Department of Energy Engineering
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Osama S. Saadeh, PhD.

Objective

As an educator, I strive to enhance my students' knowledge, curiosity, and interest in the discipline of electrical engineering. As a researcher, I aim to advance the state of the art in power electronics and power system research by performing quality research and collaborating with others in the field. As an engineer I employ my expertise, knowledge, and work ethics to produce and manage optimal engineering solutions.

Experience

Sept 2017 – Present, German Jordanian University

Associate Professor (2019), Energy Engineering

- Duties include teaching undergraduate and graduate classes, supervising undergraduate and graduate research projects, engaging in internationally funded research projects.
- On several departmental and university committees, including curriculum development, laboratory upgrade, hiring and senior design committees, university graduate study committee, international projects instruction committee.

Sept 2011 – Sept 2017, Jordan University of Science and Technology

Assistant Professor, Electrical Engineering

- Duties include teaching undergraduate and graduate classes, supervising undergraduate and graduate research projects, engaging in research and evaluating some of the teaching laboratory needs.
- On several departmental committees, including ABET, curriculum development, laboratory upgrade, hiring and senior design committees.

Sept 2014 – Sept 2016, Jordan University of Science and Technology

Energy Center Director

- Manage and direct energy policy and research at the university.
- Supervised the design and installation of 5 MW and 20MW PV systems and accompanying support infrastructure.
- On several university wide committees, including Sustainability and Center Quality.

Education

University of Arkansas, Fayetteville, Arkansas, USA

PhD in Electrical Engineering (2011)

Dissertation Title: "*Modeling and Characterization of P-Type Silicon Carbide Gate Turn off Thyristors"*

MS in Electrical Engineering (2007)

Thesis Title: *"Modeling of p-type SiC Thyristors"*

- Research Assistant at the National Center for Reliable Electric Power Transmission (NCREPT) and the GRid-connected Advanced Power Electronics Systems (GRAPES) research center.
- Research in the areas of power electronics, power system applications, protective devices, and semiconductor device modeling.
- Interned for 4 months at *General Electric Global Research Semiconductor Technology Lab*. Duties included modeling, characterization, and testing of state of the art, next generation power semiconductor devices for power grid and medical applications.

Jordan University of Science & Technology Irbid-Jordan

BS in Electrical Engineering (2004)

Fayetteville High School, Fayetteville, Arkansas, USA

High School Diploma (with Honors) (1999)

Professional Memberships

2001-present	Member of the Institute of Electrical & Electronic Engineers (IEEE) (Senior Member 2020)
2004-present	Member of the Jordan Engineers Association
2008-present	Member of The National Electrical and Computer Engineering Honor Society "Eta Kappa Nu" (HKN)
2012-2016	JUST IEEE student branch academic advisor
2015-2017	JUST IEEE student Women-in-Engineering section counselor
2015-2017	JUST IEEE student Industrial Application Society counselor
2018-present	International Solar Energy Society

Current Research Interest

Modeling and characterization of power semiconductor devices, wide bandgap semiconductors, power electronic interfaces and grid applications, inverters, converters, resonant converters, wireless power transfer, LED lighting, power system protection, power quality, three phase power recirculation, renewable energy, smart grid applications, electric vehicles, distributed energy resources and energy-economic modeling.

Publications

- **O. Saadeh**, W. Al-Hanaineh and Z. Dalala "Islanding mode operation of a PV supplied network in the presence of G59 protection" *IEEE 13th International Symposium on Power Electronics for Distributed Generation Systems (PEDG),* 2022.
- Z. Dalala, **O. Saadeh**, and Z. Zahid "Second Life Battery Energy Storage System: Modular Interface and Control" *IEEE 13th International Symposium on Power Electronics for Distributed Generation Systems (PEDG),* 2022.
- Z. Dalala, T. Alwahsh, **O. Saadeh** "Energy Recovery Control in Elevators with Automatic Rescue Application" Journal of Energy Storage, Vol. 43, August 2021.

