CHOOSE ENERGY...

ENERGY SYSTEMS TECHNOLOGY & EDUCATION CENTER
...CHOOSE ESTEC

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Choose Energy, Choose ESTEC

Choosing ESTEC means taking the first step towards an exciting career in the energy and process industries with challenging hands-on work and earnings ranging from $40,000 to $75,000 or more per year right out of school.

Demand for trained technicians with electrical, instrumentation and controls, industrial controls, mechanical and nuclear skills is increasing dramatically as industrial technology changes, automation in process industry increases, existing employees retire and new electrical generating facilities are constructed.

For Enrollment information contact:
College of Technology
Student Services
College of Technology
Idaho State University
921 South 8th Ave.,
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Pocatello, ID
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Phone: 208.282.2622
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E-mail: ctech@isu.edu

For ESTEC Information contact:
ESTEC
208.282.3085
http://www.isu.edu/estec/
The Energy Systems Technology and Education Center (ESTEC) is an operating partnership between Idaho State University’s (ISU) College of Technology (CoT), Idaho National Laboratory (INL) and Partners for Prosperity (P4P). ESTEC began in 2006 as an idea sparked by the need to address the growing shortage of work-ready technicians in the U.S. energy sector.

ESTEC offers a unique approach to educating students by providing the specific knowledge and skills needed in the process industry and electrical generation. Skill requirements have been developed in partnership with industry, energy utilities and vendors to assure that program graduates enter the workforce with the precise skills required. In each of the ESTEC programs offered, students learn through traditional classroom experience, computer based training, as well as through extensive laboratory exercises.

ESTEC has and will continue to develop working relationships with industrial and energy industry partners and systems-related product vendors to provide applied industrial research. Students and faculty work with industry to demonstrate, test, and innovate current components and systems as well as develop and test new products (components, instrumentation, control systems, etc.) in a controlled and highly-instrumented environment.

The development of ESTEC was aided in large part by funding received through grants from the United States Department of Labor Community-based Job Training Grant, the National Science Foundation Advanced Technological Education Program, Nuclear Energy University Programs, and the American Reinvestment and Recovery Act of 2009.

“Now that I am out in the workforce, I am realizing the number of job opportunities available in our field. The people here are great to work with, the work is fun and the MONEY is great.”

Josh Nestor,
2008 ESTEC I&C Graduate
ISU’s CoT is Idaho’s largest post-secondary technical institution offering more than 40 high quality professional-technical programs designed to meet the employment and economic development needs of business and industry. Programs include technical certificates, associate, baccalaureate, and graduate degree programs, adult basic education and workforce training and development. The CoT provides 22,000 square feet of classroom, office and laboratory space for ESTEC students, faculty and staff.

INL is designated as the nation’s command center for advanced civilian nuclear technology research and development. INL provides instructional materials, program implementation support, planning services, speakers, grant development and support, scholarships/internships and evaluates how ESTEC can be utilized to provide education and training opportunities with industry both locally and nationally.

P4P, a community-based organization dedicated to poverty reduction in eastern Idaho, provides outreach and referral of low-income and minority students, cash assistance and resources for partnership facilitation and development, technical assistance, research and data analysis.

In addition to the operating partners, an advisory council has been created with representatives from local and national energy utilities and vendors, educational institutions and national energy industry support organizations. The advisory council plays an important role in providing long-range strategic planning, program development and sustainability.
ESTEC offers Technical Certificates, Associate of Applied Science and Bachelors of Science degrees. Students learn to work safely and comply with health and environmental regulations applicable to their programs of study. Students must have COMPASS test scores of 45 in Algebra and 68 in English to be accepted into any ESTEC program. Students wishing to enter Energy Systems Instrumentation and Controls Engineering Technology, Energy Systems Electrical Engineering Technology or Instrumentation and Automation are admitted using a competitive application process based on their first semester grade point average in ESTEC classes.

Students accepted into an ESTEC program should plan to attend classes throughout the day Monday through Friday. A limited selection of courses are offered online, evenings and Saturdays. Students meet two to three hours a day for program theory courses and an additional three hours per day for laboratory courses. ESTEC programs have an extensive lab component. Students will also complete various general education courses during their program, usually three hours each week.

**Energy Systems Electrical Engineering Technology (EET)** prepares students to pursue a career in the installation, operation, adjustment, routine maintenance, inspection, test and repair of power generation equipment. Graduates work in all fields of electrical generation with companies who design, build, operate, and maintain electrical generation systems. These generators use fossil and nuclear fuels, hydropower, wind, or other forms of energy to produce electrical power, Electrical Engineering technicians work with generators, large electrical motors, protective relaying and other high voltage/high current electrical equipment and the interconnection wiring and control circuits and Programmable Logic Controllers (PLC’s).

