



TEXAS A&M UNIVERSITY
J. Mike Walker '66 Department of
Mechanical Engineering

ABOUT THE DEPARTMENT

The J. Mike Walker '66 Department of Mechanical Engineering at Texas A&M University has a strong local, national and international reputation as a premier undergraduate and graduate research institution with a research budget of \$55.5 million (FY24), with projects supported by the National Aeronautics and Space Administration, the National Science Foundation, the Department of Defense, the Department of Energy, and a multitude of companies across various industrial and service sectors. It has 73 laboratories and centers and 103 faculty, of whom nine are National Academy of Engineering members. Currently, the department has 580 graduate students, of whom 320 are Ph.D. students.

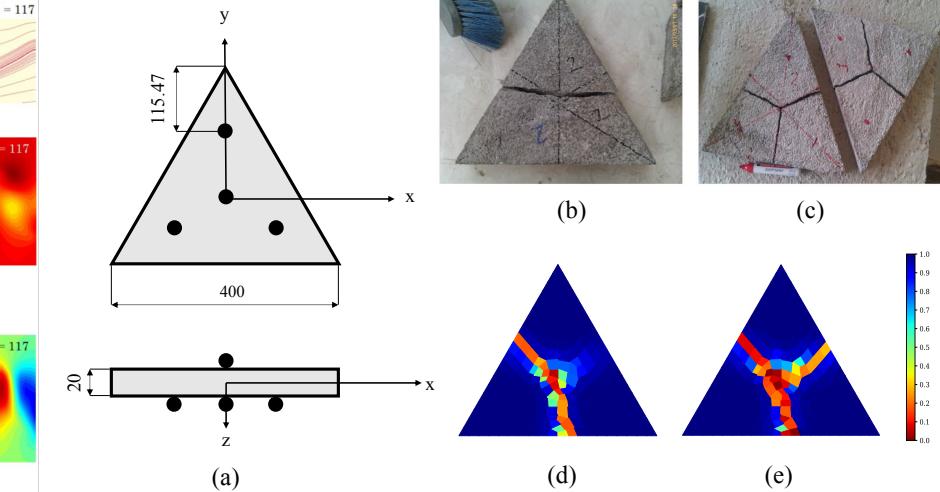
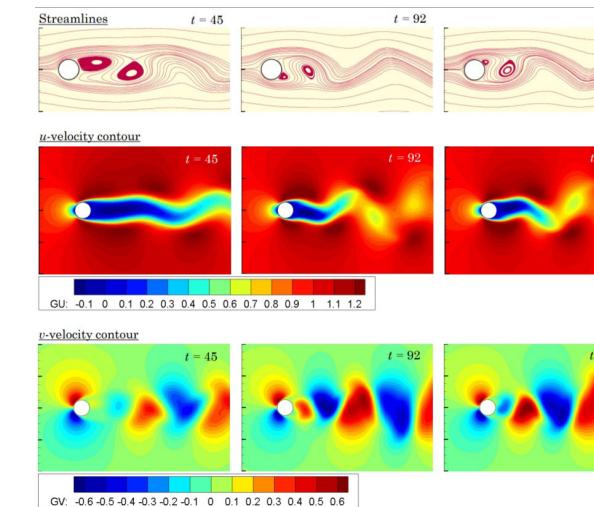
The faculty are organized into six broad cluster areas: (a) Autonomy, Controls and Robotics; (b) Design and Manufacturing; (c) Dynamics, Vibrations and Acoustics; (d) Solid, Fluid and Biomechanics; (e) Thermal Sciences, Heat Transfer and Combustion; and (f) Materials and Tribology. The department has ongoing research in a variety of applications, including advanced manufacturing, robotics and mechatronics, micro- and nanosystems, energy and environment, human health, and rotating machinery.

These students are trained at major research centers and laboratories such as the Center for Advanced Small Modular and Micro Nuclear Reactors (CASMR), Center for Autonomous Vehicles and Sensor Systems (CANVASS), Center of Innovation in Mechanics for Design and Manufacturing (CiMDM), Turbomachinery Laboratory, Energy Systems Laboratory, INVENT Lab and Starlab.



Center of Innovation in Mechanics
for Design and Manufacturing
Texas A&M Engineering Experiment Station

Lecture Series in Applied Mechanics



The J. N. Reddy Endowed Chair in Applied Mechanics Lecture

A journey through the modeling of irreversible phenomena in mechanics:
from earth pressure to modern plasticity, fatigue and fracture

By Arun R. Srinivasa

The Holder of the J. N. Reddy Endowed Chair in Applied Mechanics
Mike Walker '66 Department of Mechanical Engineering



Dr. J.N. Reddy

Professor, Mechanical Engineering

Texas A&M University

O'Donnell Foundation Chair IV Professor

Dr. J.N. Reddy received his Bachelor of Engineering from Osmania University, Hyderabad, India, in 1968, a Master of Science degree from Oklahoma State University in 1970, and a Ph.D. in Engineering Mechanics from the University of Alabama in Huntsville in 1974. He worked for a short period for Lockheed Missiles and Space Company in Huntsville, Alabama, before joining the University of Oklahoma as an assistant professor in 1975. In 1980, he was recruited as a professor in the Department of Engineering Science and Mechanics at Virginia Tech, where, in 1986, he was named the inaugural holder of the Clifton C. Garvin Endowed Professorship. In 1992, he was recruited in a nationwide search as the inaugural holder of the Oscar S. Wyatt Jr. Endowed Chair in the Department of Mechanical Engineering at Texas A&M University. He was appointed as the University Distinguished Professor in 1998 and named as the Regents' Professor in 2010.