  DOI: 10.1016/j.est.2021.103168
- **O. Saadeh**, S. Al-Tamimi and F. Amoura "A Hybrid Battery / Ultracapacitor Energy Storage Solution for PV Systems" *6th IEEE International Energy Conference (ENERGYCON)*, 2020.
- A. Abuelrub, F. Hamed, **O. Saadeh** "Microgrid integrated electric vehicle charging algorithm with photovoltaic generation" Journal of Energy Storage, Vol. 32, September 2020. DOI: 10.1016/j.est.2020.101858
- **O. Saadeh**, G. Tashtoush, E. Al-Maghrabi "PV Plant Connection and Sizing Design Methodology" Journal of Engineering and Applied Sciences, Vol. 15, September 2020. DOI: 10.36478/jeasci.2020.2950.2958
- Z. Dalala, M. Alnawafa**, O. Saadeh** and E. Alnawafa "Reducing Commuter CO2 Footprint through Transit PV Electrification" Sustainability, Vol. 12, August 2020. DOI:10.3390/su12166406
- **O. Saadeh**, A. Al Nawasrah and Z. Dalala "A Bidirectional Electrical Vehicle Charger and Grid Interface for Grid Voltage Dip Mitigation" *Energies*, Vol. 13, July 2020.

  DOI: 10.3390/en13153784
- Z. Dalala, O. Al Banna and **O. Saadeh** "The Feasibility and Environmental Impact of Sustainable Public Transportation: A PV Supplied Electric Bus Network" *Applied Sciences*, Vol. 10, June 2020. DOI:10.3390/app10113987
- H. Al-Masri, S. Magableh, A. Abuelrub, **O. Saadeh**, M. Ehsani "Impact of Different Photovoltaic Models on the Design of a Combined Solar Array and Pumped Hydro Storage System" *Applied Sciences*, Vol. 10, May 2020. DOI:10.3390/app10103650
- **O. Saadeh**, A. Al-Hmoud and Z. Dalala "Characterization Circuit, Gate Driver and Fixture for Wide-Bandgap Power Semiconductor Device Testing" *Electronics*, Vol. 9, April 2020. DOI: 10.3390/electronics9050703

- **O. Saadeh**, Z. Dalala, T. Niet, E. Ramos and M. Howells "Technoeconomic Data Adopted for the Development of a Long-term Electricity Supply Model for the Hashmite Kingdome of Jordan" *Data in Brief*, Vol. 30, June 2020.

  DOI: 10.1016/j.dib.2020.105391

- **O. Saadeh**, Z. Dalala and S. Abukhadra "The Modeling and Simulation of Converting HVAC to HVDC Grids: Impact and Feasibility" *54th IEEE Industry Applications Society Annual Meeting, 2019.*

- Z. Dalala, **O. Saadeh** and Ala Hussein, "A Current Sensorless Coulomb-Counting Method for Enhanced Battery SOC Estimation Accuracy" *2019 IEEE Energy Conversion Congress & Exposition (ECCE), 2019.*

- H. Qdais, **O. Saadeh**, M. Al-Widyan, R. Atal and M. Abu-Dalo "Environmental sustainability features in large university campuses: Jordan University of Science and Technology (JUST) as a model of green university", *International Journal of Sustainability in Higher Education,* Vol. 20, June 2019.

  DOI: 10.1108/IJSHE-06-2018-0102

- Z. Dalala and **O. Saadeh**, "A Novel Reduced Voltage Sensor-Count Control of a DC/DC Converter" *2018 IEEE Energy Conversion Congress & Exposition (ECCE), 2018.*

- Z. Dalala, **O. Saadeh**, M. Bdour and Z. Zahid, "A New Maximum Power Point Tracking (MPPT) Algorithm for Thermoelectric Generators with Reduced Voltage Sensors Count Control" *Energies*, Vol. 11, July 2018, pp. 1826-1842. DOI: 10.3390/en11071826

- **O. Saadeh**, Z. Dalalah, F. Nessir Zghoul, A. Abuelrub and M. Saadeh, "A 500 kHz Silicon Carbide (SiC) Single Switch Class-E Inverter" *International Journal of Electrical and Electronic Engineering & Telecommunications*, Vol. 7, July 2018, pp. 103-107*.* DOI: 10.18178/ijeetc.7.3.103-107

- **O. Saadeh**, M. Dalbah and Z. Dalala "Control of two Five-Phase Parallel Connected Single Source Motor Drives under Balanced and Unbalanced Conditions" *IEEE 9th International Symposium on Power Electronics for Distributed Generation Systems (PEDG),* 2018.

