printing, applied statistics and probability, biomedical science, experimental design, data mining and machine learning, healthcare, manufacturing, operations research, quality control theory, reliability, simulation, and sustainability.

For more information about our department and programs, please visit our department website at www.ndsu.edu/ime/.

Graduate study in the Department of Industrial and Manufacturing Engineering is open to all qualified baccalaureate graduates from universities and colleges of recognized standing. In addition to the Graduate School requirements, applicants must submit a GRE score that meets the following requirements:

- M.S. - 310 (Verbal + Quantitative) and 160 Quantitative minimum and Analytical Writing score of 3.5 or better
- Ph.D. - 310 or better (Verbal + Quantitative) and 160 Quantitative minimum and Analytical Writing score of 3.5 or better

Financial Assistance

There are a limited number of teaching assistantships available in Industrial and Manufacturing Engineering, which are normally assigned as support for classes with large enrollments and/or heavy laboratory content. Research assistantships are offered when student's capabilities and background experience match the needs of the project. While teaching assistantships are funded by the department, research assistantships are generally funded through externally-funded grants and contracts. In both cases, assistantships are considered as employment, and the graduate student should view these appointments as a job. The student's thesis or dissertation may or may not be in the area of their job duties for the assistantship.

Full assistantships are for half-time employment (20 hours per week). In addition to the stipend, graduate assistants receive a graduate tuition waiver. Tuition waivers cover base tuition for NDSU graduate credits only. Students are responsible for differential tuition, student fees, and tuition for non-graduate level credits taken or Cooperative Education credits. When a student is offered an appointment as a Graduate Research Assistant, the faculty and the department will carry the expectation that the student has made a full commitment to fulfill both the degree requirements and the job responsibilities.

Degree Requirements

The Master of Science degree in Industrial and Manufacturing Engineering requires 30 credits of graduate-level study.

- A minimum of 15 credits from *didactic IME* courses (numbered IME 601-689 and IME 700-789) are required.
- In addition, a minimum of 6 credits of *other courses* are required for funded student (no matter GTA or GRA). This part of the course credits may come from approved graduate level courses of other departments. If a student is funded by himself/herself, then the minimum requirement of other courses is 8 credits.
- A minimum of 3 credits (i.e., from three semesters) from IME *graduate seminar* (IME 790) are required for a funded student (no matter GTA or GRA). If a student is funded by himself/herself, then the minimum requirement of the graduate seminar is 1 credit.
- 6 credits of thesis (IME 798) are required towards the M.S. degree.
- Prior to graduation, all M.S. graduate students are required to have submitted one paper that has been accepted by a refereed journal or refereed conference. The submitted paper is expected to be based on their thesis research.

The Doctor of Philosophy degree requires 60 credits beyond the M.S. requirement (90 credits total).

For students who are enrolled with a M.S. degree, the course credit requirements *beyond the M.S.* degree are:

- A minimum of 15 credits from *didactic IME courses* (IME 601-689 and 700-789), with at least 9 credits from 700-level IME courses. If courses are not offered in a timeline that meet the students requirements, it is possible for waiver/substitution requests.
- A minimum of 12 credits of *other courses* are required. This part of the course credits may come from approved graduate level courses of other departments.
- A minimum 3 credits of *Graduate Seminar* (IME 790).
- A minimum of 30 credits of *dissertation* (IME 899).
- Prior to graduation, all Ph.D. graduate students are required to have submitted two papers that have been accepted by refereed journal or refereed conference. The submitted papers are expected to be based on their dissertation research.

For students who are enrolled with a bachelor's degree, the course credit requirements are:

- A minimum of 30 credits from *didactic IME courses* (IME 601-689 and 700-789), with at least 9 credits from 700-level IME courses. If courses are not offered in a timeline that meet the students requirements, it is possible for waiver/substitution requests.
- A minimum of 27 credits of *other courses* are required. This part of the course credits may come from approved graduate level courses of other departments.
- Among these 57 course credits, at least 30 of them must be 700-level course. For example, if you take 9 credits of 700-level IME courses, then you need to take at least 21 credits of 700-level courses of other departments.
- A minimum 3 credits of Graduate Seminar (IME 790).
- A minimum of 30 credits of dissertation (IME 899).
- Prior to graduation, all Ph.D. graduate students are required to have submitted two papers that have been accepted by refereed journal or refereed conference. The submitted papers are expected to be based on their thesis or dissertation research.

For either the M.S. or Ph.D., all courses taken outside of the IME Department must be approved in advance by the student's academic adviser. The total courses of study must be approved by the student's academic adviser, POS (plan of study) committee, and department chair. Students completing graduate degrees within the IME Department are expected to exhibit demonstrable expertise in the core competencies of either industrial engineering or manufacturing engineering. Students whose undergraduate major is in another field may be required to show proficiency in basic IME subjects. For further information in this regard, please consult the IME department.

Each new student must have an academic advisor and select their POS committee by the end of their 1st semester of study (see IME grad handbook for requirements). This committee will be chaired by the faculty adviser and will provide direction, advice and examination of the student's work and achievement. All students must consult with their major advisor and submit a plan of study (POS) by the end of the second semester of study. Once approved, the POS will provide direction for the remainder of the student's degree work.

Faculty List

Canan Bilen-Green, Ph.D.
University of Wyoming, 1998
Research Interests: Statistical Process Control, Quality Management

Kambiz Farahmand, Ph.D., P.E.
University of Texas, 1992
Research Interests: Ergonomics Design, Layout Planning and Management

David Grewell, Ph.D.
Ohio State University, 2005

Research Interests: Bio-renewable Biodegradable polymers, High Power Ultrasonics, Micro-Fabrication and Polymer and Metal Welding

Reza Maleki, Ph.D.
North Dakota State University, 1989
Registered Professional Industrial Engineer (P.E.)
Certified Manufacturing Engineer

Lokesh Narayanan, Ph.D.
North Carolina State University, 2019
Research Interests: Biomedical Design, Bio-Manufacturing and Automation

Mojahid Saeed Osman, PhD
North Carolina A & T State University, 2010
Research Expertise: Large-scale network routing & scheduling, supply chain modeling, Production systems design

Harun Pirim, Ph.D.,
Mississippi State University, 2011
Research Interests: Discrete Optimization, Machine Learning, Biological Networks, & Data Analytics

Diana Lopez-Soto, Ph.D.
Tecnologico de Monterrey, Mexico, 2016
Research Interests: Healthcare Systems Engineering and Analytics, Supply Chain, and Operations Management