Harish Cherukuri

Curriculum Vitae

Department of Mechanical Engineering and Engineering Science
University of North Carolina at Charlotte
(704) 995-4788(c), (704) 687-8321(o)
harish.cherukuri@charlotte.edu
https://coefs.charlotte.edu/hcheruku
in *https://www.linkedin.com/in/harishcherukuri*

Education

1990-1994: **Ph.D., Theoretical and Applied Mechanics**, *The University of Illinois at Urbana-Champaign*, Urbana-Champaign, IL.
Adiabatic Shear Banding in Homogenous and Multilayer Materials, Impact Response of Ceramic Disks, Dissipation and Dispersion in Numerical Schemes

1989-1990: **Ph.D., School of Applied Mechanics,**, *The University of California, San Diego*, San Diego (Started my Ph.D. at UCSD.), CA.
Fracture Mechanics, Interfacial cracks, Cohesive Zone Models

1987-1989: **M.S., Mechanical Engineering**, *Montana State University*, Bozeman, MT.
Wave Propagation, Dynamic Behavior of Materials, Laser-Generated Ultrasonic Waves

1983-1987: **B.Tech., Mechanical Engineering**, *Jawaharlal Nehru Technological University*, Hyderabad, Telangana, India.

Experience

2019-Present: **Chair, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2020-Present: **Affiliate Faculty, School of Data Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2018-2019: **Graduate Program Director, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2011-2012: **Interim Chair, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2008-Present: **Professor, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2020-Present: **Affiliate Faculty, The School of Data Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2003-2011: **Graduate Program Director, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

2003-2008: **Associate Professor, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

1997-2003: **Assistant Professor, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

1995-1996: **Postdoctoral Research Fellow, Department of Mechanical Engineering and Engineering Science**, *The University of North Carolina at Charlotte*, Charlotte, NC.

Major Accomplishments as Department Chair

University of North Carolina Charlotte is a public institution that was founded in 1946. It has a total undergraduate enrollment of 30,298 (Fall 2023). It is the largest university in the Charlotte metropolitan region and is the third-largest institution in terms of enrollment among the 17 campuses of the UNC System. The William States Lee College of Engineering is one of the eight colleges on campus with approximately 3600 students. The Department of Mechanical Engineering and Engineering Science is one of the five departments with the college. It has 50 faculty, approximately 1250 undergraduate students and 130 graduate students.

As the Chair of the Department of Mechanical Engineering and Engineering Science (MEES) at UNC Charlotte, I oversee budget, develop policies and procedures that foster positive and productive environment in the department, develop and implement workload and assessment policies for faculty and staff, work with the departmental administrative cabinet in developing and innovating curricula at both the undergraduate and graduate levels, oversee the department's assessment activities, ensuring program quality and continuous improvement, serve on college-level and campus-level administrative committees to aid in decision-making processes, conduct and manage the hiring/evaluation/reappointment/tenure/promotion activities, foster an inclusive environment, oversee student advising, and work with students to understand and address their concerns with the overall goal of increasing a sense of belonging.

My major accomplishments are as follows:

1. I have a strong record of creating/requesting positions and hiring faculty. The MEES Department hired 20 new faculty during the last five years. Some of these positions are new and some that became vacant due to retirements and departures. I attribute my success as a hiring manager to the positive work environment in our department that I and many of my colleagues worked hard to nurture.

2. Saw the department successfully through an ABET visit in 2022. We received the full six-year accreditation without any deficiencies or weaknesses.

3. Developed a strong partnership between our department and the local industry including Siemens Energy, Oerlikon, ATI Metals, etc. Our faculty have taken advantage of these connections and submitted several proposals in joint collaborations with these companies.

4. In collaboration with United Mechanical Corporation and Southern Piedmont Chapter of ASHRAE, I started in 2020, an annual, on-campus CAREER FAIR for our students interested in working in the HVAC industry. We have had excellent company participation and student turnout at each of the four fairs we have held so far.

5. Instrumental in our campus joining the America Makes coalition of companies and universities. America Makes is the nation's leading public-private partnership for additive manufacturing technology and education.

6. Established Metal Additive Manufacturing as a core research area in the MEES Department. Our research expertise in metal AM spans the entire spectrum of metal AM processes starting from powders to finished products. We are currently in the middle of building a state-of-the-art metal AM lab with over 2 million investment.