- Z. Dalala and **O. Saadeh**, "A New Robust Control Strategy for Multistage PV Battery Chargers" *IEEE 9th International Symposium on Power Electronics for Distributed Generation Systems (PEDG),* 2018.

- **O. Saadeh**, R. Rabady and M. Bani Melhem, "New effective PV battery charging algorithms" *Solar Energy*, Vol. 166, May 2018, pp. 509-518. DOI:10.1016/j.solener.2018.03.075

- Z. Dalalah, Z. Zahid, **O. Saadeh**, J. Lai "Modeling and Controller Design of a Bidirectional Resonant Converter Battery Charger" *IEEE Access,* Vol. 6, April 2018, pp. 23338-23350. DOI:10.1109/ACCESS.2018.2830321
- A. Abuelrub, **O. Saadeh** and H. Al-Masri, "Scenario Aggregation-Based Grid-Connected Photovoltaic Plant Design" *Sustainability*, Vol. 10(4), April 2018, pp. 1275-1288. DOI:10.3390/su10041275
- A. Abuelrub, H. Al-Masri and **O. Saadeh** "Grid-connected photovoltaic plant design at Jordan University of Science and Technology using scenario aggregation" *2018 International Conference on Power, Energy and Mechanical Engineering (ICPEME)*, 2018.
- **O. S. Saadeh** and M. M. Dalbah, "Control of Five Phase Two-Motor Series Connected Single Source Drive Systems under Balanced and Unbalanced Conditions". *Journal of Engineering and Applied Sciences, Vol. 12, December 2017, pp. 7098-7103*. DOI:10.3923/jeasci.2017.7098.7103
- F. Nessir Zghoul, S. Ay and **O. S. Saadeh**, "Protraction of Bartlett Bisection Theorem to Cross Coupled Circuits". *Journal of Engineering and Applied Sciences, Vol. 12, December 2017, pp. 7104-7111.* DOI:10.3923/jeasci.2017.7104.7111
- M. Saadeh, R. McCann, M. Alsarray, **O. Saadeh**, *"*A new approach for evaluation of the bus admittance matrix from synchrophasors: (A statistical Ybus estimation approach)*". International Journal of Electrical Power & Energy Systems, Vol. 93, December 2017, pp. 395–405.*

  DOI: 10.1016/j.ijepes.2017.06.021
- **O. S. Saadeh** and M. R. Al-Mothafar, "Power Electronics Laboratory Education: the JUST Experience"*. 2017 IEEE First Ukraine Conference on Electrical and Computer Engineering (UKRCON), 2017.*
- **O. S. Saadeh**, H. A. Mantooth, J. C. Balda, "The Modeling and Characterization of Silicon Carbide Gate Turn Off Thyristors" *2012 IEEE Energy Conversion Congress & Exposition (ECCE), 2012.*
- **O. S. Saadeh**, E. D. Johnson, M. S. Saadeh, A. E. Mejia, C. Schirmer, B. Rowden, A. Mantooth, J. Balda, S. Ang, "A 4 kV Silicon Carbide Solid-State Fault Current Limiter" *2012 IEEE Energy Conversion Congress & Exposition (ECCE), 2012.*
- Z. Stum, A.V. Bolotnikov, P. A. Losee, K. Matocha, S. Arthur, J. Nasadoski, R. R. Rao, **O. S. Saadeh**, L. Stevanovic, R. L. Myers-Ward, C. R. Eddy Jr., D. K. Gaskill, "4kV Silicon Carbide MOSFETs" *Material and Science Forum*, Vol. 637, March 2011, pp. 679-680.

- Y. Feng, E. Johnson, **O. Saadeh**, J. C. Balda, H. A. Mantooth, and M. Schupbach, “Impact of solid-state fault current limiters on protection equipment in transmission and distribution systems” *2010 IEEE PES T&D Conference & Exposition, 2010.*
- S.S. Ang, T. Tao, **O. S. Saadeh**, E. Johnson, B. Rowden, J.C. Balda, A. Mantooth, “Packaging and characterization of silicon carbide thyristor power modules” *Power Electronics and Motion Control Conference, 2009*.
- **O. S. Saadeh**, H. A. Mantooth, J. C. Balda, A. K. Agarwal, A. S. Kashyap, “The Modeling and Characterization of Silicon Carbide Thyristors” *39th IEEE Power Electronics Specialists Conf (PESC), 2008.*
- H. A. Mantooth, **O. Saadeh**, E. Johnson, J.C. Balda, S.S. Ang, A.B. Lostetter, R. M. Schupbach, “Solid-State Fault Current Limiters: Silicon versus Silicon Carbide” *2008 PES General meeting(PESGM).*
- E. Johnson, **O. S. Saadeh**, J.C. Balda, H. A. Mantooth, S. S. Ang, “An Analysis of Paralleled SiC Bipolar Devices” *39th IEEE Power Electronics Specialists Conf (PESC), 2008.*

