

Short Bio of Professor Raghu Echempati



Dr. Echempati's academic career spans over 3 decades as he taught at many Universities in USA and abroad since 1976. These included IIT Delhi, U of Florida, The Ohio State University, etc., before joining Kettering University in 1997. He taught in Germany and in other countries for 14 years (each 3 months period). This included Fulbright fellowship to teach at IIT, Delhi and at KMUTT, Bangkok, Thailand. Recently In 2017, he received Oxford- Erskine Fellowship to teach at University of Canterbury, Christchurch, New Zealand for 5 months.

Dr. Raghu taught several courses in the mechanics, design, applied structural finite element analysis and elasticity. He also taught Senior Capstone Design classes and Lightweighting Technologies (Design and Joining with Aluminum and other materials) for automotive applications.

At Kettering, he serves as the director of mechanical engineering (ME) graduate admissions programs, and has served as an academic advisor for ME study abroad programs in Germany, faculty advisor/chair of the student and senior sections of American Society of Mechanical Engineers (ASME) and Pi Tau Sigma Honor Society. He also served a member on several committees at Kettering University including the faculty senate, higher learning commission (HLC), ABET, curriculum development committee, international programs, graduate and undergraduate programs, etc.

He has supervised over 250 undergraduate/graduate and research student theses, reviewed several technical articles, papers, textbooks and research proposals for various domestic and international conferences, journals, scientific bodies and publishers. These are in the areas of basic and advanced mechanisms, vibrations of mechanical systems, automotive sheet stamping operations and finite element analysis of these. He used a variety of CAE tools for structural analysis and motion simulation. These include front loader assemblies, wiper assemblies, steering and suspension linkages, etc.

Dr. Echempati developed the "Design with Aluminum for Automotive Lightweighting" elective course and has written a primer textbook on this subject. He served as a Professor Intern at GEMA Chrysler group (2007) and General Motors Corporation (2001), and other companies. He secured GM-PACE Foundation award to develop metal forming course modules in 2004, Applied Research Grant on Real and Virtual Formability Studies of Aluminum Alloys, Bosch – Kettering Professorship to work on projects of interest to Robert Bosch Co., MI, 1997-'02.

He has published over 160 applied research papers in peer-reviewed journals and conference proceedings of repute. In 2016, he has organized a one-week MHRD-GIAN Workshop at IIT Jodhpur on Vehicle Dynamics and Chassis Suspension Systems. In 2019, he has organized another one-week workshop at NIT Warangal on Automotive Lightweighting Technologies. He was also involved in industrial consulting projects while teaching at IIT Delhi (Indian Railways, ARDB, etc.).

He does exercise to (try to) keep good health by walking/running and now swimming.

Raghu Echempati

Education

M.S.	Engineering Management	Kettering University	2014
Ph.D.	Mechanical Engineering	Indian Institute of Technology	1978
M.S.	Mechanical Engineering	Indian Institute of Technology	1972
B.S.	Mechanical Engineering	Andhra University	1970

Academic Experience (Kettering University)

- Assistant/Associate/Full Professor, Kettering University, 1997 to present
- Teaching, applied research and consulting experience at various universities span over 30 years

Non-Academic Experience

- ABET (Accreditation) Scholar, 2010
- Notary Public (Michigan)

Certifications or Professional Licensure

- Professional Engineer (State of Mississippi)

Scientific & Professional Society Memberships

- Fellow Member of ASME, Member of SAE, ASEE
- Life member of Association of Machines and Mechanisms (India)

Honors & Awards

- GIAN-MHRD Foreign Expert One-week Workshop on Lightweighting Technologies, NIT Waragal, TS, (India); June 2019
- Erskine Fellowship to teach nonlinear FEA at University of Canterbury, Christ Church, New Zealand, January to June 2016
- GIAN-MHRD Foreign Expert 2-week Vehicle Dynamics Workshop, IIT Jodhpur, (India); January 2016
- Fulbright Specialist Award, Faculty of Industrial Education and Technology (FIET), KMUTT, Thailand, Dec 2013-January 2014
- ASME Dedicated Service Award, 2013
- ASME Faculty Advisor Award, 2012
- Outstanding Applied Researcher Award (Kettering University), 2011
- McFarland Award, SAE International, 2009
- Fulbright travel award, I.I.T., New Delhi, India, 2008
- Oswald Award for service to International Programs, Kettering University, 2007

Institutional & Professional Service (2012-2016)

- Chair of admissions, mechanical engineering graduate programs
- Member of graduate council committee

