“Cultivate the people, educational resources and applied research capabilities necessary to improve the local, regional, and national availability of highly-skilled technicians and provide graduates with the technical knowledge and skills needed to support the design, construction, operation and maintenance of energy, industrial, mining and government agencies.”
- The ESTEC Mission

Welcome back for another year
ESTEC Staff, Students, and Industry Partners!

Thanks to all of our industry partners who have hired ESTEC graduates and interns. Over the past summer, we placed 24 interns and most of our graduates into industry jobs.

MEET OUR NEW CPS PROGRAM COORDINATOR
Sean McBride has obtained a BBA in Information Systems from ISU, an MBA from ISU’s NIATEC Cyber Security Program, and most recently a Masters of Global Management Degree from Thunderbird - Arizona State University.

Between January 2009 and July 2017, he wrote 2,300 cyber threat intelligence reports.

He implemented the situational awareness and vulnerability analysis programs that originally constituted the DHS ICS-CERT at INL.

Click here to read story

Academic 2017 - 2018
Fall News
Idaho National Laboratories
• Prototype Project
• Cyber Attacks
Cyber-Physical Security Program
• Meet our new CPS Program coordinator
• $150K in new Lab equipment
• INL Cyber Core
POWER CAREERS
• Meet our new POWER Careers Advocate
• 19.6% of new ESTEC students are female
General News
• ESTEC Technical Advisory Committee Meeting Oct. 26
• Power-Gen, Dec. 2017
• New ESTEC program description sheets
Academic 2017/2018
Student Snapshot

- 104 students enrolled
- 67 2017-2018 Graduates
- 100% placement rate
- $63K mean annual salary

Fall 2017 Graduates
In Each Program

- Instrumentation Engineering Technologies: 10
- Electrical Engineering Technologies: 4

Spring 2018 Graduates
In Each Program

- Nuclear Operations Technologies: 8
- Electrical Engineering Technologies: 12
- Mechanical Engineering Technologies: 23
- Instrumentation Engineering Technologies: 25

Total Number of Interns
at Each Location

- Recovered Energy Tech Instrument - 1
- Alyeska Pipeline - 1
- Keller Repair - 1
- ESTEC - 6
- City of Pocatello - 1
- Energy Solar - 1
- Simplot - 3
- High Desert Milk - 2
- Idaho National Laboratory
  - Advanced Test Reactor - 5
  - Materials & Fuel Complex - 2
  - Fluor - 1

External Funding Sources

- Other
- Newport
- Phillips 66
- NSF POWER Careers
- NSF Energy System Scholars
- Battelle Energy Alliance


Industry Flow Loop: Four 480V three-phase motors, Pumps, multiple types of instrumentation, controlled by Emerson Ovation DCS.
Currently in her 3rd semester of the Energy Systems Instrumentation Engineering Technology program, Chelsea is an active member of the department’s POWER Careers and Energy System Scholars. She had the opportunity this summer to intern at Idaho National Laboratory, Materials and Fuels Complex from May to August. She hopes to get hired full time locally, but will move for the right fitting job.

**Chelsea Beaman**
IET

After interning at Idaho National Laboratory at the Materials and Fuels Complex this last summer between May and August, Alex is now in his 3rd semester of the Energy Systems Instrumentation Engineering Technology program. After he graduated high school, he pursued an electrical apprenticeship in Twin Falls, Idaho. During this four year period he attended trade school for 8 semesters and worked 8000 hours to complete the apprenticeship.

**Alex Bybee**
IET

After completing two internships at both ON Semiconductor as a Test Maintenance Technician, and then an internship as an Instrumentation and Programming Technician with the City of Pocatello, Cory is now in his 4th semester of the Energy Systems Instrumentation Engineering Technology, BAS program. He plans to work & live in Pocatello after graduation. He is going to work at the City of Pocatello’s Water Pollution Control Department (WPC).

**Joseph “Cory” Thompson**
IET

Ruby is new to ESTEC, completing her 1st semester of the Energy Systems Instrumentation Engineering Technology program. She is also a new member of POWER Careers. Her favorite class is Theory. She gets to learn how to calculate all the different variables of a circuit. After those calculations she gets hands-on experience by building the circuit and measuring the variables in the Theory Lab.