7. Secured a donation of a metal AM printer (valued at over 130k) from a company in 2023.

8. Supported and Implemented a Peer Teaching Plan called Academic Success Plan (ASP) to provide support to sophomores in the foundational courses of Statics and Solids.

9. With the help of our Undergraduate Program Director, introduced a minor in Mechanical Engineering for non-mechanical engineering STEM students.

10. Hired adjunct faculty from the industry to teach tech electives focusing on sustainability, decarbonization, and motorsports.

11. Successfully turned around a faltering and once-popular undergraduate concentration in motorsports to an exciting and once-again popular and thriving concentration in our undergraduate program by hiring new lab managers and faculty with years of experience in the NASCAR industry. The concentration now has approximately 200 students. In 2023, we started a formula SAE electric vehicle (FSAE-E) team. This is in addition to the FSAE internal combustion engine team that we already have.

12. Worked with the faculty and staff in our motorsports program in writing proposals and securing funding from Kulwicki Foundation for our FSAE teams and motorsports activities.

13. Instrumental in establishing an MOU between UNC Charlotte and the Universitat Politècnica de València, Alcoy campus for student and faculty exchange. In addition, traveled to Colombia, Peru, and India to establish MOUs with UNC Charlotte for student recruitment to our graduate programs.

14. During the challenging period of COVID-19 restrictions, I had the privilege of successfully shepherding our department. Our department navigated the unprecedented challenges posed by the pandemic with resilience and adaptability. I implemented a robust remote learning infrastructure, while prioritizing the well-being of our students and faculty, to ensure the continuity of education, enabling our faculty and students to engage in virtual classrooms and maintain academic progress. Through effective leadership and collaboration, we emerged from this period stronger and more prepared to face future challenges.

Experience as the Department Graduate Coordinator

I served as the Graduate Program Coordinator for the Department of Mechanical Engineering and Engineering Science from 2003 to 2011, and again from 2018 to 2019. In this role, my responsibilities included admissions, curriculum development, and student support. I acted as a liaison between the department and the graduate school, managed teaching assistant assignments and graduate student awards, and oversaw recruitment activities. I also maintained the graduate program section of the departmental website and provided guidance and mentoring to our graduate students throughout their academic journey.
In addition to these core responsibilities, I collaborated closely with faculty to support their graduate student needs and worked with the International Student and Scholar Office (ISSO) to address international student matters. I was also charged with evaluating and improving our program, managing resources effectively, and representing the program's interests both within the university and to external stakeholders.

Some of my accomplishments as Graduate Coordinator include:

1. Supporting and implementing student research experience for undergraduates (SREU) programs: These initiatives aimed to attract our own undergraduate students to pursue graduate studies within our department.

2. Expanding international recruitment: I traveled to Colombia, Peru, and India to establish Memorandums of Understanding with various universities for student recruitment and to explore faculty exchange opportunities.

3. Cultivating a supportive advising environment: I prioritized an empathetic and personalized approach to advising, ensuring graduate students received the guidance and support they needed to thrive.

Awards and Honors

1. Keynote Speaker at the International Multifunctional Materials conference in Allahabad, India, 2014. My presentation was on the modeling of targeted drug-delivery systems.

2. Keynote Speaker, Second International Conference on Simulation, Modeling and Analysis, COSMA 2011, Amrita University, December 2011.
3. Chair, Materials Processing and Manufacturing Technical Committee, ASME, 2011-2014.
4. Vice Chair, Materials Processing and Manufacturing Technical Committee, ASME, 2009-2011.
5. Fulbright-Nehru Senior Research Fellow to India, 2010-2011.
6. Recipient of the Harshini V. de Silva Graduate Mentoring Award, 2011.
7. Executive Committee Member of Phi Beta Delta Honor Society, 2009-2013.
8. Past Member of the advisory committee for Center for Teaching and Learning.
9. Invited Guest of the Department of Mechanical Engineering, Indian Institute of Science, Bangalore, 2009.
10. Nominated for the College of Engineering Outstanding Undergraduate Teaching Award, 2007.
11. Invited speaker in the Department of Theoretical and Applied Mechanics, University of Illinois at Urbana-Champaign, 2006.
12. Recipient of the 2002-2003 College of Engineering Graduate Teaching Award.
13. Recipient of the 2001-2002 Maxheim Faculty Research Fellowship.
14. Recipient of the Tau Beta Phi award for excellence in teaching at the University of North Carolina at Charlotte, 2000.
15. Nominated for the Alcoa Foundation outstanding faculty award, 1999.
16. Recipient of the Tau Beta Phi award for excellence in teaching at the University of North Carolina at Charlotte, 1998.
17. Recipient of the J.O. Smith award for outstanding teaching by a graduate student, Department of Theoretical and Applied Mechanics, The University of Illinois at Urbana-Champaign, 1995.

