

Mechanical Engineering

Program and Application Information

Department Chair:	Dr. Alan Kallmeyer
Graduate Coordinator:	Dr. Ghodrat Karami
Department Location:	111 Dolve Hall
Department Phone:	(701) 231-8671
Department Email:	ndsu.me.gradprogram@ndsu.edu
Department Web Site:	www.ndsu.edu/me/
Application Deadline:	February 15 for fall semester; September 15 for spring semester. Applications received after the deadline will still be considered, but preference is given to those submitted by the deadline.
Degrees Offered:	Ph.D., M.S.
Test Requirement:	GRE (International applicants). Minimum required total (quantitative + verbal): 300; Minimum required quantitative: 155
English Proficiency Requirements:	TOEFL iBT 79 IELTS 6.5

Program Description

The Department of Mechanical Engineering offers graduate programs leading to the M.S. and Ph.D. degrees. Graduate work may be concentrated in engineering mechanics, fatigue and fracture, biomechanics and biomaterials, thermal engineering, fluid mechanics, energy, controls, and mechatronics, or engineering materials with an emphasis on plastics, composite materials and nanomaterials. Students with a B.S. degree in physics or mathematics may pursue a special graduate program of studies and earn an M.S. degree in Mechanical Engineering.

Admissions Requirements

Admission to the ME program is granted in a competitive process that is based upon consideration of the student's undergraduate GPA, test scores, and area of interest. Students who have graduated from an accredited institution in the United States with a baccalaureate degree in Mechanical Engineering or a closely related field must possess a GPA of 3.0 or greater for consideration of admission at full standing. International students must also provide both the TOEFL (and IELTS) and GRE general test scores before their applications will be considered. Minimum requirements for consideration of admission are 79 on the TOEFL iBT or 6.5 on the IELTS, and 300 on the GRE (combined quantitative and verbal) with a minimum quantitative score of 155.

Financial Assistance

Research and/or teaching assistantships may be available to qualified students. Applicants are considered on the basis of scholarship, potential to undertake advanced study and research, and financial need. The availability of research and teaching assistantships is contingent upon current funding levels.

Mechanical Engineering - M.S.

The minimum total semester credits required for the M.S. degree in Mechanical Engineering is 30. The M.S. degree can be earned with either of two options: the thesis option or the comprehensive study option.

With the thesis option, a student must complete a core curriculum of 9 credits (three courses) of graduate courses in mechanical engineering, a master's thesis of 6 to 9 credits of ME 798 Master's Thesis, and the remaining credits from other approved graduate level courses. At the conclusion of the graduate program, the student will be examined orally on the thesis and course work. With the comprehensive study option, a student must complete a core curriculum of 9 credits (three courses) of graduate courses in mechanical engineering, a master's paper of no more than 3 credits of ME 797 Master's Paper, and the remaining credits from other approved graduate level courses. At the conclusion of the graduate program, the student must pass a comprehensive oral examination on the master's paper and course work. For more detailed information on the requirements for the M.S. degree, contact the department.

Mechanical Engineering - Ph.D.

The Ph.D. program requires the completion of 90 credit hours of graduate study beyond the baccalaureate degree (60 credits beyond the M.S. degree). In addition to the credit requirements for the M.S. degree, the Ph.D. degree requires a minimum of 24 course credits and a minimum of 24 credits of research-based dissertation. The remaining 12 credits may consist of any approved graduate level credits. Each student is required to pass a series of written qualifying exams on core subjects within 24 months of enrollment in the Ph.D. program. After the majority of course work has been completed, an oral preliminary exam will be administered focusing on the student's proposal for the dissertation research. At the conclusion of the Ph.D. program, each student is required to pass a comprehensive oral final examination primarily focused on the dissertation, but which may also cover material from

course work, particularly courses fundamental to the dissertation. For more detailed information on the requirements for the Ph.D. degree, contact the department.