Supervised MS Theses

- *High Voltage DC Transmission as a Solution for Renewable Energy Stability Issues, Baher Abu Sba’, GJU, June 2021.*
- *The Environmental Life Cycle Assessment for Using Electric Vehicle Technology Compared to Conventional Vehicle in Jordan, Ashraf Dawaghreh, JUST, June 2020.*
- *Quantifying Electric Grid limiting Factors for PV integration, Abedallah Alkhresheh, GJU, January 2020.*
- *PV System Islanding Mode Operation with G59 Protection, Wael Al-Hanainah, GJU, January 2020.*
- *Charging / Discharging Algorithm for Electric Vehicle Integrated With Photovoltaic Generation. Fadi Hamed, JUST, December 2019.*
- *An Intelligent Electrical Vehicle-Grid Interface for Mitigation of Power Quality Issues, Anwar Al-Nawasrah, GJU, Nov. 2019.*
- *Characterization of Windwide-Bandgap Power Semiconductors Devices, Ahmad Al-Hmoud, GJU, Aug. 2019.*
- *The Feasibility and Environmental Impact of Green Streets as a Sustainable Alternative: Amman Bus Rapid Transit Project as a Case Study, Omar Al Banna, GJU, March 2019.*
- *A Photovoltaic System Connection and Sizing Design Methodology Based on System Modeling and Simulation, Eman Al-Maghrabi, JUST, January 2019.*

- *Impact Assessment of Integrating Renewable Energy Systems on the National Grid of Yemen, Waleed Ali, JUST Dec.2017.*
- *Control of Five Phase Two-Motor Drive System Supplied From a Single Inverter Under Balanced and Unbalanced Conditions, Monther Mahmoud Dalbah, JUST, October 2016.*
- *Design Of an Advanced Controller for Effective Battery Charging from Photovoltaic Cells, Muath Mohammed Bani Melhem, JUST, July 2016.*

Attended Workshops

- "High Performance Innovation System Executives Workshop - GJU Innovation Ambassadors", GJU, Amman, Jordan, 2021.
- "Water-Energy-Food Nexus (Training of Trainers)", GiZ, Amman, Jordan, 2021.
- "Jordan National Energy Hub", ENI CBC Med ESMES Project, Amman, Jordan, 2021.
- "Assessing the Socio-Economic Impact of Green Development Policies in the Jordanian Transport Sector", DIAPOL-CE, Webinar, 2021.
- "Joint Summer School on Modelling Tools for Sustainable Development – OpTIMUS: Open-Source Energy Modelling System (OSeMOSYS)", International Center for Theoretical Physics (ICTP), Trieste, Italy, 2019.
- "Introduction to Biostatistical and Statistical Analysis using JMP Software", JUST ADC, Irbid, Jordan, 2016.
- "E-learning: Open Educational Resources", JUST ADC, Irbid, Jordan, 2015.
- "Integration of Renewable Energy Resources in the Transmission and Distribution Networks in the Arab Region", ESCWA, Amman, Jordan, 2015.
- "Solar Cooling", GiZ and Jordan Ministry of Environment, Irbid, Jordan, 2014.
- "Arc Flash/NFPA 70E", Eaton Corporation, Tulsa, OK, 2009.

Research Projects

- **Partner:** "Green City – Territorial Partnerships for Sustainable and Resilient Urban Development", Funded by Agenzia italiana per la cooperazione allo sviluppo (AICS), 2021-2023.
- **Co-Partner**: "Enhancing Online Education Reach for unprivileged Individuals in Rural Communities in Jordan" Paying it Forward (PiF) Alumni Grant managed by Binational Fulbright Commission in Jordan, funded by The Bureau of Educational and Cultural Affairs (ECA) of the U.S. Department of State, 2021.

