

Robert J. Kerestes, Ph.D.

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Research Interests

Engineering Education, STEM Curriculum Development, Electric Power Distribution Systems, Distributed Energy Resource Management, Arc Flash, Mathematical Modeling and Simulation of Physical Systems, Power Systems Control & Stability, Smart Grid Technology, Electric Machinery, and Power Quality.

Academic Employment

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|--------------|---|
| 2018-Present | Director of Electrical Engineering Undergraduate Program <ul style="list-style-type: none">• Advised and mentored ungraduated electrical engineering students• Chaired electrical and computer engineering undergraduate curriculum committee• Worked on continuous improvement of faculty advising and mentoring process for the ECE department• Worked on continuous improvement of electrical engineering undergraduate curricula• Conducted and orchestrated departmental undergraduate seminar |
| 2017 | Associate Director of Electrical Engineering Undergraduate Program <ul style="list-style-type: none">• Assisted in the advisement of undergraduate electrical engineering students. |
| 2016-Present | Assistant Professor – University of Pittsburgh
Courses: <ul style="list-style-type: none">• ECE 0031 – Linear Circuits and Systems I• ECE 1259 – Electromagnetics• ECE 1266 – Applications of Fields and Waves• ECE 1771 – Electric Machinery• ECE 1775 – Power Quality (newly developed)• ECE 2774 – Power Systems Analysis II• ECE 2795 – Advanced Electric Machines & Drives Principle Investigator: <ul style="list-style-type: none">• Foundations for Engineering Education for Distributed Energy Resources (FEEDER) and Grid Engineering for Accelerated Renewable Deployment (GEARED) – Department of Energy• Development of Real-Time Tutor Sourcing Application – Office of the Provost’s Personalized Education Grant Committee Participation: <ul style="list-style-type: none">• ECE Lab Committee (Former Chair)• ECE Undergraduate Committee (Co-Chair)• ECE Undergraduate Advising• ECE Power Committee• ECE NTS Faculty Search Committee• ECE ABET Committee |

Undergraduate Student Advising:

- Advised undergraduate students of course selections to fit their desired career path.
- Advised undergraduate students of graduate school requirements and opportunities.

2013-2016

Adjunct Professor – University of Pittsburgh

Courses:

- ENGR 1869 – Electrical Engineering for Non EE Students
- ECE 1259 – Electromagnetics
- ECE 1673 – Linear Control Systems
- ECE 1769 - Power Systems Analysis (course development only)
- ECE 1710 – Power Distribution Systems Engineering and Smart Grids
- ECE 1773 – Power Generation, Operation and Control (co-instructor)
- ECE 2795 – Special Topics: Power – Renewable and Alternative Energy Systems (co-instructor)

2010-2012

Teaching Assistant (Electrical Engineering) – University of Pittsburgh

Courses:

- ECE 1673 – Linear Control Systems
- ECE 1769 - Power Systems Analysis
- ECE 1773 – Power Generation, Operation and Control

2008-2010

Teaching Assistant (Mathematics) – University of Pittsburgh

Courses:

- MATH 0025 – Applied Algebra
- MATH 0031 – College Algebra
- MATH 0032 - Trigonometry and Functions

2008-2010

Mathematics Tutor – Math Assistance Center, University of Pittsburgh

Subjects:

- Algebra, Trigonometry, Calculus, Linear Algebra, Ordinary Differential Equations, Real Analysis, Vector Analysis and Complex Variable Analysis

2009

Undergraduate student researcher, Seoul National University, IRES

- Performed semiconductor research using a transmission electron microscope

Industry Employment

2012-2016

Senior Engineer – Emerson Process Management

Tasks:

- Mathematical Modeling for Dynamic Simulation of Thermal Power Plants, Electrical Power Systems and Microgrids
 - Project Lead for Dynamic Simulator Modeling Team
 - Development of Synchronous Generator Control Algorithms
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- Development and Implementation of Emerson Ovation™ Embedded Algorithms Using a Combination of Simulink and C