M.S. Degree	30
Minimum of 24 course credits	24
Minimum of 24 credits of research-based dissertation	24
Any approved graduate level credits	12
Total Credits	90

Fardad Azarmi, Ph.D.

University of Toronto, 2008

Research Interests: Thermal Spray Coatings, Thin Film, Multiscale Engineering Analysis, Finite Element Analysis, Failure in Materials, Corrosion, Materials Characterization, High Temperature Materials, Composite Structures, Metal Foams, Functionally Graded Materials

Dilpreet S. Bajwa, Ph.D.

University of Illinois at Urbana-Champaign, 2000

Research Interests: Biobased Polymer Composites, Wood Composites, Processing and Characterization, Recycled Materials, Utilization, Durability Engineering via Weathering and Degradation Mechanisms

Alan R. Kallmeyer, Ph.D.

University of Iowa, 1995

Research Interests: Theoretical, Computational, and Experimental Solid Mechanics, Fatigue and Fracture of Engineering Materials, Composite Materials

Ghodrat Karami, Ph.D.

Imperial College of Science and Technology, University of London, 1984

Research Interests: Multiscale Computational Solid Mechanics, Biomechanics, Cellular Mechanics, Micromechanics Characterization of Composites, Continuum Mechanics, Structural Mechanics, Nonlinear and Large Deformation and Analysis, Thermoelastic Analysis

Sumathy Krishnan, Ph.D.

Indian Institute of Technology, 1995

Research Interests: Solar Heating and Cooling, Concentrated Solar Power, Renewable Energy Integrated Systems

Robert V. Pieri, Ph.D.

Carnegie-Mellon University, 1987

Research Interests: Design, Materials and Nanomaterials Characterization, Instructional Pedagogy, Fracture Mechanics, Measurements, Alternative Energy, and Industrial Support

Majura Selekwa, Ph.D.

Florida A&M University, 2001

Research Interests: Robotics, Machine Intelligence, Soft computing Applications, Numerical Methods and Numerical Optimization, Optimal and Robust Control, Smart Actuation Control Systems, Real-Time Control in Mechatronics

Michael Stewart, Ph.D.

University of Illinois, 1979

Research Interests: Computational Fluid Dynamics, Heat and Mass Transfer in Porous Media

Yildirim Bora Suzen, Ph.D.

Wichita State University, 1998

Research Interests: Computational Fluid Dynamics, Aerodynamics, Modeling of Industrial Transport Processes, Transition and Turbulence Modeling, Active/Adaptive Flow Control, Turbo machinery, Multiprocessor CFD

Annie X.W. Tangpong, Ph.D.

Carnegie Mellon University, 2006

Research Interests: Vibrations and Dynamics, Tribology, Friction Damping in Rotating Structures, Friction Damping in Nano- and Bio-materials

Chad A. Ulven, Ph.D.

University of Alabama at Birmingham, 2005

Research Interests: Advanced Composites Materials Development, Environmentally Friendly Materials Processing, Nondestructive Evaluation, Impact/High Strain Rate Characterization of Advanced Materials

Xinnan Wang, Ph.D.

University of South Carolina, 2008

Research Interests: Experimental Biomechanics, Synthesis of Nanomaterials, Nanomechanical Characterization, Nanomanipulation

Yechun Wang, Ph.D.

University of Maryland, 2007

Research Interests: Microfluidics, Biofluid Mechanics, Computational Fluid Dynamics, Numerical Analysis, and Characterization of Organic Coatings

Xiangfa Wu, Ph.D.

University of Nebraska-Lincoln, 2003

Beijing Institute of Technology, 1998

Research Interests: Nanofabrication and Nanomaterials, Advanced Composites, Fracture and Impact Mechanics

Mariusz Ziejewski, Ph.D.

North Dakota State University, 1986

Research Interests: Impact Biomechanics, Human Body Dynamics, Head and Neck Trauma, Impact Trauma, Human Brain Modeling, Statistical Methods