- **Member**: CliEEN – the Climate-Economy-ENergy Modelling Network, Part of DIAPOL-CE "Policy Dialogue and knowledge management on low emission strategies in the MENA Region" Under the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2020-2023.
- **Partner**: "Increasing Access and Planning for Efficient Cooling Solutions in Jordan" Kigali Cooling Efficiency Program (K-CEP) NDC Support Facility grant number: 21-1817, 2021-2023.
- **PI**: "Integrating Energy Economy Modelling Concepts in the Energy Engineering Curriculum at the German Jordanian University (GJU) – Jordan." GiZ Agreement number: 81262854, 2020-2021.
- **Partner**: "Energy Smart Mediterranean Schools Network / (ESMES)" ENI CBC MED Reference number: A_B.4.3_0123, 2019-2023.
- **PI**: "Modeling and Characterization of Wide-bandgap Power Semiconductor Devices." GJU Project ID: SNRE 02/2018, 2018-2020.
- **CO-PI**: "A photovoltaic System connection and sizing design methodology based on system modeling and simulation". JUST Project ID: 9/2018, 2018-2020.
- **Member**: MENA Network on Climate-Energy-Economy Modelling, Part of DIAPOL-CE "Policy Dialogue and knowledge management on low emission strategies in the MENA Region" Under the International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, 2017-2020.
- **Contractor:** "Fostering Renewable Energy (RE) and Energy Efficiency (EE) Initiatives in Jordan Building Sector - REEED". A project co-funded by the EU, the contracting authority is the Ministry of Energy and Mineral Resources. The project is run by ICU in partnership with the National Centre for Agricultural Research and Extension. Contracted as a "Third Party" to validate energy consumption reduction and estimate CO2 emission reduction and training services, 2015-2017.
- **Partner:** "Smart Control Systems for Energy Management: New Master Degree/ (SEM-SEM)" Erasmus+ Project Reference Number: 561703-EPP-1-2015-1-UK-EPPKA2-CBHE-JP, 2015-2018.
- **Partner:** "Modernising Undergraduate Renewable Energy Education: EU Experience for Jordan (MUREE)" TEMPUS project number: 530332-TEMPUS-1-2012-1-JO-TEMPUS-JPCR, 2012-2015.

- **PI:** “Designing, simulating and building a Silicon Carbide (SiC) - based uninterruptible power supply (UPS) system.” JUST Project ID: 216/2014, 2014-2016.
- **CO-PI**: “Investigating the effect of integrating simulations with measurements on the course outcomes of the power electronics lab at JUST” JUST Project ID: 182/2012, 2012-2014.

Engineering Project / Technical Services

- GJU/MEMR joint steering committee member.
- CIGRE Jordan, Technical Committee Member.
- American University of Madaba PV system: member of technical, financial evaluation and commissioning committees.
- National Electric Power Company, Jordan: Industry/Academy Steering Committee
- The University of Jordan (JU) 16 MW PV system: member of technical and financial evaluation committee.
- Al - Balqa' Applied University 7 MW and 10 MW PV system: member of technical and financial evaluation committee
- Mutah University 5 MW PV system: member of technical evaluation committee.
- Jordan Aircraft Maintenance Limited (JORAMCO): Consultant for CO2 Emission calculations and energy efficiency measures.
- Energy Service Provider Accreditation Committee Member, A USAID-funded activity implemented by Deloitte.
- JUST administrative building LED project: supervised the redesign of the lighting system at the new administrative building at JUST.
- JUST Sustainability Committee: measured current sustainability markers on campus, CO2 emissions, CO2 sink, and part of team that prepared the university’s sustainability policy.
- “Total Jordan” education and outreach steering committee.
- The University of Jordan (JU) renewable energy advisory board: part of team advising Jordan University on path of power sustainability.
- Jordan CubeSat Project: Advisor for student team in charge of building power system for the Jordan CubeSat, project sponsored Crown Prince Foundation (CPF).
- JUST 33/11 kV substation upgrade: prepared RFP documents.
- Sports City lighting systems: Studied tender documents for several Jordanian sports city lighting upgrade, studied submitted proposal, awarded tender.

- JUST 20 MW PV system: Prepared the ToR documents, member of proposal technical and financial evaluation committee.
- JUST 5 MW PV system: Prepared the ToR documents, lead the proposal technical evaluation committee, participated in the proposal financial evaluation committee, awarded the tender, supervising purchasing, construction, integration, and complete system commissioning.

