



School of  
Information Systems and Applied Technologies

## ELECTRONIC SYSTEMS TECHNOLOGIES

College of Applied Sciences and Arts

[www.siu.edu/~isat](http://www.siu.edu/~isat)

### What will I study?

The electronics revolution continues with technological advancements from personal devices to industrial automation. Every year the electronics industry produces products which were once considered things of fantasy. This explosive growth drives an increasing need for technologists with sharp minds, skilled hands and advanced degrees in electronics.

Technical skills are not enough for today's competitive workforce. While many colleges in the state of Illinois provide a two-year degree in electronics, the EST program is a four year degree providing a strong blend of technical, management, and interpersonal skills important in career advancement.

The program has a two-year electronics core required by all students in fundamental theory. Program core courses include: Basic electronics theory and laboratory, basic digital theory and laboratory, fundamentals of electronic communications, computer and networking fundamentals, system sensing and control

At the advanced level students' focus on at least one area of study particular to their desired career goals. These courses are system based and deal directly with equipment they will work with in industry. The areas of study are:

- Biomedical Technologies
- Industrial Technologies
- Communications Technologies
- Networking Technologies

### Who are the Faculty?

The department faculty who teach EST students consist of instructors who have specializations in their areas of instruction with years in the private sector. These areas include: RF and optical communications, biomedical

equipment and operations, industrial equipment, embedded programming, networking and security.

The faculty performs direct teaching and work one-on-one with students. Teaching or graduate assistants are not used in the teaching of lecture and laboratories.

### What Facilities are at SIUC?

The EST laboratories total over 8000 square feet provide the equipment and resources necessary to develop hands-on technical skills. The EST facilities, totally handicapped accessible, are centrally located to the electronics faculty offices in the ASA building.

Laboratories are populated with equipment specific to the needs of the coursework. Laboratory areas include: general electronics instrumentation, biomedical equipment, industrial control equipment, communication, PC maintenance, LAN and WAN networking and network security. General use labs are also available for students in the building.

### What Organizations can I join?

Students in Electronic Systems Technologies have a variety of organizations to match their interests.

- Electronics Association is EST's club where students work on projects of their interest, such as robotics.
- Association of Computer Machinery (ACM).
- Future Information Technology Experts (FITE).
- Phi Beta Lambda

### What are my Career Opportunities?

The blend of technical, interpersonal, and management skills lead to excellent employment opportunities, rapid advancement, and competitive salaries.

Applications Engineer  
Field Service Engineer and  
Technician  
Industrial Engineers and Technician  
Transportation Engineer and  
Technician  
Embedded Systems Engineer  
Network Installer  
Network Administrator  
Biomedical Technician  
Instrumentation and Calibration  
Technician  
Repair Technician

Being accredited by the FAA, graduates are easily placed in airports as control system technicians.

### How do I get more Information?

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# Electronic Systems Technologies (EST)

*Bachelor of Science Degree - 120 Total Hours*

Completion of this degree provides graduates with advanced skills required by electronic technologists. Technical skills include: the evaluation of current technologies, the planning and implementation of preventive maintenance programs and the testing, troubleshooting and calibration of electronic equipment and systems. In addition, the degree will include skills in writing, interpreting and presenting technical documentation.

## University Core Curriculum-41 hours

The EST student will complete UCC requirements along with classes for the major beginning with a focus on foundation skills (English, Math, and Speech).

**ENGL101-3 English Composition I**  
**ENGL102-3 English Composition II**  
**MATH -3\***  
**SPCM101-3 Speech Communications**  
**Science -6**  
**Social Science -6**  
**Fine Arts -3**  
**Humanities -6**  
**Human Health -2**  
**Multicultural -3**  
**Interdisciplinary -3**

*\*MATH125 Technical Math recommended as best preparation for the EST major*

## Career Prerequisites-36 hours

Four-semester sequencing of electronics theory begins in the first fall semester. Students enrolled in laboratory courses are required to purchase electronic components for the purpose of constructing, analyzing, and evaluating electronic circuits. The total cost of these components is estimated to be at least \$200.

**EST 101-3 DC-AC Circuit Analysis**  
**EST 111-3 DC-AC Circuit Analysis Laboratory**  
**EST 102-3 Electronic Circuits Theory**  
**EST 112-3 Electronic Circuits Laboratory**  
**EST 201-3 Digital Circuits Theory**  
**EST 211-3 Digital Circuits Laboratory**  
**EST 202-3 Industrial Process Control Theory**  
**EST 212-3 Industrial Process Control Laboratory**  
**EST 221-3 Introduction to Electronic Communications**  
**ISAT 121-3 Installing and Upgrading Computer Systems**  
**ISAT 224-3 LAN Installation and Administration**  
**IST 209-3 Introduction to Programming**

## Core Mgmt & Tech Requirements-9 hours

All majors take the following professional development classes.

**EST 305-3 Electronic Troubleshooting and Maintenance**  
**EST 451-3 Current Trends in Elec. Sys. Technologies**  
**ISAT 366-3 Applications of Technical Writing**

## Selected Program Options-34 hours

For best career results students are encouraged to complete as many program options as hours will allow. It is the intent of the program faculty that the students sit for the Certified Electronics Technician (CET) examination after the second year in the program. The curriculum places emphasis on skills necessary to achieve long-term career goals with one of the following segments of the electronics industry:

### *Biomedical-21 hours*

**EST 301-3 Introduction to Biomedical Instrumentation**  
**EST 311-3 Biomedical Instrumentation Laboratory**  
**EST 340-3 Application of Solid State Devices**  
**EST 341-3 Digital Circuit Applications**  
**EST 411-3 Imaging and Info Syst. in Healthcare**  
**ISAT 335-3 WAN Installation and Administration**  
**EST 319A-3 Biomedical Internship**

### *Communications-18 hours*

**EST 302-3 Optical Electronics**  
**EST 304-3 Communication Systems**  
**EST 340-3 Application of Solid State Devices**  
**EST 341-3 Digital Circuit Applications**  
**EST 414-3 Advanced Communication Systems**  
**EST 319B-3 Communications Internship**

### *Industrial-21 hours*

**EST 307-3 Industrial Control Equipment**  
**EST 317-3 Industrial Human Machine Interfacing**  
**EST 337-3 Power Distribution and Motor Control**  
**EST 340-3 Application of Solid State Devices**  
**EST 341-3 Digital Circuit Applications**  
**EST 407-3 Industrial Networking and Systems Integration**  
**EST 319C-3 Industrial Internship**

### *Telecommunications & Networking-18 hours*

**ISAT 335-3 WAN Installation and Administration**  
**ISAT 316-3 Ethics and Security in Information Systems**  
**IST 360-3 Network Security**  
**ISAT 415-3 Enterprise Network Management**  
**ISAT 416-3 Advanced Enterprise Networking Mgmt**  
**EST 319D-3 Telecommunications & Networking Internship**

### *Additional Approved Electives*

Students may choose from the following general electives to complete program option hours.

**EST 306-3 Technical Drawing**  
**EST 342-3 Microcontroller Applications Lecture**  
**ISAT 365-3 Data Applications and Interpretation**  
**TRM-332-3 Labor-Management Problems**  
**TRM 361-3 Fiscal Aspects of Technical Management**  
**TRM 362-3 Legal Aspects of Technical Management**  
**TRM 364-3 Work Center Management**  
**TRM 383-3 Data Interpretation (Same as ISAT 365)**  
**TRM 421-3 Professional Development**