**Energy Systems Instrumentation and Controls Engineering Technology** prepares students to enter the energy workforce in areas that measure and control power plant systems. Power plants are complex systems requiring constant monitoring of parameters such as level, pressure, temperature, flow, and chemical processes. Safe operation of the plant is dependent upon accurate measurements and correct and exacting configurations of the control systems that continually communicate information to the plant operator and insure efficient operation of the plant and environmental compliance.

**Mechanical Engineering Technicians (MET)** work with the mechanical and rotating equipment such as pumps, valves, hydraulic equipment, steam boilers used in the generation of electrical power and within industrial plants. They collaborate with engineers and scientists to design, develop, test, install and maintain power generation machinery, mechanical parts, and other equipment. Mechanical engineering technicians fill the gap between the tasks performed by engineers, technologists and scientists and those performed by craftsmen.

**Energy Systems Nuclear Operations Technology** is designed to teach the knowledge and skills required to qualify for employment as an entry level nuclear operator. Unlicensed operators work with plant systems and subsystems, perform system lineups and maintain operational information for nuclear power plants. The safe operation of nuclear power plants is dependent upon highly trained operators executing complex operating procedures precisely in accordance to the plant design. Nuclear operations technicians learn how plant components operate; how human performance factors impact safe operation; and an understanding of the design of nuclear power plants.

**Energy Systems Wind Engineering Technology.** Wind turbines are self-contained power plants. Wind engineering technicians work with the mechanical, electrical and control systems of wind turbines. They install, test, and maintain these systems over the life of the machine. Students will understand the need to follow critical industry safety requirements and will be familiar with OSHA regulations and standards. Wind engineering technicians are expected to be able to climb to the top of a 300 foot wind turbine and perform technical activities both inside and outside the turbine.

**Instrumentation and Automation Engineering Technology** is a 50 year old program turning out a legacy of graduates having up-to-date electrical and instrumentation skills with successful employment in chemical, food, petroleum, natural gas, power, paper, mining, nuclear, research, security, defense, manufacturing, utilities, and construction industries.
Industrial Controls is a program where the first year of Instrumentation Automation Engineering technology is replaced by participation in a state certified electrical apprenticeship. An electrical journeyman's license is required for the degree/certificate.

Instrumentation and Automation Assistant prepares students as entry-level technicians and maintenance assistants to meet the needs of the electrical and process industries. Graduates will have theoretical knowledge and hands on experience setting up and calibrating electronic devices that measure and control temperature, level, flow, pressure, motion, force, humidity and pH.

Energy Systems Renewable Energy Technology teaches the knowledge and skills required to qualify for entry level positions in the renewable energy industry. Students will understand the operational principals of a wide variety of renewable energy resources, and apply the acquired knowledge and skills to install, operate and maintain the systems required to meet the new skill demands of emerging and expanding renewable energy industries.

Technical Certificate Programs:

Course sequences and course descriptions for all ESTEC programs are available at www.isu.edu/estec.

“The ISU’s ESTEC Program is turning into my go-to program to find high quality interns and full time employees.”

Kyle Adler, HR Director
Constellation Energy
Industrial Focus

The ESTEC programs were developed with our industrial partners who represent utilities, equipment manufacturers, engineering service companies, federal agencies, oil and gas companies and industrial processing companies. All of these industries have high standards for workplace safety, procedural compliance and a collaborative teamwork focused approach to job execution. ESTEC students learn in an environment that closely mirrors the workplace they will enter upon graduation. ESTEC strives to create a "real world" feel to its laboratories by using equipment commonly found in industry and following industry standard safety practices such as OSHA standard lockout/tagout practices, use of personal protective equipment (PPE), National Fire Protection Association (NFPA 70E) arc flash protection when working with electrical equipment.

Academic Excellence

“ESTEC staff are working closely with the energy industry in curriculum design as well as development of laboratory models and applications that ensure students meet the needs of industry.”

R. Scott Rasmussen,
Executive Director ESTEC
High Growth/High Demand Careers

There are many varied careers in the energy and process industries. Careers with utilities, power generating corporations, the INL or other federal contractors, power plant constructors, equipment suppliers, food, space, mining, chemical, nuclear, paper, steel and petroleum process industries are typical places to work with this type of education. Jobs are available throughout Idaho, the region, and the United States.

Technicians with the skills to construct, install, maintain, calibrate, troubleshoot, and repair related components, systems, and facilities are needed to replace a retiring workforce, staff new facilities and operate the increased technology industry has adopted. In the latest survey conducted by the Center for Energy Workforce Development (2009), an estimated 50% of the current workforce will be replaced due to attrition and retirement in the next five years. This translates to a need of 27,800 technicians and an additional 12,300 non-nuclear plant operators.

