COLLEGE OF ENGINEERING
FACULTY AREAS OF EXPERTISE BY DEPARTMENT
Academic Year 2019-2020

DEPARTMENT OF CHEMICAL ENGINEERING		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Arce, Pedro **Chair** and Professor	parce@tntech.edu (931) 372-3267	Nanostructured materials-*With Functional Performance* (Health Care Engineering Applications: Hydrogels for clinical diagnostics, wound healing, math-assisted medicine, tissue scaffolds and assisted drug delivery) • Micro- and Nano-flows in Biophysical Systems (Microcirculatory and renal system pathologies, arterial stenosis, kidney failure, etc.) • Environmental catalysis (Advanced oxidation in water, soil and air; photocatalytic clean energy production, electrokinetics-based remediation; battery and fuel cell materials) • Engineering education: (collaborative-, creative- and innovation-driven learning; constructionistic approaches)
Arias Chavez, Laura H. Assistant Professor	lchavez@tntech.edu (931) 372-3678	Improving sustainability at the water - energy nexus, especially through the use of membrane technologies. • Fabrication and characterization of polymeric membranes for reverse osmosis, forward osmosis, and filtration processes. • New fabrication strategies for improving membrane fouling resistance and selectivity. • Development and evaluation of applications in desalination and the recovery of materials and energy from 'waste' water and other non-traditional resources. • Experimental (wet chemistry) work and process-level modelling.
Biernacki, Joseph J. Professor	jbiernacki@tntech.edu (931) 372 3667	Modeling of multi-scale materials systems composite concrete systems
Ghorashi, Bahman Professor	bghorashi@tntech.edu (931)372-3224	Agile Manufacturing • Rheology and non-Newtonian fluid flow • Blockchain Technology and its applications in chemical industry • M2M communication and logistics • Leadership in Higher Education
Jorgensen, Stephanie Instructor	sjorgensen@tntech.edu (931)-372-3666	WOUND HEALING: Development of modified early-phase wound environments • Experimental and analytical modeling of drug delivery and transport through early-phase wound environments • Skin-on-a-Chip
Padmanabhan, Venkat Assistant Professor	vpadmanabhan@tntech.edu (931) 372-3606	Polymer membranes for gas separation • Thermo-mechanical and flow properties of polymer nanocomposites • Materials for energy storage and transfer
Rice, Cynthia A. Associate Professor	crice@tntech.edu (931) 372-6059	Polymer electrolyte fuel cells: electrocatalysis, mass transport materials, durability/performance, and diagnostics.
Sanders, Robby Associate Professor	rsanders@tntech.edu (931) 372-2494	Bio-assay development • Drug delivery • Wound healing
Stretz, Holly Professor	hstretz@tntech.edu (931)372-3495	Research program in interfaces in 3-D printing • High-throughput on demand manufacturing of pharmaceuticals • Nanomaterials as sensors • Nanocomposite water treatment membranes • Expertise in polymer nanocomposites

