

Mechanical Engineering Graduate Courses

- MEC 500: Modeling and Control of Manufacturing Systems
- MEC 501: Convective Heat Transfer and Heat Exchange
- MEC 502: Conduction and Radiation Heat Transfer
- MEC 504: Thermal Analysis and Design of Electronic Systems
- MEC 505: Modeling and Simulation for Materials Processing and Manufacturing
- MEC 506: Energy Management in Commercial Buildings
- MEC 507: Mathematical Methods in Engineering Analysis I
- MEC 508: Mathematical Methods in Engineering Analysis II
- MEC 509: Transport Phenomena
- MEC 510: Object-Oriented Programming for Scientists and Engineers
- MEC 511: Mechanics of Perfect Fluids
- MEC 512: Mechanics of Viscous Fluids
- MEC 514: Advanced Fluid Mechanics: Introduction to Turbulence
- MEC 515: Emerging Energy Technologies
- MEC 516: Energy Technologies Laboratory
- MEC 517: Energy Technologies Laboratory II
- MEC 518: Energy Harvesting
- MEC 520: Energy Technology Thermodynamics
- MEC 521: Thermodynamics
- MEC 522: Building Energy Dynamics and Technology
- MEC 523: Internal Combustion Engines
- MEC 524: Computational Methods for Fluid Mechanics and Heat Transfer
- MEC 525: Product Design Concept Development and Optimization
- MEC 526: Modern Power Cycles
- MEC 527: Introduction to Building Energy Modeling
- MEC 528: Introduction to Experimental Stress Analysis
- MEC 529: Introduction to Robotics: Theory and Applications
- MEC 530: Applied Stress Analysis
- MEC 532: Vibration and Control
- MEC 535: Engineering Stress Analysis
- MEC 536: Mechanics of Solids
- MEC 537: Combustion Research Laboratory
- MEC 539: Introduction to Finite Element Methods
- MEC 540: Mechanics of Engineering Structures
- MEC 541: Elasticity
- MEC 543: Plasticity
- MEC 550: Mechatronics
- MEC 552: Mechanics of Composite Materials
- MEC 556: Introduction to Engineering Mechanics of Composites
- MEC 557: Engineering Composites Fabrication and Characterization
- MEC 560: Advanced Control Systems
- MEC 564: Fundamentals of Aerodynamics
- MEC 565: Aerospace Propulsion
- MEC 567: Kinematic Analysis and Synthesis of Mechanisms
- MEC 568: Advanced Dynamics
- MEC 570: Introduction to Engineering Tribology
- MEC 571: Analysis and Design of Robotic Manipulators
- MEC 572: Geometric Modeling for CAD, CAM
- MEC 575: Introduction to Micro Electro-Mechanical Systems (MEMS)
- MEC 576: Microfluidics and Microscale Heat Transfer
- MEC 579: Optical Measurement
- MEC 580: Manufacturing Processes
- MEC 584: Quality Engineering
- MEC 585: Total Quality Management
- MEC 591: Industrial Project in Opto Electro Mechanical Systems Engineering
- MEC 596: Projects in Mechanical Engineering
- MEC 597: Graduate Research and Study in Manufacturing
- MEC 599: Research
- MEC 630: Special Topics in Fluid Mechanics
- MEC 631: Special Topics in Heat Transfer
- MEC 632: Special Topics in Statistical Mechanics
- MEC 633: Special Topics in Thermodynamics
- MEC 634: Advanced Topics in Kinematics and Dynamics of Machines
- MEC 635: Advanced Topics in Nonlinear Dynamic Systems
- MEC 636: Advanced Topics in Mechanical Vibration
- MEC 637: Special Topics in Precision Engineering
- MEC 641: Fracture Mechanics
- MEC 651: Advanced Finite Element Analysis
- MEC 656: Aerospace Propulsion
- MEC 662: Advanced Vibration and Analysis
- MEC 671: Optical Methods for Experimental Stress Analysis
- MEC 691: Mechanical Engineering Seminar
- MEC 695: Mechanical Engineering Internship
- MEC 696: Special Problems in Mechanical Engineering
- MEC 697: Practicum in Teaching I
- MEC 698: Practicum in Teaching II
- MEC 699: Dissertation Research on Campus
- MEC 700: Dissertation Research off Campus - Domestic
- MEC 701: Dissertation Research off Campus - International
- MEC 800: Full Time Summer Research

Who We Are

The State University of New York (SUNY)

The State University of New York (SUNY) is the largest and most comprehensive state university system in the United States. SUNY was officially established in 1948 when New York became the 48th state to create a state university system. SUNY initially represented a consolidation of 29 unaffiliated institutions, including 11 teachers colleges. Today, SUNY has grown to include 64 geographically dispersed campuses that have been established in order to provide high quality education and opportunity.