**Ruby Medina**
IET

STUDENT FEATURE
Fall 2017
Jake is in his 3rd semester of the Energy Systems Electrical Engineering Technology program. The Energy Scholar interned with Fluor Idaho out at Idaho National Laboratory this past summer. Jake worked over a year and a half as an apprentice electrician right before starting classes, yet he was still eager to learn the “how” of electrical systems. After graduation, he hopes to work for Orbital ATK. He is excited to help put those rockets into space!

Serena Navo is currently in her first semester of the Energy Systems Mechanical Engineering Technology Program. After graduation she wants to pursue a Bachelors of Applied Science. Serena has completed two summer internships with University of Idaho. Her second internship was in the Engineering Building, where she had the opportunity to work with Jim Alves-Foss, Ph.D. in computer science.

Roberto is in his third semester of the Energy Systems Nuclear Operations Technology program and is an Energy Scholar. After graduation he plans to apply to locations where he feels he can fully utilize the skills and abilities that he has acquired throughout the program. His hopes are to stay local with Idaho National Laboratories. He also plans to continue furthering his education at Idaho State University.

Christie is in the first semster Energy Systems Nuclear Operations Technology Program, and a member of POWER Careers. She is interested in the Cyber-Physical Security Program and finishing her bachelor’s Degree. Before coming back to school this semester Christie volunteered many hours at her kids’ schools, with the Cub Scouts program, Neighborhood Watch, and her church.
Sean McBride is ESTEC’s new program coordinator for the Cyber-Physical Systems Security (CPS Program. The newsletter staff sat down with Sean to help spread knowledge on what the program has to offer and what the program goals are.

**ESTEC:** Sean, what does “cyber physical security” mean?  
**Sean:** The term “cyber-physical systems” refers to computers that control the real, physical world. Your mind might immediately think of the power grid or oil refineries -- which is accurate; but, I would emphasize that students and instructors throughout many College of Technology programs are accustomed to building, operating and maintaining cyber-physical systems.

For example, UAVs and robots are cyber-physical systems by definition; diesel generators addressed in our onsite power program have microelectronics; HVAC systems are classic examples. Computers and communications equipment are also found in automotive technologies and airplanes.

Though we may not always think of it this way, the fact is that computers already influence or control many fundamental aspects of our lives and that trend is increasing at a fantastic rate. You can now use your phone to turn your lights on and off, start your car and unlock your doors. That same trend exists in industrial environments where sensors increasingly monitor flow from wellheads, vibrations on motors, and many other aspects. Businesses want that data to make better decisions; but, they want it done safely and securely.
ESTEC: What does the CPS Program teach students?
Sean: In the Cyber-Physical Security program, we teach students to think through the consequences of misconfiguration, unintentional virus infections, and all-out attacks against these computers. We arm our students with adequate vocabulary, defensive strategies, and hands-on experience to quite literally keep the lights on and the water running.

ESTEC: What is your role in the program?
Sean: In my role as program coordinator, I view myself as the primary catalyst for recruiting, curriculum development, instruction, and job placement. Of course, I enjoy the support of many others within ESTEC, the greater COT, and industry to make those things happen.

In my instructional role, I oversee our 8-course curriculum, develop our laboratory, and teach “Risk Management for Cyber Physical Systems”, “Defending Critical Infrastructure”, and our Capstone experience course.

ESTEC: Tell us about your professional background.
Sean: From a professional point of view, my first full-time job after graduating from ISU was at the INL where I worked on cyber security projects sponsored by the DOE and DHS. I implemented the situational awareness and vulnerability analysis programs that originally constituted the DHS ICS-CERT. That is the group that informs the country, and really the world, about vulnerabilities or attacks that impact industrial facilities. The ICS-CERT also sends its experts throughout the country to respond to computer intrusions.

I recognized an opportunity to make a bigger difference and left to start a cyber security firm. We called it Critical Intelligence and ran it for 6 years, at which time my partner and I sold the firm. I then ended up running the industrial control systems business strategy for a large cyber security company.
ESTEC: What makes this program unique?