Zhang, Liqun (Laura) Assistant Professor	lzhang@tntech.edu (931) 372-3474	Molecular simulation on biomass modified asphalt, warm mix asphalt • Simulations and modeling on structure and dynamics of human beta defensin type 3 • Interaction with lipid membranes and receptors
DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Badoe, Daniel A. Professor	dbadoe@tntech.edu (931) 372-3490	Urban travel demand modeling • Transportation data collection • Travel behavior analysis
Click, Steven Associate Professor	sclick@tntech.edu (931) 372-6464	Traffic signal design, timing, operations, and analysis • Traffic signal system design, timing, operations, and analysis • Non-traditional intersection design, operations, and analysis • Non-traditional interchange design, operations, and analysis • Highway traffic simulation modeling
Crouch, L. K. Professor	lcrouch@tntech.edu (931) 372-3196	Construction materials • Aggregates • Portland cement concrete • flowable fill • Bituminous materials.
Datta, Tania Associate Professor	tdatta@tntech.edu (931) 372-3446	Biological Wastewater Treatment Process and Design • Applied Environmental Microbiology • Water Quality/Watershed Management • Bioenergy Production through Anaerobic Processes • Low-Cost Technologies for Water and Sanitation in Developing Countries.
Henderson, Craig Professor	chenderson@tntech.edu (931)372-3062	Masonry, concrete and steel testing and design • Structural dynamics and earthquake engineering • Computational structural modeling
Huff, Tim Assistant Professor	thuff@tntech.edu (931) 372-3605	Earthquake engineering • Seismic design of structures • Ground motion selection and modification for structural analysis • Nonlinear analysis of structures in practice • Seismic isolation • Bridge design
Huo, Sharon Associate Provost and Professor	xhuo@tntech.edu (931) 372-3463	Structural analysis • Reinforced concrete design • Prestressed concrete design • Structural steel design • Bridge design
Kalyanapu, Alfred Associate Professor	akalyanapu@tntech.edu (931) 337-3561	Climate impacts • Computational hydraulics and Hydrology • Hydraulic/hydrologic modeling urban water management • Regional scale flood modeling and simulation
Liu, Jane Professor	jliu@tntech.edu (931) 372-3256	Composite materials • Vibration analysis, plates & shells • Computational mechanics symbolic computer systems in engr. applications • Computational algebraic geometry in nonlinear structural analysis
Mohr, Benjamin **Chair** and Associate Professor	bmohr@tntech.edu (931) 372-3454	Durability, microstructure, and chemistry of cement-based materials • Early-age behavior of cement and concrete • Fiber-reinforced concrete • Supplementary cementitious materials

NAME	CONTACT INFORMATION	RESEARCH INTERESTS AND EXPERTISE
Oswalt, Jessica Associate Dean of Academic Affairs for the College of Engineering and Professor	joswalt@tntech.edu (931) 372-3782	Engineering management including engineering economics • Project management • Process improvement • Systems modeling
Otuonye, Francis Professor and Associate VP of Research	fotuonye@tntech.edu (931) 372-3374	Geotechnical engineering • Mining engineering • Health and safety impacts
Ramirez, Guillermo Associate Professor	gramirez@tntech.edu (931) 372-3261	Theoretical and computational mechanics • Mathematical formulation and corresponding computer implementation to describe the electro-mechanical behavior of solids under different types of environments
VandenBerge, Daniel Assistant Professor	dvandenberge@tntech.edu (931) 372-3257	Rapid drawdown analysis • Behavior of compacted clays • Fully softened shear strength • Levee seepage • Dam failures • Geotechnical reliability analyses • Sustainable earth structures • Engineering education
Weathers, Lenly Associate Professor	lweathers@tntech.edu (931) 372-3539	Transport of pollutants in the environment • Transformation of chlorinated compounds • Oxidized metals and other pollutants in anaerobic environments in the presence of metallic iron
COMPUTER SCIENCE		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Alam, Mohammod Instructor	msalam@tntech.edu (931)-372-3379	Algorithms • Computer Communications (Networks)
Boshart, Mark Instructor	mboshart@tntech.edu (931)-372-3428	Computer Science Education • Computer Graphics • Computer Animation
Brown, Eric Adjunct Professor and Assistant Director of Cybersecurity Education, Research and Outreach Center	elbrown@tntech.edu (931)-372-3602	Cybersecurity risk assessment
Eberle, William (Bill) Professor	weberle@tntech.edu (931) 372-3278	Data Mining • Graph-based Anomaly Detection • Fraud Detection
Elizandro, David Professor	delizandro@tntech.edu (931) 372-3386	Institutional leadership • Strategic planning • Systems integration and effectiveness
Gannod, Gerald **Chair** and Professor	jgannod@tntech.edu (931) 372-3691	Software reverse engineering • Web and mobile development (specifically web services in enterprise computing) • Predictive analytics • Visualization • Agile approaches for computing education
Ghafoor, Sheikh Professor	sghafoor@tntech.edu (931) 372-3687	Parallel and Distributed Computing • High Performance Computing • Autonomic Resource Management for High Performance Computing Environment • Programming Model for Heterogeneous High Performance Computing Environment