Funded Research Projects

My 27 years as a faculty member have been dedicated to diverse research using computational methods. My expertise spans manufacturing processes, thermal metrology, targeted drug delivery, super-alloy behavior, particle-based methods, and machine learning's transformative role in manufacturing and materials science. This multifaceted and diverse work has garnered approximately 5.6 million dollars in funding from the DoD, NSF, industry, and UNC Charlotte. The following is a list of various funded projects.

1. *IGE: Reimagining the STEM Doctorate: The Pathways to Entrepreneurship (PAtENT) program*, PI: Praveen Ramaprabhu, co-PIs: Harish P. Cherukuri, Mesbah Uddin, David Pugalee, and Terry Xu, Funded by the National Science Foundation, 2020-Current, **Amount: $500,000.**
2. *In-Process Turning Metrology and Data Learning*, PI: Harish P. Cherukuri, funded by Lawrence Livermore National Laboratories, 2019-2020. **Amount: $240,000.**
3. *Retooling Veterans with Service- and Combat-Connected Disabilities in Advanced Virtual Engineering*, Investigators: Mesbah Uddin (PI), Jerry Dahlberg (co-PI) and Harish P. Cherukuri (co-PI). **Amount: $750,000.**

4. *Machine Learning in Manufacturing*, I was the lead PI on an NC ROI grant with the participating institutions being UNC Charlotte, Fayetteville State University and NCSU, funded by the State of North Carolina, August 2018-July 2023. **Amount: $1,600,000.**

5. *Advanced Modeling and Simulation in Additive Manufacturing*, Investigators: Harish Cherukuri (PI), Ahmed El-Ghannam and Joshua Tarbutton, funded by DoD, September 2018 - August 2021. **Amount: $600,000.**

6. *Discrete Element Method in Powder Processing*, Investigators: Harish P. Cherukuri and Miguel Pando, funded by UNC Charlotte, August 2018 - May 2019. **Amount: $\approx$ $25,000.**

7. *Design of Air-Preheater Seals*, Investigators: Nenad Sarunac and Harish P. Cherukuri, Funded by Paragon, Funding Period: July 2013-June 2014. **Amount: $\approx$ $78,000.**

8. *Fracture mechanics methodology for piping elbows and tees to support LBB analysis*, Investigator: Harish P. Cherukuri and Kannan Subramanian, Funded by EPIC, UNC-Charlotte, Funding Period: 2010. **Amount: $\approx$ $22,000.**

9. *Response of copper wire cables due to compressive loading*, Investigator:Harish P. Cherukuri, Funded by CommScope, Funding Period: 2008. **Amount: $\approx$ $30,000.**

10. *Prediction of Microstructure During Multistand Rolling of Inconel 718 and Waspaloy*, Investigator: Harish P. Cherukuri, Funded by Allvac, An Allegheny Technologies Company, Funding Period: 2006-2007. **Amount: $\approx$ $72,000.**

11. *Machining of Ceramics*, Investigator: Harish P. Cherukuri, Funded by Western Michigan University as a subcontract, Funding Period: 2004-2006. **Amount: $\approx$ $120,000.**

12. *Design of Profiled Thrust Bearings*, Investigators: Noah D. Manring, R.E. Johnson, Harish P. Cherukuri and John Litherland, Funded by NSF and Caterpillar, Funding Period: 2001-2004. **Amount: $\approx$ $640,000.**

13. *Machining of Ceramics*, Investigators: R.J. Hocken, John Patten and Harish P. Cherukuri, Funded by NSF, Funding Period: 1999-2002. **Amount: $\approx$ $220,000.**

14. *Integrated Process Models to Predict Thermal Distortion and Residual Stress*, Investigators: Harish P. Cherukuri, R.E. Johnson, R.G. Keanini and R.E. Smelser, Funded by NSF, Funding Period: 1999-2003. **Amount: $\approx$ $335,000.**