Military Employment

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| 2002-2006 | United States Naval Reserve <ul style="list-style-type: none"> • Third Class Petty Officer, Construction Battalion Electrician • Honorable Discharge |
| 1998-2002 | United States Navy, Active Duty <ul style="list-style-type: none"> • Third Class Petty Officer, Interior Communications Electrician • Qualified Ship's Power Systems Switchboard Operator • Common Core Engineering Training – Engineering Plant General Operation • Electrical Core Training – Engineering Plant Electrical Operation • Interior Communication "A" School – Ships Communication Systems • Honorable Discharge |

Education

University of Pittsburgh

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| 2012 – 2014 | Doctor of Philosophy – graduation – April 2014 <ul style="list-style-type: none"> • Electrical Engineering Major (concentration in Power Systems) • Completed Doctoral Thesis – "Estimation of Harmonics, Interharmonics and Sub-Harmonics in Motor Drive Systems" |
| 2010 – 2011 | Master of Science – graduation – December 2011 <ul style="list-style-type: none"> • Electrical Engineering Major (concentration in power systems) • Completed master's thesis – "Economic Analysis of Grid Level Energy Storage for the Application of Load Leveling" |
| 2007-2010 | Bachelor of Science – graduation – April 2010 <ul style="list-style-type: none"> • Electrical Engineering Major (concentration in power systems) • Mathematics Minor |

Community College of Allegheny County

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| 2003-2007 | Transferred in September 2007 <ul style="list-style-type: none"> • Physics/Mathematics Major |
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Honors and Awards

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| 2019 | Office of the Provost's Innovation in Education Award - <i>"Integration of Computer Aided Design into Electrical Engineering Curriculum using COMSOL Multiphysics"</i> |
| 2019 | Office of the Provost's Open Educational Resource Grant – <i>"Development of Open Educational Resources for Core Electrical Engineering Courses"</i> |

- 2019 John C. Mascaro Faculty Lectureship
- 2018 Office of the Provost's Personalized Education Grant – *"Development and Implementation of a Real-Time Tutor Sourcing Application"*
- 2011 First Ever Siemens' T&D Service Solutions Graduate Power and Energy Scholarship
- 2011 IEEE Student Member
- 2009 Eta Kappa Nu – Honors Society for Electrical and Computer Engineers
- 2006 Phi Theta Kappa – Honors Society for Students Attending Junior College

Publications

- 2018 Cook, T.V., Lyle, J.A., & Kerestes, R.J. (2018). Work in progress: Reinforcement of engineering education with hands on learning of through technical skills. In ASEE Annual Conference and Exposition, Conference Proceedings, 2018-June.
- 2018 Kerestes, R.J., Qu, Z., & Turgut, D. (2018). Enhanced workforce development via the 2017 FEEDER student summer program. In ASEE Annual Conference and Exposition, Conference Proceedings, 2018-June.
- 2018 Morello, S.A., Al Hassan, H.A., Campbell, B.G., Kerestes, R.J., & Reed, G.F. (2018). Upstream Fault Detection Using Second Harmonic Magnitudes in a Grid Tied Microgrid Setting. In IEEE Power and Energy Society General Meeting, 2018-August. doi: 10.1109/PESGM.2018.8585777.
- 2012 Kerestes, R.J., Reed, G.F., & Sparacino, A.R. (2012). Economic analysis of grid level energy storage for the application of load leveling. In IEEE Power and Energy Society General Meeting. doi: 10.1109/PESGM.2012.6345072.
- 2012 Reed, G.F., Grainger, B.M., Sparacino, A.R., Kerestes, R.J., & Korytowski, M.J. (2012). Advancements in medium voltage DC architecture development with applications for powering electric vehicle charging stations. In 2012 IEEE Energytech, Energytech 2012. doi: 10.1109/EnergyTech.2012.6304641.
- 2012 Sparacino, A.R., Grainger, B.M., Kerestes, R.J., & Reed, G.F. (2012). Design and simulation of a DC electric vehicle charging station connected to a MVDC infrastructure. In 2012 IEEE Energy Conversion Congress and Exposition, ECCE 2012, (pp. 1168-1175). doi: 10.1109/ECCE.2012.6342685.
- 2012 Sparacino, A.R., Reed, G.F., Kerestes, R.J., Grainger, B.M., & Smith, Z.T. (2012). Survey of battery energy storage systems and modeling techniques. In IEEE Power and Energy Society General Meeting. doi: 10.1109/PESGM.2012.6345071.