Stony Brook University Degree in US

Stony Brook University (SBU) is one of the four major campuses of the SUNY system, located on Long Island, New York. The University campus lies 60 miles east of Manhattan and 60 miles west of Montauk Point. Stony Brook was established in 1957, has grown tremendously, and is now recognized as one of the nation's important centers of learning and scholarship. Stony Brook is

- In the top 1 percent of the world's higher education institutions by the Times Higher Education World University Rankings
- One of the top 100 universities in the nation and one of the top 35 public universities by U.S. News & World Report
- One of the 30 best values in public colleges and universities by Kiplinger
- One of only 10 universities nationwide recognized by the National Science Foundation for combining research with undergraduate education

98% of Stony Brook's teaching faculty hold doctoral degrees or the highest degrees in their fields, and Stony Brook faculty are responsible for more than 1,840 inventions and more than 500 U.S. patents.

The State University of New York (SUNY), Korea

SUNY Korea was established in March 2012 as the first American university in Korea. It is the only global campus of SUNY and Stony Brook University (SBU). We aspire to be a hub for global education, research, and innovation by forming partnerships in both the private and public sectors and by continuing to build global networks with leaders and innovators across the globe.

Inquiries for Graduate Program

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State University of New York, Korea

Department of Mechanical Engineering Graduate Program

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Chair's Message



Welcome to the Department of Mechanical Engineering at the State University of New York (SUNY), Korea. In this department, we are driven by our mission to produce the best quality undergraduate and graduate students, comparable to any other university in the world. We meet or exceed all the requirements of the relevant international accreditation bodies.

Mechanical Engineering is one of the traditional engineering disciplines, having been taught for more than one hundred years. The achievements of mechanical engineers closely mirror the evolution of human civilization. Thus, many technological milestones in our world most likely involved mechanical engineering in a very significant way. Some of the top inventions of mechanical engineers include the automobile; the airplane; space exploration vehicles; agricultural mechanization; bioengineering; heating, ventilating, and air-conditioning (HVAC) equipment; massive production of computers and smartphones, and the development of codes and standards.

The behaviors in our department that enable us to meet our mission begin with the rigorous efforts we put into hiring the highest caliber professors into the department, the demand for excellent teaching and research portfolios from our professors, our religious focus on the requirements for accreditation, and an environment of fun for students - alongside strong academic standards and the provision of academic advisors to students, so that students are properly guided from the moment they enter our program to the day they graduate.

I hope you will explore what the Department of Mechanical Engineering at SUNY Korea has to offer.

Foluso Ladeinde

Fellow, ASME; Associate Fellow, AIAA; Life Member, AIAA, APS; M.SIAM. Associate Editor, Journal of Aerospace Engineering; Past Associate Editor, AIAA Journal.

What is Unique about SUNY Korea Mechanical Engineering Graduate Program?

1. Stony Brook University Degree
2. One Year at Stony Brook University in New York (Ph.D. Only)
3. Ability to Work (OPT) in US for up to 3 Years after Finishing Graduate Studies (Final Year in US)
4. Merit-Based Scholarships Available for Outstanding Ph.D. Candidates
5. The International Atmosphere at SUNY Korea
6. The Great Professors at SUNY Korea
7. The Facilities at the Department of Mechanical Engineering SUNY Korea - Computational Facilities, CNC Machines, Engines, etc.