15. *Fixturing Effects on Dimensional Measurements*, Investigators: Harish P. Cherukuri, K.S. Smith and Bethany Woody, Funded by UNC-Charlotte Center for Precision Metrology Affiliates Program, Funding Period: 2003. **Amount: $\approx$ $5,000.**

16. *Thermal Issues in Metrology*, Investigators: Harish P. Cherukuri and E. P. Morse, Funded by UNC-Charlotte Center for Precision Metrology Affiliates Program, Funding Period: 2002-2004. **Amount: $\approx$ $70,000.**

17. *Modeling of Fiber-Optic Cable Crush tests*, Investigators: Harish P. Cherukuri and Paul H. DeHoff, Funded by Commscope, Funding Period: 2001-2002. **Amount: $\approx$ $30,000.**

18. *CAD-Based Thermal Soakout, Extension*, Investigators: Harish P. Cherukuri and R.G. Wilhelm, Funded by UNC-Charlotte Center for Precision Metrology Affiliates Program, Funding Period: 1999-2001. **Amount: $\approx$ $65,000.**

19. *CAD-Based Thermal Soakout*, Investigators: Harish P. Cherukuri and R.G. Wilhelm, Funded by UNC-Charlotte Center for Precision Metrology Affiliates Program, Funding Period: 1997-1999. **Amount: ≈ $54,000.**

20. *Determination of Stiffness Characteristics of a Pressure Sensor*, Investigators: Stuart T. Smith and Harish P. Cherukuri, Funded by IBM, Funding Period: 1999. **Amount: ≈ $13,000.**

21. *Investigation of Thermal Cracking of Nickel-Based Ingots*, Investigator: Harish P. Cherukuri, Funded by Allvac, An Allegheny Technologies Company, Funding Period: 1997-98. **Amount: ≈ $4,000.**

22. *DEFENSE UNIVERSITY RESEARCH INSTRUMENTATION PROGRAM: High-Speed Photography of Dynamic Processes in Materials*, Principal Investigator: Dr. Qiuming Wei, Co-Investigators: Drs. Howie Fang and Harish P. Cherukuri, 2007. **Amount: ≈ $178,348.**

23. *Sun Microsystems: A Matching Grant from Sun Microsystems*, Principal Investigator: Harish P. Cherukuri, Co-Investigators: Drs. Robert G. Wilhelm and Charles E. Price, 2002. **Amount: $40,000**.

Chapters in Books

1. A Chapter in *Basics of Precision Engineering*, Ed. by Richard Leach and Stuart Smith, 2018.

2. Baines-Jones, V., Baird, P., Cherukuri, H., Ferrucci, M., Flack, D., Goldsmith, M., ... & Lee-Bennett, I. *Beautiful Equations*, 2017.

3. J.A. Patten, H.P. Cherukuri, and J. Yan, *Ductile Regime Machining of Semiconductors and Ceramics*, A Chapter in "High Pressure Surface Science and Engineering", Edited by Slova Domnich and Yuri Gogotsi, the Institute of Physics, pp. 541-631, 2004.

4. R.E. Johnson and H.P. Cherukuri, *Chatter in Rolling Processes*, Chapter 4, "Dynamics and Chaos in Manufacturing Processes", edited by Professor F. Moon, Wiley Series in Nonlinear Science, pp. 93-124, 1998.

Select List of Peer-Reviewed Publications

1. Ojal N, Cherukuri HP, Schmitz TL, Devlugt KT, Jaycox AW. *A combined experimental and numerical approach that eliminates the non-uniqueness associated with the Johnson-Cook parameters obtained using inverse methods*. The International Journal of Advanced Manufacturing Technology. 2022 May;120(3-4):2373-84.

2. Ojal N, Copenhaver R, Cherukuri HP, Schmitz TL, Devlugt KT, Jaycox AW. *A Realistic Full-Scale 3D Modeling of Turning Using Coupled Smoothed Particle Hydrodynamics and Finite Element Method for Predicting Cutting Forces*. Journal of Manufacturing and Materials Processing. 2022 Mar 11;6(2):33.

3. Hashemitaheri M, Mekarthy SM, Cherukuri H. *Prediction of specific cutting forces and maximum tool temperatures in orthogonal machining by Support Vector and Gaussian Process Regression Methods*. Procedia Manufacturing. 2020 Jan 1;48:1000-8.