NAME	CONTACT INFORMATION	RESEARCH INTERESTS AND EXPERTISE
Gupta, Manaak Assistant Professor	mgupta@tntech.edu	Foundational Cyber and Computer Security • Access Control Models • Formal Analysis, Secure Cyber Physical Systems • Smart and Connected Cars • Internet of Things • AI and Machine Learning assisted Security Solutions • Malware Clustering and Classification
Ismail, Muhammad Assistant Professor	mismail@tntech.edu	Cyber-physical security • Networking • Smart grids • Blockchain • Resource allocation • Machine learning • Optimization • Stochastic modeling
Kosa, Martha Associate Professor	mjkosa@tntech.edu (931) 372-3579	Theoretical problems in distributed computing
Rahman, Akond Assistant Professor	arahman@tntech.edu	DevOps • Software Analytics, and Software Security • Static analysis • Qualitative analysis • statistical methods • Supervised and unsupervised learning techniques.
Rogers, Michael Professor	mrogers@tntech.edu (931)-372-6304	GPGPU Computing • Distributed Computing • Distributed Shared Memory • Operating Systems • Network Protocols
Scott, Stephen Professor	sscott@tntech.edu (931) 372-6484	Cloud, cluster, and grid computing • Resilient high performance distributed, heterogeneous, and parallel computing
Shannigrahi, Susmit Assistant Professor	sshannigrahi@tntech.edu	Computer Networks, Future Internet Architectures • Networking IoT Devices • Future Mobile Communications
Siraj, Ambareen Professor and Director of Cybersecurity Education, Research and Outreach Center	asiraj@tntech.edu (931) 372-3448	Cyber security in smart grid • Network intrusion detection • Situational awareness in security • Security education
Talbert, Doug Associate Professor	dtalbert@tntech.edu (931) 372-6178	Artificial intelligence • Data analytics • Health information data analysis
Ulybyshev, Denis Assistant Professor	dulybyshev@tntech.edu (931)-372-6127	Data Privacy • Database / Cloud / OS / Web security • Information Retrieval (search engines, Search Engine Optimization) • SCADA systems / Manufacturing Execution Systems • Blockchain-based Technologies • Machine Learning (recommendation systems)
ELECTRICAL AND COMPUTER ENGINEERING		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Alouani, Ali T. Professor	aalouani@tntech.edu (931) 372-3383	Sensor fusion • Fuzzy logic control • Mechatronics systems
Austen, Jeffrey R. Associate Professor	jausten@tntech.edu (931) 372-3485	Signal processing • Communication systems
Baswell, Mike Lecturer	mbaswell@tntech.edu (931)-372-6156	Programmable Logic Controller • Control Systems • Battery Voltage Regulation
Belkacemi, Rabie Associate Professor	rbelkacemi@tntech.edu (931) 372-3626	Smart grid (power and energy systems)

Bhattacharya, Indranil Associate Professor	ibhattacharya@tntech.edu (931) 372-3352	High-Efficiency Solar Cells • High-Energy-Density Sodium and Lithium-ion Batteries • Wireless Power Transfer • Semiconductor Electronics • Photonics and Optics • Electromagnetics.
Bruce, J.W. Associate Professor	jwbruce@tntech.edu (931)372-3453	Data converter architectures • Embedded and cyber-physical systems design • Quantum computing logic systems • Integration of unmanned aerial vehicles in the national airspace • Engineering education
Bruce, Lori Professor, Provost, and VP of Academic Affairs	lbruce@tntech.edu (931) 372-3224	Remote sensing • Image analysis • Artificial intelligence • Data analytics • Hyperspectral imaging and precision agriculture
Carnal, Charles Professor	charleslc@tntech.edu (931) 372-3858	Robot control systems • Statistical signal analysis
Fouda, Mostafa Post-Doctoral Research Associate	mfouda@tntech.edu (931)-372-3450	Cyber Security • Wireless Networks • Deep Learning, Blockchain • IoT • Smart Grid
Hasan, Syed Associate Professor	shasan@tntech.edu (931) 372-3462	Artificial Intelligence for Edge Computing • Edge Intelligence • Security Threats in Deep Learning Architectures • Internet of Things' • Vulnerabilities against Hardware Based Attacks • Machine Learning Algorithms on Hardware
Johnson, Wayne Research	wjohnson@tntech.edu (931)-372-3460	Electronics Manufacturing • Extreme Environment Electronics
MacKenzie, Allen **Chair** and Professor	amackenzie@tntech.edu (931) 372-3397	Wireless Communications and Networking • Dynamic Spectrum Access Systems and Spectrum Policy • Cognitive Radio and Cognitive Networks • Applications of Game Theory and Auction Theory • Error Control Coding
Mahajan, Satish Professor and Director of Center for Energy Systems Research	smahajan@tntech.edu (931) 372-3760	Optoelectronics (Lasers; Solar Cells; Optical Fibers) • Electromagnetics • Wireless Charging of EVs • Sensors • Renewable Energy
Mahmoud, Mohamed Associate Professor	mmahmoud@tntech.edu (931) 372-3677	Security & Privacy in Smart Grid, Vehicular Ad Hoc Network (VANET), and Cloud Applications. • Secure/privacy-preserving Machine learning Models. • Blockchain • Cryptography and machine learning.
Ojo, Joseph O. Professor	jojo@tntech.edu (931) 372-3869	Electric machine analysis and design • Adjustable • Speed motor drives • Power electronic convertors • Control theory applied to power electronics and power systems, power systems economics and deregulation issues
Radman, Ghadir Professor	gradman@tntech.edu (931) 372-3520	Smart grid • Integration of renewable energy sources • Power system operation/control
GENERAL AND BASIC ENGINEERING		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Craven, Kristine Associate Professor	kcraven@tntech.edu (931)372-6027	Teaching and Learning Strategies • Student Success and Retention • First Year Engineering Programs