Faculty

- **Foluso Ladeinde**, Chair, Ph.D., 1988, Cornell University: Mechanical & Aerospace Engineering
Theoretical and Computational Fluid Dynamics, Flow Turbulence, Chemically-Reactive Subsonic and Supersonic Flows, Applied Mathematics, Aerodynamic Noise Prediction and Reduction, Wind Turbine Aerodynamics.
- **Imin Kao**, Executive Director of SUNY Korea Academic Programs, Stony Brook Professor, Ph.D., 1991, Stanford University: Mechanical Engineering
Robotics, Stiffness Control, Wiresaw Manufacturing Process, Manufacturing Automation, Taguchi Methods.
- **Mahdi Mohebbi**, Assistant Professor, Ph.D., 2013, University of Pittsburgh: Mechanical Engineering
Fluid Mechanics, Partial Differential Equations, Dynamical Systems, Heat Transfer, Inverse Problems.
- **Achilles Vairis**, Visiting Professor, Ph.D., 1997, University of Bristol: Mechanical Engineering
Linear Friction Welding, Friction Stir Welding and Processing, Frictional Behavior, Numerical Modeling of Complex Systems, Joining Processes, Manufacturing Processes, Coatings, Biomechanical Engineering, Additive Manufacturing.
- **Changwoon Han**, Associate Professor, Ph.D., 2005, University of Maryland College Park: Mechanical Engineering
Physics-of-Failure, Life Prediction, Accelerated Life Test, Prognostics and Health Management, Optical Measurement, Photo-mechanics
- **Amin Fakhari**, Assistant Professor, Ph.D., 2015, Isfahan University of Technology: Mechanical Engineering
Robotics, Dynamic Modeling and Control of Robotic Systems, Object Grasping and Manipulation, Anthropomorphic Robotic and Prosthetic Hands, Biped and Humanoid Robots, and Biomechanics.
- **Gun-Woong Bahng**, Leading Professor (Research), Ph.D., 1982, Northwestern University: Materials Science and Engineering
Internal Combustion Engines.
- **Chanbin Park**, Leading Professor, Ph.D., 1973, City University of New York: Electrical Engineering
Guidance and Control, Techniques of Feedback Suboptimal Control, Nonlinear Process Control.
- **Hyun Soon Lee**, Leading Professor, Ph.D., 1981, State University of New York at Stony Brook: Mechanical Engineering
Heat Transfer, Energy, Engine Technologies, Thermal Sciences.
- **Si Won Hwang**, Leading Professor, Ph.D., 1996, Inha University: Mechanical Engineering
Fracture Mechanics, Traffic Collision and Reconstruction.
- **Sangwan Joo**, Adjunct Professor, Ph.D., 1998, Osaka University: Robotics
Modeling and Measurement for the Joint Stiffness of Robot Manipulator, Passive Compliant Tool Design and Its Analysis.

Cross-Appointed Stony Brook Faculty

- **Jeff Ge**, Cross-Appointed Stony Brook Professor, Ph.D., 1990, University of California, Irvine: Mechanical Engineering
Design Automation and Robotics.
- **David Hwang**, Assistant Professor, Ph.D., 2005, University of California, Berkeley: Mechanical Engineering
Pulsed Laser Processing of Electronic Materials in Micro/Nano Scales.
- **Sotirios Mamalis**, Assistant Professor, Ph.D., 2012, University of Michigan: Mechanical Engineering
Simulation and Thermodynamic Analysis of High Pressure Lean Burn Engines.

About the Graduate Program

- M.S. With Thesis
- M.S. Without Thesis
- Ph.D.
- Areas of Concentration:
 - Design and Manufacturing (DM)
 - Solid Mechanics (SM)
 - Thermal Science and Fluid Mechanics (TSFM)

Graduation Requirements (M.S.)

- M.S. With Thesis:
 - 21 approved graduate course credits and a thesis (9 credits)
 - Oral Thesis Defense exam
- M.S. Without Thesis:
 - 30 approved graduate course credits
 - A minimum of 18 approved graduate credits from the Department of Mechanical Engineering
- Both M.S. Programs:
 - May transfer a maximum of 12 approved graduate credits from other programs at SUNY Korea / SUNY Stony Brook, or a maximum of 6 credits from other institutions.

Graduation Requirements (Ph.D.)

- A minimum of 18 approved graduate credits beyond the M.S. degree requirements; A minimum of 9 credits from Mechanical Engineering
- A maximum of 6 approved graduate credits from other programs (other institutions) may be transferred. Cannot be the same credits used to satisfy the requirements for any prior graduate degrees (M.S. or Ph.D.)
- Must pass a Written Qualifying Exam in Applied Mathematics and in the student's major area of concentration
- Need a minor area of concentration - which can be another area of concentration in ME or in Electrical Engineering, Material Science & Engineering, Computer Science, Applied Mathematics, and Biomedical Engineering
- A coherent sequence of 3 graduate courses in the minor, with a grade of B or better in each course
- 3 credits in MEC 698 (Practicum in Teaching II)
- Dissertation Proposal Exam must be taken and passed after the student has been admitted to candidacy
- Dissertation Defense Exam must be taken and passed upon completion of the dissertation