- Faculty advisor of ASME and Pi Tau Sigma student sections
- Chairman of ASME Saginaw Valley (Senior member) Section
- Member of ME and university Curriculum Committee
- Member of department and university promotion committees
- Member of mechanics group committee
- Course coordinator of:
 - Solid Mechanics, Machine Design – I, Machine Design – II, Analysis and Design of Mechanisms and Machines, Mechanical Systems Capstone Project, Failure and Material Considerations in Design, Applied Finite Element Analysis, Linear Elasticity, Independent study on Lightweighting Technologies, Vehicle dynamics and Chassis systems, Simulation of Metal Forming Processes
- Associate editor of Passenger Cars, Society of Automotive Engineers (SAE)
- Co-organizer, technical papers reviewer and member of SAE's:
 - Body Design and Engineering, Metallic Materials, Vehicle Dynamics, Steering and Suspensions, Failure Analysis of Materials, Components, and Systems, Driving issues with aging population
- Technical paper reviewer of: ASEE Conferences, ASME Conferences, other International conferences
- Reviewer of journal papers published by SAGE, InderScience, J of Material Science, etc.
- Chair of awards committee of ASEE for 2016-2018
- Member of technical steering of several international conferences and journals in Europe, Thailand and India
- External foreign examiner for several Ph.D. theses from Indian and New Zealand Universities such as IITs, University of Canterbury, and other leading engineering colleges in India.
- Panel committee member of graduate research fellowships of NSF and DOE
- Panel committee member of Fulbright scholars
- Panel committee member of Gilman awards (Fulbright) for students

Principal Publications/Presentations (2012-2019) – Total over 160 publications

- S. Kathiresan and R. Echempati, "Analysis and Design Modifications of Automotive Seating Rail System", Abstract of the paper accepted for presentation at **MDA 2020 Conference** to be held in Porto, Portugal, June 2020.
- R. Echempati, "Lightweighting Technologies", Keynote talks to be delivered at (a) **Mechanical 2020 Conference** to be held in Manchester, UK, and **TMCE 2020 Conference** to be held in Dublin, Ireland in May 2010.
- R. Echempati, "Primer in Automotive Lightweighting Technologies: Design, Manufacturing, and Joining Methodologies with Aluminum", **textbook** under print with Taylor and Francis (CRC Publications, 2019).
- S. Kathiresan and R. Echempati, "Analysis and Design Optimization of Seat Rail Structures in Various Operating Conditions", **Proc. of ASEE NCS Conference** Grand Rapids, MI, 2019.
- R. Echempati, "Senior Mechanical Systems Design Capstone Projects: Experiences and Assessment", **Proc. of ASEE Conference**, Tampa, FL, June 2019.
- R. Echempati, "New Idea to Enhance Better Understanding of Free Body Diagrams in Solid Mechanics Course", paper submitted to **JEET (Journal of Engineering Education Transformations)**, 2019.
- R. Echempati, "Fall 2018 Capstone Design Teaching and Learning Experiences", **Proc. of ASEE NCS Conference**, Grand Rapids, MI, 2019.