Training Courses Delivered

1. ENI CBC Med ESMES Project, The 10th High School, Aqaba, Jordan: Renewable Energy and Energy Efficiency Measures in Public Buildings, April 2021.
2. "Policy dialogue and knowledge management on low emission development strategies in the MENA region" (DIAPOL-CE), German Jordanian University, Amman, Jordan: Energy Economy Modelling, January 2021.
3. Istituto per la Cooperazione Universitaria ONLUS Jordan office, National Center for Agricultural Research and Extension, Shoubak, Jordan: Solar Pumps, March 2017.
4. Istituto per la Cooperazione Universitaria ONLUS Jordan office, National Center for Agricultural Research and Extension, Mafraq, Jordan: Solar Pumps, February 2017.
5. Istituto per la Cooperazione Universitaria ONLUS Jordan office, Jordan University of Science and Technology, Irbid, Jordan: Introduction to PV System Design, Operation & Maintenance, January 2017.
6. Istituto per la Cooperazione Universitaria ONLUS Jordan office, National Center for Agricultural Research and Extension, Amman, Jordan: Energy Efficiency Systems, December 2016.
7. Energy Center, Jordan University of Science and Technology. Irbid, Jordan: Introduction to PV Systems, August 2016.
8. Norwegian Refugee Council Jordan office, Ministry of Education Engineers, Irbid, Jordan: Solar Technology: monitoring and maintenance of PV systems, August 2016.
9. Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE: Variable Speed Drives, February 2016.
10. Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE: Transformer Maintenance & Testing, January 2015.
11. Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE: AC Electric Motors and Drives, September 2014.

	12. Management Science Institute, Dubai, UAE: Operation and Maintenance of High Voltage Switchgear and Transformers, August 2014. 13. Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE: MV Variable Speed Motor Drives, April 2014. 14. Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE: HV Cables Jointing and Termination, November 2013. 15. Abu Dhabi Gas Industries Ltd. (GASCO), Abu Dhabi, UAE: Operation & Maintenance of Circuit Breakers and Switchgear, December 2012. 16. Arkansas Power Electronics International (APEI), Arkansas, USA: Modern Power Electronics and Power Semiconductor Devices, May 2011.
Software Skills	C, C++, Visual Basic, Visual C++, MatLab, OrCAD, MAST, PSPICE, SABER, PSIM, ETAP, PowerWorld, Neplan, OSeMOSYS, Mathematica, LTspice, Allegro, Altium Designer.
Hardware Skills	High power high temperature (500^{o} C) probe station, bench top equipment (power supplies, scopes, function generators …), curve tracers, microprocessors. MV and HV CB and switch gear. Traditional and Solid-state protective equipment. Next generation Smart Grid technologies. Built high current (5000 A) and high voltage (20 kV) device characterization test circuits. Designed, built, and tested a high power (4160 V, 4000 A) fault current limiter. Renewable energy deployment, and integration, Resonant Converters and wireless power systems.
Key Course Work	**Communication**: Analog Communications, Digital Communications, Mobile Communications, Digital Filters, Communication Systems and Wireless Data Communication. **Electronics**: Analog Electronics, Digital Electronics, Microwave Electronics, Power Electronics, Communication Electronics, Semiconductor Devices and Power Semiconductor Devices. **Power Systems:** Power Systems, Electric Power Distribution and Transmission Systems, Switch Mode Power Converters, Power System Analysis, Power System Control, Motor Drives, Power System Quality and Power System Protection. **Integrated Circuits:** IC Design, IC design Lab, IC Fabrication, IC Fabrication Lab and Analog IC Design. **Computer:** C programming, Digital Design, Microprocessor, and Computer Networks **Management:** Commercialization of Research, Ethics for Scientists and Engineers.

Teaching Experience	Electronics II; Circuits I & II; Power Electronics; Power Semiconductor Devices; Switch Mode Power Converters; Power System Analysis; Power System Protection; Power System Quality; Power System Distribution and Transmission; Power System Operation; Smart-Grid Power Systems; Electrical Power Generation, Transmission & Distribution; Special Topics in Renewable Energy Systems; Advanced Renewable Energy System; Circuits Lab; Electronics Lab and Power Electronics Lab, Modeling and Simulation.