4. Mandloi K, Allen A, Cherukuri H, Miller J, Duttrer B, Raquet J. *CFD and experimental investigation of AM surfaces with different build orientations*. Surface Topography: Metrology and Properties. 2023 Jul 14;11(3):034001.

5. Mandloi K, Evans C, Fox J, Cherukuri H, Miller J, Allen A, Deisenroth D, Donmez A. *Toward specification of complex additive manufactured metal surfaces for optimum heat transfer*. Proc. Jt. Spec. Interest Group Meet. Euspen ASPE, St. Gallen, Switzerland. 2021 Sep 23.

6. Mandloi K, Evans C, Fox J, Cherukuri H, Miller J, Allen A, Deisenroth D, Donmez A. *Toward specification of complex additive manufactured metal surfaces for optimum heat transfer*. Joint Special Interest Group meeting between euspen and ASPE Advancing Precision in Additive Manufacturing, St. Gallen, CH.

7. Shaikh SA, Cherukuri H, Khan T. Recovering the Forcing Function in Systems with One Degree of Freedom Using ANN and Physics Information. Algorithms. 2023 May 12;16(5):250.

8. Gawande K, Kiran R, Cherukuri HP. *A numerical study of the response of buried steel pipelines undergoing strike-slip fault.* Engineering Failure Analysis. 2019 Aug 1;102:203-18.

   Cherukuri H, Perez-Bernabeu E, Selles M, Schmitz T. *Machining chatter prediction using a data learning model. Journal of Manufacturing and Materials Processing*. 2019 Jun 8;3(2):45.

9. Cherukuri H, Perez-Bernabeu E, Selles MA, Schmitz TL. *A neural network approach for chatter prediction in turning*. Procedia Manufacturing. 2019 Jan 1;34:885-92.

10. Bobba, D., Ramaprabhu, P. & Cherukuri, H.P., *An integrated DEM-FEM Modeling of Almen Strip Tests*, submitted to ASME Manufacturing Science and Engineering Conference MSEC-NAMRC 47 2019.

11. Patel, J. & Cherukuri, H.P., *Chip morphology studies using separate fracture toughness values for chip separation and serration in Orthogonal machining simulations*, NAMRC-MSEC 2018, College Station, TX.

12. Shahinian, H., Hassan, M., Cherukuri, H., & Mullany, B. A., *Fiber Based Tools for Precision Polishing Applications*, Conference Proceedings, American Society for Precision Engineering 2017, Charlotte, NC.

13. Shahinian, H., Hassan, M., Cherukuri, H., & Mullany, B. A., *Fiber-based tools: material removal and mid-spatial frequency error reduction*, Applied optics, 56(29), 8266-8274, 2017.

14. Hossein Shahinian, B.A. Mullany, and H.P. Cherukuri, *An Evaluation of Fiber-Based Tools for Glass Polishing using Experimental and Computational Approaches*, Applied Optics, Vol 55, Issue 16, Pages 4307-4316, 2016.

15. C.S. Avachat and Cherukuri, H.P., *A parametric study of the modeling of orthogonal machining using the smoothed particle hydrodynamics method*, Conference proceedings of IMECE2015, Houston, Texas, Nov 2015.

16. Dorduncu M, Apalak MK, Cherukuri HP. *Elastic wave propagation in functionally graded circular cylinders*. Composites Part B: Engineering. 2015 May 1;73:35-48.

17. K. Subramanian and H.P. Cherukuri, *Prediction of microstructure evolution during multi-stand shape rolling of nickel-base superalloys*, Integrating Materials and Manufacturing Innovation, SpringerOpen Acess Journal, 3-27, 2014.

18. C.S. Jog and Cherukuri H.P., *A reexamination of some puzzling results in linearized elasticity*, Sadhana, 39(1), 139–147, 2014.

19. S.A. Shaik, K. Bose, and, H.P. Cherukuri, *A study of durability of hip implants*, Materials and Design, Vol. 42, pp. 230-237, 2012.

20. K.S. Smith, R.G. Wilhelm, B. Dutterer, H.P. Cherukuri, and G. Goel, *Sacrificial structure preforms for thin-part machining*, CIRP Annals - Manufacturing Technology, Volume 61, Issue 1, pp. 379-382, 2012.

21. R. Mariayyah, J.A. Patten and H.P. Cherukuri, *Toolwear during single-point diamond turning of Silicon Carbide*, the Journal of Machining Science and Technology, in print.