- K. Karouac and R. Echempati, "Understanding Applied Nonlinear Elasticity Through Examples", **Proc. of ASEE NCS Conference**, Grand Rapids, MI, 2019.
- R. Echempati, "New Course Development and Assessment Tools in Automotive Lightweighting Technologies", **Proc. of ASEE Conference**, Salt Lake City, UT, 2018.
- H. Kunakornsakul, P. Pinit and R. Echempati, "Preliminary design and implementation of embedding information literacy into an undergraduate engineering course" paper published in **Int. J. Innovation and Learning**, 2018.
- R. Echempati, "Integration of real life examples, safety concerns and societal impact as learning outcomes of mechanical engineering courses", **Proc. Of ASEE 2017 Conference**, Columbus, OH, 2017; modified version of this paper published in **JEET (Journal of Engineering Education Transformations)**, 2018.
- R. Echempati, "Research on aluminum and other multi-material design and joining: Studies on laser bending and friction welding techniques", **Keynote address at ICLIST 2018 Conference**, Thailand, 2018.
- V. Choksi, R. Panchal and R. Echempati, "Structural and Vibrational Analysis of a Five-Cylinder Engine Crankshaft", **Proc. Of 6th International Conference on Learning Innovation in Science and Technology Conference (ICLIST)** held at Hua Hin, Thailand, 2018.
- V. Dave and R. Echempati, "Optimal Design for Thermal, Structural and Vibration analysis of Turbo Charger Mount", **Proc. Of IN-TECH 2018 Conference** held in Zagreb, Croatia, 2018.
- R. Echempati, "Automotive Lightweighting and Joining Technologies", **Keynote address at International Week of Research, Development and Innovation (SIIDI 2017)**, Columbia, 2017.
- B. Fetene, K. Vikash, U. Dixit., and R. Echempati, "Numerical and Experimental Analysis of Multi-Pass Laser Bending of Mild Steel Strips", paper submitted for consideration for publication in **Journal of Optics and Laser Technology** (Elsevier), 2017.
- J. Shukla, R. Vyasa, R. Echempati, and V. Badheka, "Investigation and thermal analysis of friction stir welding process parameters of AA6061 plates", paper presented at **ASME IMECE 2016 conference** held in Phoenix, AZ, 2016.
- R. Echempati, "Learning Outcomes of using Real Life (or Everyday) Examples in Mechanics Stream of Courses", **Proc. of ASEE Annual Conference** held at Seattle, WA, June 2015.
- Tianwu Li, R. Echempati and R. Fiedler, "Analysis and Redesign of Structural Walls of Sink-float Tank of Plastic Recycling Machine", **Proc. of ASEE NCS Conference** held at Cincinnati, OH, April 2015.
- Yi Yang and R. Echempati, "Use of technology and software in the classroom - Active learning and project-based learning", **Proc. of ASEE NCS Conference** held at Cincinnati, OH, April 2015.
- A. Eideh, Uday S. Dixit and R. Echempati, "A Simple Analytical Model of Laser Bending Process, paper published in **Lasers Based Manufacturing**, Topics in Mining, Metallurgy and Materials Engineering by Springer India 2015, edited by S.N. Joshi and U.S. Dixit (eds.), , DOI 10.1007/978-81-322-2352-8_1.
- R. Echempati, LeBlanc, N., Sahu, A., and Dani, P., "Quick-return Mechanism Revisited", **Computers in Education Journal** (Division of ASEE), Vol. 25, No. 2, April-June 2014 issue.
- Vyasa, R., and R. Echempati, "Finite Element Analysis of a Lathe Spindle", **Proc. of ASME IMECE 2014 Conference** held in Montreal, Canada, September 2014.
- R. Echempati, "Statics Concepts Inventory Results at Kettering University", **Proc. of ASEE 2014 Conference** held in Indianapolis, IN, June 2014.
- Vyasa, R., Kwintiane, B., Echempati, R., and Roller, D., "5-axes Response Surface Graph for Optimal Control of Lathe Spindle Vibration", **Proc. of TMCE-2014 Conference** held in Budapest, Hungary, May 2014.

- Echempati, R. and Sala, A., “Experiences of Implementing Blended Teaching and Learning Technique in Mechanics and Design Courses”, **Proc. of ASEE 2013 Conference** held in Atlanta, GA., June 2013.
- Raghu Echempati and Anca Sala, “Experiences of Implementing Blended Teaching and Learning Technique in Mechatronics and FEA Courses”, **Proceedings of ASEE 2013 Conference** held in Atlanta, GA, June 24, 2013.
- R. Echempati, et al., “Quick-Return Mechanism Revisited”, **Proceedings of ASEE 2013 Conference** held in Atlanta, GA, June 24, 2013.
- R. Echempati, et al, “Design Optimization of a Car Truck Stand”, **Proceedings of ASEE 2012 Conference** held in San Antonio, TX, June, 2012.
- Y. Dong, A. Mazzei and R. Echempati, “On the Wind-shield Mechanism Design to Enhance Student Understanding of Design Courses”, **Proceedings of ASEE 2012 Conference** held in Sa Antonio, TX, June 2012. A modified version of this is published in **Computers in Education Journal**, Volume 23, Number 1, January-March 2013 issue.
- R. Echempati and A. Fox, “Integrated Metal Forming, Vibration Analysis, and Thickness Optimization of Sheet Metal Parts”, **Proceedings of TMCE Congress** held in Ancona, Italy, April 2010 (modified version of this paper is accepted for publication in Journal of Computers in Engineering), 2012.

Professional Development Activities (2012-2016)

- Attended as a partner member the CAAT Conference held at Macomb Community College, Warren, MI, 2017.
- Erskine Scholar, University of Canterbury, Christchurch, New Zealand, 2017 (5 months).
- Visiting Professor, VIT University, India (during non-teaching term at Kettering), 2017-‘18.
- Participated in teaching and learning (T&L) activities as an expert panel member and keynote speaker at the curriculum development workshops (IUCEE) and international conferences held at MNIT, Jaipur, RJ, Hyderabad, Rajkot, etc., during the years 2016 and 2017 (India).
- Participated in several CETL, Kettering seminars and activities, 2012-2017.
- Organized several industry speaker presentations to deliver lectures to the ME students and faculty, 2012-2017.
- Distinguished Faculty Speaker organized by CETL, 2013 and 2015.

Undergraduate and graduate student theses supervised

- Supervised over 250 undergrad and 10 grad & Ph.D. theses in the areas of machine design, fatigue, finite element analysis, metal forming simulation, and manufacturing methods.