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Wells, S. Michael Assistant Professor	mwells@tntech.edu (931) 372-3829	Website development • Global engineering communication • Assisting international students in acclimating to American culture
Wilson, Christopher **Chair** and Associate Professor of Mechanical Engineering	chriswilson@tntech.edu (931) 372-3216	Composite materials testing • Materials properties • Simulation

MANUFACTURING AND ENGINEERING TECHNOLOGY		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Fidan, Ismail Professor	ifidan@tntech.edu (931) 372-6298	Additive Manufacturing • Smart Manufacturing • Electronics Manufacturing • STEM Education and Distance Learning/Remote Laboratories
Flatt, Larry Adjunct Professor	lflatt@tntech.edu	Fluid Power • Robotics
Kim, Duckbong Assistant Professor	dkim@tntech.edu (931) 372-3327	Advanced manufacturing, wire + arc additive manufacturing (WAAM), metal big area additive manufacturing (mBAAM), data analytics, machine vision, high temperature alloys, and high entropy alloys (HEAs)"
Vondra, Fred L. Professor	fvondra@tntech.edu (931) 372-3527	Metal casting processes • Foundry tooling materials • Industrial maintenance
Wilson, Dale **Interim Chair** and Professor of Mechanical Engineering	dwilson@tntech.edu (931) 372-3323	Fracture mechanics • Failure analysis • Machine design • MEMS • Mechanical properties of materials

MECHANICAL ENGINEERING		
NAME	**CONTACT INFORMATION**	**RESEARCH INTERESTS AND EXPERTISE**
Abounassif, Ahmed Adjunct Professor	aabounassif@tntech.edu (931)-372-6028	Computational Fluid Dynamics • Eulerian Multiphase Flow Simulations • Thermodynamics • Fluids Mechanics and Heat Transfer
Albakri, Mohammad Assistant Professor	malbakri@tntech.edu (931)-372-3265	Computational Mechanics • Structural Dynamics • Meta-Structures • Structural Health Monitoring • Advanced Manufacturing • Experimental Modal Testing
Anton, Steve Associate Professor	santon@tntech.edu (931) 372-3287	Smart materials • Piezoelectric sensing • Structural health monitoring • Biomedical sensing • Energy harvesting • 3D printing • Robotics-based STEM education
Brookshear, Daniel Instructor	wbrookshear@tntech.edu (931)-372-3272	Thermodynamics • fluids • heat transfer. Research has been with Oak Ridge National Laboratory/University of Tennessee focusing primarily on looking at and evaluating catalysts for the purpose of cleaning up automotive exhaust from gasoline and diesel engines.