22. G.R. Schweinsberger, C.M. Cilip, S.R. Trammell, H.P. Cherukuri and N.M. Fried, *Noninvasive laser coagulation of the human vas deferens: Optical and thermal simulations*, Lasers in Surgery and Medicine, Volume 43, Issue 5, pages 443-449, July 2011.

23. H.P. Cherukuri, P. Ulysse, R.E. Smelser, K. Subramanian and D. Kotaru, *Prediction of Thermal Distortion of Quenched Extruded Shapes Using Generalized Plane Strain Theory*, AIP Conference Proceedings, Volume 1252, pp. 173-180, 2010.

24. B.S. Jang and H.P. Cherukuri, Laser generated elastic waves in a semi-infinite domain, pp. 219-220, Vol. 3, No. 2, Journal of the Korean Society for Industrial and Applied Mathematics, 2007.

25. R. Mariayyah, K. Bose, and H.P. Cherukuri, *A numerical investigation of the feasibility of pressure-induced phase transformations during machining of silicon carbide*, Numiform '07, Materials Processing and Design: Modeling, Simulation and Applications, Ed. by J.M.A. Cesar de Sa and A.D. Santos, pp. 1167-1172, June 2007.

26. K. Subramanian, R. Minisandram, R. and H.P. Cherukuri, *Mesh Rezoning in Multistand Rolling*, Numiform '07, Materials Processing and Design: Modeling, Simulation and Applications, Ed. by J.M.A. Cesar de Sa and A.D. Santos, pp. 1187-1182, June 2007.

27. X. Ling, H. P. Cherukuri, R. E. Smelser and P. T. Wang, , *Effect of quenching paths on hardness in an infinitely long cylinder*, International Journal of Material and Product Technology, Invited Paper, (A Special issue on Quenching and Distortion), Volume 25, No. 1-4, pp. 345-360, 2005.

28. X. Ling, Mark Horstmyer and H.P. Cherukuri, *A hybrid regularization model for inverse heat conduction problems*, International Journal for Numerical Methods in Engineering, Volume 65, No. 13, pp. 2246-2264, 2005.

29. X. Ling, H.P. Cherukuri and R.G. Keanini, *A noniterative finite element method for inverse heat conduction*, International Journal of Numerical Methods in Engineering, Volume 56, No. 9, pp. 1315-1334, 2003.

30. X. Ling, H.P. Cherukuri and R.G. Keanini, *A modified sequential function specification finite element-based method for parabolic inverse heat conduction problems*, Computational Mechanics, Volume 36, No. 2, 117-128, 2005.

31. S. K. Ajjarapu, J. A. Patten, H. P. Cherukuri and C. Brand, *Numerical simulations of ductile regime machining of silicon nitride using the Drucker-Prager material model*, Journal of Mechanical Engineering Science, Proceedings of Institution of Mechanical Engineers, Vol.218, Part C, pp. 577-582, 2004.

32. X. Ling, R. Keanini, H.P. Cherukuri and R.E. Smelser, *An Inverse Method for Estimating Surface Heat Fluxes with Applications to a Quenching Problem*, Materials Processing and Design: Modeling, Simulation and Applications-NUMIFORM 2004-Proceedings of the 8th International Conference on Numerical Methods in Industrial Forming Processes, Ed. by Somnath Ghosh, June K. Lee and Jose C. Castro, pp. 1191-1196, June 2004.

33. S. Ajjarapu, R.R. Fesperman, John A. Patten and H.P. Cherukuri *Experimental and Numerical Investigation of Ductile Regime Machining of Silicon Nitride*, Materials Processing and Design: Modeling, Simulation and Applications-NUMIFORM 2004-Proceedings of the 8th International

Conference on Numerical Methods in Industrial Forming Processes, Ed. by Somnath Ghosh, June K. Lee and Jose C. Castro, pp. 1377-1383, June 2004.

34. C. Alderman, C.E. Brawner, H.P. Cherukuri, R.K. Ingle, T. K. Miller and S. A. Rajala, *Partnerships Increase Access to Engineering Education: North Carolina's Two+Two Experience*, Technological Horizons in Education, Volume 30, No. 3, 2002.

35. N.D. Manring, R.E. Johnson and H.P. Cherukuri, *The Impact of Linear Deformations on Stationary Hydrostatic Thrust Bearings*, Journal of Tribology, Volume 124, No. 4, pp. 874-877, 2002.