Career possibilities include:
• Power Distribution Technician
• Electrical/Electronics Technician
• Control Technician
• Operations and Maintenance Technician
• Productions Technician
• Substation Technician
• Combustion Turbine Technician
• Wind Technician

Levels of employment include:
• Technician
• Journeyman
• Group leader
• Group supervisor
• Group manager

For a wide-ranging list of job openings and qualifications, check the following websites:
• getintoenergy.com/
• thinkenergygroup.com
• energycentraljobs.com
• monster.com
• careerbuilder.com
• nukeworker.com
• awea.org

Search the employment sites using keywords such as Instrumentation and Controls Technician, Automation Technician, PLC, Electrical Engineering Technician, Mechanical Engineering Technician, Wind Technician, etc. to view current job availability.

Graduates from ESTEC programs are currently employed with
• Idaho National Laboratory
• Tri-State Power
• URS
• Williams Gas Pipeline
• Chevron
• ON Semiconductor
• Hoku
• Idaho Power
• Constellation Energy
• Bureau of Land Management,
• Rosemont Emerson, and many others

Of our current graduates, 64% are employed within the four state region of Idaho, Wyoming, Montana and Utah.
Financial Assistance

ISU, the CoT, and ESTEC offer assistance to qualified applicants through:

- Tech Prep and Dual Enrollment – allows students to earn college credit while in high school saving considerable money in tuition costs.
- Scholarships – available for qualified applicants through ISU, the College of Technology, ESTEC and its partners. For scholarship applications, deadlines and specific information visit www.isu.edu/scholar/.
- Or visit http://www.isu.edu/finaid/ for assistance in finding out more information concerning available financial aid.

Internship Opportunities

Internships are a valuable way for students to gain work experience in their chosen field. Internships are usually completed during the summer. Some opportunities pay between $15 and $20 per hour, others are unpaid experiential opportunities. Students will work individually with ESTEC faculty in securing internship opportunities.

Additional Educational Opportunities

Education and training at ESTEC is just the beginning. An ESTEC degree will open doors and allow you to advance in experience and education. Students who wish to advance their education even further can obtain Bachelor’s, Master’s and Doctoral degrees through ISU or other educational institutions.

“From an industry perspective, we see an urgent need for technicians to support the electric power industry in America. ESTEC will help meet this growing need for technicians.”
Vern Porter, Vice President of Engineering and Operations for Power Production Idaho Power
Skills needed for Energy Systems Technicians:

Troubleshooting. Determining causes of operating errors and deciding what to do about it
Mathematics. Using mathematics to solve problems
Active Learning. Understanding the implications of new information for both current and future problem-solving and decision-making
Technology Design. Generating or adapting equipment and technology to serve user needs
Equipment Selection. Determining the tools and equipment needed to do a job
Equipment Maintenance. Performing routine maintenance on equipment and determining when and what kind of maintenance is needed
Operations Analysis. Analyzing needs and product requirements to create a design
Quality Control Analysis. Conducting tests and inspections of products, services, or processes to evaluate quality or performance
Reading Comprehension. Understanding written sentences and paragraphs in work related documents
Critical Thinking. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems
Speaking. Talking to others to convey information effectively
Writing. Communicating effectively in writing as appropriate for the needs of the audience
Operation Monitoring. Watching gauges, dials, or other indicators to make sure a machine is working properly
Safety-Conscious. Puts safety first in every aspect of the job; takes responsibility for won actions; notices and corrects unsafe situations; always uses safety procedures; is concerned for the safety of others
Information Management and Technology. Able to use computers to process information; familiar with common technology applications in the workplace
Team Player. Able to work as a productive team member, able to share information, works well and credits (praises) others, puts team above personal interests
Work ethic. Possesses honesty and integrity, is trustworthy, shows good manners, accepts advice, supervision, and criticism, is dependable and will follow through with assignments, is ready to begin work on time, takes pride in work and hold high standards for themselves, shows initiative and works efficiently

Students interested in pursuing an ESTEC career should consider the following industry requirements:

- Valid driver’s license and good driving record—travel may be involved
- Be able to pass a drug test
- Possess a clean criminal background
- Ability to work with minimal supervision
- Enthusiasm to adhere to industry expectations
- Willingness to periodically work overtime, weekends, and periodically on-call
- Consider relocation when looking for employment

Note: Licensure, certification, and/or employment applications related to some degree programs require students to disclose any history of criminal prosecution, which may include the student's driving record. Students who have a criminal history are strongly encouraged to contact the licensing agency or meet with the coordinator of the program they are interested in, prior to beginning classes, to discuss potential impediments to licensure, certification or employment.
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