Department of Electrical and Computer Engineering

Dr. S. P. Kozaitis
Department Head
Florida Institute of Technology
Welcome to Florida Tech’s College of Engineering, the largest college in our University. With over 1,700 undergraduate and graduate students, and 70 dedicated faculty members, our College is one of the most vibrant in the southeastern U.S. The College of Engineering currently offers over 45 bachelors, masters, and doctoral degree programs and is continually ranked as one of America’s top technological institutions in engineering by the Fisk Guide to Colleges.
Department of Electrical and Computer Engineering

- Two programs: Electrical Engineering and Computer Engineering
- Offers MS and PhD degrees
- 280 Undergraduate Students
- 130 Graduate Students
- 11 Full-time faculty
- Connection with local industry: Harris, NASA, Intersil, Northrup-Grumman
- Undergraduate emphasis areas
  - Circuits, electronics, signals, programming, senior design
  - Virtual instrumentation, C++ programming, digital electronics
- Graduate emphasis areas
  - Physical electronics, materials, and fiber optics
  - Electromagnetics
  - Image, signal, machine learning, speech processing
  - Wireless communication
# Choose an area and advisor

http://coe.fit.edu/ee/faculty/index.php

<table>
<thead>
<tr>
<th>Area</th>
<th>Advisors</th>
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<tbody>
<tr>
<td>Signal Processing</td>
<td>Anagnostopoulos, Kepuska, Mu, Otero</td>
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<td>Electromagnetics</td>
<td>Lail</td>
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<tr>
<td>Communications</td>
<td>Kostanic, Mu, Otero</td>
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<tr>
<td>Physical Electronics</td>
<td>Earles, Murshid, Grossman</td>
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<tr>
<td>Computer Engineering</td>
<td>Kepuska, Kozaitis, Otero</td>
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# 2 - Choose classes

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<thead>
<tr>
<th>CRN</th>
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<td>Applied Discrete Math</td>
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Program plans

• Fill out a program plan when you register for the Spring semester (before completing 9 credit hours in your program).

• Choose courses carefully: not okay to attend many classes first week then drop some.
Program plans

Need depth

• Need five ECE 5XXX courses
• Three of those courses must be: ECE 5XXX, where X is the same number

Need breadth

• Need at least two courses outside the department
• Often MTH or CSE

Other courses

• approved by your advisor
• CIS courses not approved
## MS Thesis vs. Non-thesis

<table>
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<th>Non-thesis</th>
<th>Thesis</th>
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<tbody>
<tr>
<td>10 courses</td>
<td>10 courses = 8 courses</td>
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<tr>
<td></td>
<td>+ ECE 5999 – 3 credits</td>
</tr>
<tr>
<td></td>
<td>+ ECE 5999 – 3 credits</td>
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Fiber-optic Communications and Sensors

Spatial Channel Hopping

Physical Layer Encryption

Secure Communications

Enhanced Data Security

Does not sacrifice bandwidth

Existing and Future Networks

Investigating 40TB/s system. Collaborative effort with U of Arizona and Alabama A&M

Grossman, Murshid
Physical Electronics: Materials

Research

Scanning Probe Microscopy (SPM),
Laser Materials Processing and Sensor Fabrication

Hydrogen Sensors
40 nm = 40E-9 m
Pd film on glass

magnified 43000x

<-SEM       SPM->

40 nanometers
Electromagnetics

Research
Antennas
High impedance planes
Bandgap structures
Optically-controlled switches
Energy harvesting
Communications: Wireless

Research

- Cognitive Radio
- Relay Networks
- Multi-user MIMO
- Physical Layer Security Design and optimization of cellular networks
- Atmospheric turbulence modeling and prediction

Kostanic, Mu, Otero
Communications: Wireless Sensor Networks

- On-Demand Intelligent Deployments
- Modeling and Simulation of WSN
- Performance Evaluation & Optimization of WSN
- Efficient Networking Algorithms for WSN
- Wireless Sensor Data Mining

Otero, Kostanic, Mu
Research

Advanced signal processing and classification methods for infrasonic signals
Machine learning and Pattern recognition
Speech processing
Image processing

Anagnostopoulos, Kepuska, Ham, Kozaitis, Mu, Otero
Signal Processing: Human Sensor Networks & Big Data

- High Performance Computing
- Data Mining & Machine Learning
- Algorithms, Natural Language Processing, Speech Processing, Image Processing, etc.
- Parallel and Distributed Software Engineering

Otero, Anagnostopoulos, Kepuska