TALWAR COLLEGE OF ENGINEERING AND COMPUTER SCIENCES

PROGRAM LEAD

Dr. Zakariya Al-Hamouz

Dr. Al-Hamouz has a long experience in teaching undergraduate and graduate courses as well as supervising master's and doctoral students and senior-level capstone design projects. His research interests include diagnosis of failures in rotating machines, power systems protection and automation and control. He has an extensive collaboration with industry which led to solving many practical engineering problems. His collaboration and research efforts to date have led to seven U.S.-issued patents, the publication of 59 refereed journals and 55 conference papers. Dr. Al-Hamouz is a recipient of the KFUPM Excellence in Research award and the IEEE/IAS James Melcher Prize Paper award.

- Ph.D., Electrical Engineering, KFUPM, Dhahran, Saudi Arabia
- M.S., Electrical Engineering, Jordan University of Science and Technology, Irbid, Jordan
- B.Sc., Electrical Engineering, Yarmouk University, Irbid, Jordan

CONTACT

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INDIANA TECH

Electrical Engineering, B.S.

ind.tc/child-development-bs

Electrical engineers are skilled professionals who work in rapidly evolving careers related to electricity, electronics, hardware and software. Throughout history, they have played an immeasurable role in conceiving devices and technologies that we depend on every day; from battery chargers, to cellphones, to electrical systems in cars, to developing controls for food processing plants and more.

If you have a strong foundation in mathematics and science, a degree in electrical engineering could lead you to a rewarding career. You will take courses in circuit analysis, electronics, digital systems, programmable logic controllers, LabView and data acquisition systems, electromagnetics, electrical machines, controls, embedded systems and communications. Computer-based simulations and project-based laboratories will reinforce the course topics. When you graduate you will be able to pursue a job in a wide variety of electrical engineering fields. Our graduates get jobs all over the country.

Why choose Indiana Tech?

- We consult with engineering companies to develop and maintain relevant coursework that will equip you with knowledge and experience that today's employers are looking for.
- Our laboratory courses are project-based. By the end of a lab course, you will design, simulate, build and test a functional circuit that you can keep.
- Our laboratories are equipped with the state-of-the-art equipment. In addition to traditional circuits, electronics, digital and communications labs, we feature contemporary and relevant labs such as a computer interfaced electrical machines training lab, the Rockwell automation portable programmable logic controller troubleshooting lab and a LABView/DAQ (data acquisition system) lab.
- Indiana Tech fosters an active learning environment, enriched by instructors who possess years of experience in their respective fields.

Accreditation

Our electrical engineering degree program is accredited by the Engineering Accreditation Commission of ABET, under the General Criteria and the Electrical, Computer, Communications, Telecommunication(s) and Similarly Named Program Criteria.

Curriculum

Required Core Courses
- CH 1220 - General Chemistry I
- ECE 1000 - Introduction to Circuit Simulation and PCB Design
- ECE 1100 - C Programming
- ECE 2000 - Digital System Design I
- ECE 2010 - Digital System Design I Lab
- ECE 2100 - Circuit Analysis I
- ECE 2200 - Circuit Analysis II
- ECE 2210 - Circuits Lab
- ECE 2300 - Electronics I
- ECE 2310 - Electronics Lab
- ECE 3000 - Signals and Systems
- ECE 3100 - Linear Controls
- ECE 3200 - Electromagnetic Fields and Waves
- ECE 3400 - Programmable Logic Controllers & Lab
- ECE 3600 - Introduction to Electrical Communication Systems
- ECE 4400 - Electrical Machines
- ECE 4410 - Machines and Controls Lab
- ECE 4960 - ECE Senior Project I
- ECE 4961 - ECE Senior Project II
- EGR 1500 - Computer Programming for Engineers
- EGR 4400 - Professional Practice
- IIT 1000 - University Experience
- IIT 2000 - Pre-Internship Seminar
- MA 1210 - Calculus II
- MA 2100 - Differential Equation & Linear Algebra
- MA 2200 - Calculus III
- MA 2410 - Discrete Structures
- MA 2430 - Probability & Statistics for Engineers
- PH 1300 - General Physics I
- PH 1310 - General Physics I Laboratory
- PH 2300 - General Physics II
- PH 2310 - General Physics II Laboratory

Choose one of the following engineering electives (3 credits):
- EGR 2600 - Materials Science
- EGR 2650 - Manufacturing Processes
- EM 2010 - Statics
- IME 2110 - Six Sigma I
- ME 3200 - Thermodynamics I

Choose four of the following electrical engineering electives (12 credits):
- ECE 3300 - Electronics II
- ECE 3700 - Embedded Systems
- ECE 3800 - Solid State Electronics
- ECE 4100 - Circuit Synthesis
- ECE 4200 - Digital Signal Processing
- ECE 4300 - Digital Communication
- ECE 4500 - Power Electronics and Drives
- ECE 4600 - Power System Analysis and Protection

Warriors in the Workplace

Indiana Tech graduates with this degree have earned jobs at:

- L3Harris Technologies
- Raytheon Technologies
- ESPEC
- EMCOR Group
- Essex
- Artisan Electronics
- Verizon
- Indiana Michigan Power
- Swisslog
- Ultra Electronics USSI
- Crown Equipment
- Naval Surface Warfare Center

Internship Opportunities

Indiana Tech students pursuing this degree have interned with:

- Indiana Michigan Power
- Micromatics
- Pyromation, Inc.
- American Electric Power
- Press-Seal Gaskets
- Raffel Systems
- Ultra Electronics USSI
- EMCOR Group
- Crown Equipment
- Avancez

Alexandra Forsythe

B.S. Electrical Engineering, 2022

Alexandra Forsythe had an outstanding college career at Indiana Tech—one that prepared her well for outstanding accomplishments to come.

While at Indiana Tech, Alex earned several impressive internships with organizations like NASA, Raytheon, Ultra Electronics-USSI and Intel. Her duties ranged from programming and verification to designing cutting-edge technology, including a mission-critical circuit board that will be used on an upcoming space mission. With each new experience, she was able to add to her skill set, become a more versatile professional, build confidence and prepare for the multi-faceted responsibilities that are needed in the workplace.

“Indiana Tech has done an outstanding job of preparing me for a successful career,” Alex said. “Having professors who have extensive experience working in industry not only taught us how things are done by employers, but it also provided important connections when it came time to search

for internships and full-time positions. That knowledge and those connections can make all the difference in the world to a student who is competing for a job."

Now, Alex has an incredible position in Oregon as a design engineer with Intel, and she is pursuing a master's in electrical engineering. Long-term, she wants to earn a Ph.D. in electrical engineering, become an engineering fellow and work as an adjunct professor.