36. X. Ling, and H.P. Cherukuri, *Stability analysis of plane wave motions in elastic solids*, Computational Mechanics, Volume 29, No. 4-5, pp. 430-440, 2002.

37. B. Chakravarthy, H.P. Cherukuri and R.G. Wilhelm, *Prediction of temperature changes during soakout using FEA*, Precision Engineering: Journal of the International Societies for Precision Engineering and Nanotechnology, Vol. 26, No. ER1, pp. 15-23, 2002.

38. T.G. Kumbera, H.P. Cherukuri, J.A. Patten, C.J. Brand and T.D. Marusich, *Numerical Simulations of Ductile Machining of Silicon Nitride with a Cutting Tool of Defined Geometry*, Proceedings of the 5th CIRP workshop on modeling of machining operations, pp 41-45, May 2002.

39. T.G. Kumbera, H.P. Cherukuri,J.A. Patten, C.J. Brand and T.D. Marusich, *Numerical Simulations of Ductile Machining of Silicon Nitride with a Cutting Tool of Defined Geometry*, Proceedings of the 4th CIRP workshop on machining models at TUDelft, pp. 7-10, August 2001.

40. T. G. Kumbera, H.P. Cherukuri, J.A. Patten, C.J. Brand and T.D. Marusich, *Numerical Simulations of Ductile Machining of Silicon Nitride with a Cutting Tool of Defined Geometry*, Journal of Machining Science and Technology, Volume 5, No. 3, pp. 341-352, 2001.

41. H.P. Cherukuri and R.E. Johnson, *Modelling of vertical continuous casting process with temperature-dependent material properties*, International Journal of Mechanical Sciences, Volume 43, No. 5, pp. 1243-1257, 2001.

42. H.P. Cherukuri, *Dispersion analysis of plane wave motions in an isotropic elastic solid*, Computational Mechanics, Volume 25, No. 4, pp. 317-328, 2000.

43. R.E. Johnson, and H.P. Cherukuri, *Vertical continuous casting of bars*, Proceedings of the Royal Society, Series A: Mathematical, Physical and Engineering Sciences, Volume 455, pp. 227-244, 1999.

44. A. Acharya, H.P. Cherukuri, and S. Govindarajan, *A new proposal in gradient plasticity: theory and application in 1-D quasi-statics and dynamics*, Mechanics of Cohesive-Frictional Materials, Volume 4, pp. 153-170, 1999.

45. R.E. Johnson and H.P. Cherukuri, *An approximate model of rod casting*, Numiform '98, Simulation of Materials Processing: Theory, Methods and Applications, Edited by Hutink, J. and Baaijens, F.P.T., pp. 669-673, 1998.

46. H.P. Cherukuri, R.E. Johnson, and R.E. Smelser, *A rate-dependent theory for hot-rolling*, International Journal of Mechanical Sciences, Volume 39, No. 6, pp. 705-727, 1997.

47. H.P. Cherukuri and R.E. Johnson, *On the Role of Interstand Tension in the Chatter Vibrations of Rolling-Mills*, ASME MED Volume 4, 1996.

48. H.P. Cherukuri, R.E. Johnson and R.E. Smelser, *A rate-dependent model for hot-rolling*, Journal of the Idaho Academy of Science, Volume 32, No. 1-2, June/December, pp. 52-58, 1996.

49. H.P. Cherukuri and T.G. Shawki, *On shear-band nucleation and finite propagation speed of thermal disturbances*, International Journal of Solids and Structures, Volume 34, No.4, pp. 435-450, 1997.

50. H.P. Cherukuri and T.G. Shawki, *An accurate finite-difference scheme for elastic-wave propagation in a circular disk subjected to impact loading*, Journal of the Acoustical Society of America, Volume 100, No. 4, pp. 2139-2155, 1996.

51. H.P. Cherukuri and R.E. Johnson, *On the role of interstand tension in the chatter vibrations of rolling-mills*, ASME MED Volume 4, 1996.

52. H.P. Cherukuri and T.G. Shawki, *Energy-based localization theory, Part 1: Basic framework*, International Journal of Plasticity, Volume 11, No. 1, pp. 15-40, 1995.

53. H.P. Cherukuri and T.G. Shawki, *Energy-based localization theory, Part 2: Effects of the diffusion, inertia and dissipation numbers*, International Journal of Plasticity, Volume 11, No.1, pp. 41-64, 1995.