Canfield, Stephen Professor	scanfield@tntech.edu (931) 372-6359	Mobile Robots for Inspection • Maintenance and Manufacturing of Mobile Manipulators • Cobot (Collaborative robot) design and applications • Climbing robots • Mechatronics applications in robotics and manufacturing • Robotics for manufacturing • Design of Autonomous and semi-autonomous systems • Vehicle system mobility.
Chen, Pingen Assistant Professor	pchen@tntech.edu (931) 372-3310	Modeling, diagnostics, controls, and optimizations of automotive systems including conventional/hybrid/electric powertrains, internal combustion engines, emissions control systems, sensors, autonomous vehicles, and advanced engine combustion with alternative/renewable fuels.
Cui, Jie Assistant Chair and Professor	jiecui@tntech.edu (931)-372-3357	Computational Fluid Dynamics • Turbulence Modeling • Large Eddy Simulation • Numerical Heat Transfer • Thermal Fluids
Cunningham, Glenn T. Associate Professor	gcunningham@tntech.edu (931) 372-3826	Energy efficiency • Balance of plant energy systems • Thermal systems
Hill, Tristan Lecturer	thill@tntech.edu (931)-372-3774	Robotics • Programming • Numerical Modeling Analysis • Mechatronics • Dynamics of Machinery
Idem, Stephen Professor	sidem@tntech.edu (931) 372-3607	Scale model testing • Fluid flow measurement • Thermal modeling • Fluid mechanics • Heat transfer
Languri, Ethan Assistant Professor	elanguri@tntech.edu (931) 372-6790	Thermal energy storage systems • Heat transfer fluid enhancement • Evaporation in porous media • Industrial energy efficiency • Combined heat and power systems • Numerical modeling
Motevalli, Vahid Professor and Associate Dean of Research and Innovation	vmotevalli@tntech.edu (931) 372-3172	Hybrid-electric vehicle systems and power- train • Combustion and fire safety • Aviation and transportation safety and security
Pardue, Sally Associate Professor	spardue@tntech.edu (931) 372-6573	Random vibrations • Modal analysis • Non-destructive evaluation (NDE) • Machine design
Rao, Mohan **Chair** and Professor	mrao@tntech.edu (931) 372-3254	Vibrations • Acoustics • Noise control • Damping design • Sound quality • Auditory engineering
Slater, Joseph **Dean** and Professor of Mechanical Engineering	jslater@tntech.edu (931)-372-3832	Vibration of structures and machines • Aeroelasticity • Linear and Nonlinear System identification • Experimental Modal Analysis • Nonlinear Dynamics • Cyber Physical Systems • Morphing Wing Control • Turbomachinery Blade Vibration
Sundaram, Meenakshi R. Professor	msundaram@tntech.edu (931) 372-3790	Product design and development • Production • Systems design and operations management • Lean manufacturing and process improvements • Economic analysis and cost justification
Ting, Kwun-Lon Professor	kting@tntech.edu (931) 372-3230	Mechanism design • Kinematics • Machine design • Gearing • Robotics • Dynamics of machines
Vaselbehagh, Ahmad Assistant Professor	avaselbehagh@tntech.edu (931) 372-6468	Thermal-Fluid Sciences for Energy Conversion and Storage Applications • Fluid-Structure Interactions • Turbulence

Wilson, Christopher Associate Professor and Chair of General and Basic Engineering	chriswilson@tntech.edu (931) 372-3216	Composite materials testing • Materials properties • Simulation
Wilson, Dale Interim Chair of Manufacturing and Engineering Technology, and Professor	dwilson@tntech.edu (931) 372-3323	Fracture mechanics • Failure analysis • Machine design • MEMS • Mechanical properties of materials
Zhang, Ying Professor and Director of Center for Manufacturing Research	yzhang@tntech.edu (931) 372-3969	High-temperature protective coatings for gas turbine engine applications • Materials synthesis via chemical vapor deposition/pack cementation/electrodeposition • High-temperature oxidation and corrosion
Zhu, Jiahong (John) Professor	jzhu@tntech.edu (931) 372-3186	Solid oxide fuel cell • Zn-air batteries • High-temperature alloys • Processing of ceramic • Intermetallic and metallic coatings
CENTER FOR ENERGY SYSTEMS RESEARCH NAME CONTACT INFORMATION RESEARCH INTERESTS AND EXPERTISE		
Van Neste, Charles Research Assistant Professor	cvanneste@tntech.edu (931) 372-3682	Alternative forms of energy generation and transmission with a major focus in wireless and quasi-wireless power transfer • High frequency inverter design • Electronic instrumentation • Electromagnetic interactions

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