Dr. Reddy, a Highly Cited Researcher and the author of over 800 journal articles and 25 textbooks, is a well-known researcher and educator in applied and computational mechanics. His research in the last 15 years has focused on two major topics: (1) the development of higher-order shear deformation theories and finite element models of laminated composite and functionally graded plate and shell structures, and (2) the use of nonlocal mechanics ideas to model architected heterogeneous materials and structures and simulate the probability of damage and fracture in solids.

Dr. Reddy made a very significant impact on mechanics education with the publication of his well-received books on linear and nonlinear finite elements and laminated composite plates and shells. He has guided over 130 graduate students (including 80 Ph.D.s and 50 M.S.) and advised over 50 postdoctoral researchers,

many of whom hold faculty positions around the world. About one-third of his doctoral students are employed in academia. Others hold high positions in industries in America and around the world.

Additionally, he established the J.N. Reddy Chair in Applied Mechanics faculty endowment to bolster his fellow researchers and instructors. This generous endowment supports the teaching, research, service and professional development of faculty in the J. Mike Walker '66 Department of Mechanical Engineering who embody the passion for, and commitment to, education for which Reddy is known.

Dr. Reddy has earned numerous honors and awards that are very significant by any measure. Since 2015, he has been elected as a member of nine engineering and science academies: U.S. National Academy of Engineering, Chinese Academy of Engineering, Canadian Academy of Engineering, Brazilian National Academy of Engineering, Indian National Academy of Engineering, European Academy of Sciences, Spanish Royal Academy of Engineering, European Academy of Sciences and Arts, and Royal Society of Canada. The most-significant national and international awards in the last 20 years are as follows: the Raymond D. Mindlin Medal (2014) from the American Society of Civil Engineers (ASCE); the ASME Medal (2016) from the American Society of Mechanical Engineers (ASME); the William Prager Medal (2016), Society of Engineering Science; the John von Neumann Medal (2017), U.S. Association of Computational Mechanics; the Theodore von Karman Medal (2018) from ASCE; the Stephen P. Timoshenko Medal (2019) from ASME; the IACM Congress (Gauss-Newton) Medal (2022) from the International Association of Computational Mechanics; the Leonardo da Vinci Award (2023) from the European Academy of Sciences; and the Michael Paidoussis Medal (2023) from the Royal Society of Canada (RSC). Dedicated to teaching and research, J. N. Reddy is an inspiration to many around the world.



Dr. Arun Srinivasa

Professor, Mechanical Engineering

J.N. Reddy Chair in Applied Mechanics

Associate Dean for Student Success, College of Engineering

Dr. Arun Srinivasa is currently the Associate Dean for Student Success at the College of

Engineering at Texas A&M University. He is dedicated to the undergraduate teaching mission of the department and college, and has served as the Associate Department Head for the Department of Mechanical Engineering.

Dr. Srinivasa's research interests are in the simulation of manufacturing processes, and the study of the fracture, fatigue and impact of structures. He has conducted path-breaking research in the broad area of persistent structural changes in materials due to mechanical, chemical and thermal effects, including nonlocal and Cosserat theories, biomechanics and the foundations of continuum thermodynamics. His approach is particularly noteworthy in combining adherence to fundamental physics while also addressing technologically relevant problems with practically feasible computational strategies. He has authored and coauthored over 200 journal publications in peer-reviewed journals and has coauthored four books, apart from several articles on engineering education.

Dr. Srinivasa also has a long-standing interest in incorporating technology in the classroom to improve student engagement and interaction in a way that is inclusive and accessible to students from different backgrounds. He has incorporated computational thinking, quantitative design and decision-making activities as part of core engineering science education. He developed active learning classes as early as 2007 with videos and related materials, where the students spend a substantial amount of time in the classroom in interactive design, evaluation and quantitative decision-making activities, while the bulk of the procedural aspects of the course are available online. He has developed more than 200 online tutorials in mechanical

engineering topics on his YouTube channel, which have been viewed more than 250,000 times. His ability to engage a wide audience is illustrated by being invited to present a TEDx talk on "Can Objects be Smart?" at Education City in Qatar. He has published extensively in journals in engineering education and is a founder of Encando.AI - a startup dedicated to enabling faculty to implement good pedagogical practices easily and developing deep learning among students by removing the frustration, not the effort.

He was awarded the 2025 Ralph Coates Roe Award from the American Society of Engineering Education for his contributions to research and teaching in mechanical engineering; the 2023 University Professorship for Undergraduate Teaching Excellence (UPUTE) award; the 2021 Ben Sparks Medal from the American Society of Mechanical Engineers (ASME) for his contributions in fostering new, innovative applications and approaches to the teaching of mechanical engineering; the 2019 Worcester Reed Warner Medal by the American Society of Mechanical Engineers for seminal contribution to the permanent literature of engineering; and the 2018 Archie Higdon Distinguished Educator Award by the American Society of Engineering Education for his work in mechanics education. At the university level he has won the Association of Former Students Distinguished Achievement award for teaching both at the college level and the university level, the BP award for Teaching Excellence at Texas A&M University, the Halliburton Professorship for scholarly excellence and contributions to engineering, the outstanding graduate teaching award, the William Keeler faculty fellowship, as well as the Benjamin Dasher best engineering education paper award from the frontiers in engineering conference. He was also awarded the ASME Best Teacher Award by the ASME student chapter of Texas A&M University.