54. T.G. Shawki, R.A. Sherif and H.P. Cherukuri, *Characterization of the Flow Localization History in Dynamic Viscoplasticity*, Applied Mechanics Reviews, Volume 45, No. 3, Part 2, pp. 149-153, 1992.

Graduate Student Mentoring

I have a strong record of mentoring graduate students in my (previous) role as the Graduate Program Coordinator for the MEES Department for over eight years and as a faculty and researcher. I served as the mentor and dissertation advisor to 14 Ph.D. students and over 40 MS students. In addition, I served on the thesis committees of over 20 Ph.D. students from the MEES Department, Civil Engineering, Electrical Engineering, and Mathematics. Currently, I have two Ph.D. students in my group and also co-advising another student.

A select list of Ph.D. theses under my supervision are listed below:

1. *Investigation of gas metal arc welding as a potential method for additive manufacturing of magnesium alloys*. Ph.D. Candidate: Christoph Kossack.

2. *Investigation of Thermal and Fluid Flow Characteristics of AM Surfaces with Different Build Orientations Through CFD and Experiments*. Ph.D. Candidate: Kuldeep Mandloi.

3. *Machining and Chatter Avoidance: Predictive Analytics and Uncertainty Analysis.* Ph.D. Candidate: Maryam Hashemitaheri.

4. *Modeling of machining using a combined Finite Element (FE) and Smoothed Particle Hydrodynamics (SPH) method*. Ph.D. Candidate: Nishant Ojal.

5. *Thermomechanical Modeling and Analysis of Precision Glass Molding Process*. Ph.D. Candidate: Dhanooj Bobba.

6. *Microstructural Modeling During Multi-Pass Rolling of a Nickel-Base Superalloy*, Ph.D. Candidate: Kannan Subramanian.

7. *Experimental and numerical studies on ductile regime machining of silicon carbide and silicon nitride*. Ph.D. Candidate: Ravishankar Mariayyah.

Teaching

I am passionate about teaching, always seek to foster a dynamic and engaging learning environment in classroom, and strive to enable students to think critically and creatively. I seek to improve my teaching continuously through the incorporation of new teaching pedagogies, technologies, and by seeking feedback from peers and students. I

have written proposals to NSF on the use of adaptive learning in the classroom to provide diverse pathways of learning to students in order to increase student success and retention rates.
In the following table, I listed various courses I taught over the years here at UNC Charlotte.

Course	Level
MEGR2144 (Introduction to Solid Mechanics)	Undergraduate
MEGR2240 (Computational Methods in Engineering)	Undergraduate
MEGR3225 (Introduction to Finite Element Analysis)	Undergraduate
MEGR6141 (Theory of Elasticity)	Graduate
MEGR7090 (Discrete Element Method, an Introduction)	Graduate
MEGR7108 (Introduction to Finite Elements)	Graduate
MEGR7090 (Engineering Analysis)	Graduate
MEGR7090 (Theory of Plasticity)	Graduate
MEGR7090 (Computational Plasticity)	Graduate
MEGR7090 (Computational Methods in Engineering)	Graduate
MEGR7090 (Machine Learning in Manufacturing and Materials	Graduate

References

Dr. Mark Barkey
Head and Professor
Department of Aerospace Engineering & Mechanics
University of Alabama, Tuscaloosa
✉ mbarkey@ua.edu
☎ (205) 348-1621

Dr. Robin Coger
Provost and Professor
Academic Affairs
Eastern Carolina University
✉ provostoffice@ecu.edu
☎ (252) 328-5419

Dr. Matt Davies
Director of Applications Engineering & Training
Moore Nanotechnology Systems
✉ matt.davies@nanotechsys.com
☎ (980) 580-6530 (ext. 603)

Dr. Taufiquar Khan
Chair and Professor
Department of Mathematics and Statistics
UNC Charlotte
✉ taufiquar.khan@charlotte.edu
☎ (704) 687-0635

Dr. Ronald E. Smelser
Professor
Department of Mechanical Engineering and Engineering Science
UNC Charlotte
✉ rsmelser@charlotte.edu
☎ (704) 687-8245

Dr. Stuart T. Smith
Professor
Department of Mechanical Engineering and Engineering Science
UNC Charlotte
✉ stusmith@charlotte.edu
☎ (704) 687-8351