Sean: The Cyber-Physical Systems Security program is brand new to the College. This is great because Southeast Idaho is a hot spot for cyber physical systems security expertise. Our program was created by professionals from the INL, the FBI, and the leading cyber security firm, FireEye, who all live in the area. Establishing this CPS security program within the college was really a perfect confluence of events.

First, it could not exist without the Energy Systems Technology and Education Center (ESTEC). ESTEC exists to quickly place qualified technicians into industrial environments as specialists in electrical, mechanical, or instrumentation engineering technologies or nuclear operations. ESTEC itself is a truly unique center not only in our region, but also throughout the United States. You can’t have an effective CPS security program without ESTEC’s impressive laboratories and equipment that fulfill that mission. (The CPS program just received $150K in new Lab equipment.)

Second, ISU has a long-standing tradition of cybersecurity education. For 12 years, Dr. Corey Schou has operated the National Information Assurance Training and Education Center (NIATEC) within his Informatics Research Institute. Over the years, this graduate degree program has produced and placed dozens of cyber security professionals within the federal government. I was one of that program’s first graduates.

Third, since roughly 2005, the Idaho National Laboratory has received government mandates to develop and enhance the cyber security of the power grid and other industries. Cyber Security is now a significant mission area at the INL. Through the years, dozens of talented security professionals have passed through the Lab where they honed their skills and expertise and then moved on. I relate these facts to show how the ESTEC Cyber Physical Systems Security Program is perfectly positioned to harness Southeast
Idaho’s unique expertise and formalize a career path that accelerates the safety and security of our country’s industrial infrastructures.

**ESTEC:** What is your favorite part of the job so far?

**Sean:** I get excited when I stop to consider that we – all of us alive in this part of the country – are the beneficiaries of incredible industrial ingenuity that gives us and our families clean drinking water, reliable electricity, cheap gasoline, and instantaneously accessible information. I love encouraging students to think through the scenarios that could interrupt these critical services -- damaging products, hurting employees, harming the public, and degrading the environment. Once you can “see” cyber threat scenarios that interrupt our ability to enjoy those services, you can implement warnings and safeguards to protect and defend against those threats.

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**Meet our new CPS Program Coordinator**

**Sean McBride**

**Cyber-Physical Security Program Coordinator**

[Click here to read more about Sean McBride](#)
Evan Smith is ESTEC’s Energy Systems Mechanical Engineering Technologies (MET) Program Coordinator. Evan received his Bachelor of Science in Mechanical Engineering from the University of Utah in 1981. He worked in the chemical industry for 29 years before teaching at ISU for 7 years. Evan also worked in plant engineering design and reliability. He has a professional engineering license and is a Certified Maintenance Reliability Professional. His favorite part of teaching is seeing a student use “simple” engineering concepts to solve problems or build a lab project. Everything is simple once it’s understood. Here is what he had to say about this amazing program:

The word about our program needs to reach the individuals who are interested in having a life long, well-paying career. A career that provides a sense of accomplishment after a day is complete, knowing that a problem was corrected or prevented.

There are many who seek the opportunity to work with technology, machines, and power. And when we say power, we are not talking only about the electricity that is generated and sent to our home or business. Any force that is harnessed and put to work is power. Consider fluid power that keeps water coming through our faucet, water to grow the crops that feed us, or even the fluid that stops the cars we drive. Many may not realize that it is fluid pressure that operates our car brakes, or even keeps our refrigerators cooling by circulating a fluid.

Our Mechanical Engineering Technology Program continues to teach individuals how to use the tools and knowledge for equipment operation. There are employers fighting for graduates who have learned how to place a 2,000 lb motor in line within a hair of the machine it drives. No, this is not an exaggeration. A one ton machine needs to align its shaft with its counterpart within 0.001 inch to 0.003 inch. My hair measures 0.002 inch.

Enjoy what you do, even when you don’t think you should. You can be certain that someone, somewhere, would like what you are doing.
Energy System Scholars (ESS) is a National Science Foundation project that aims to recruit new, young students to enroll in Science, Technical, Engineering and Mathematics (STEM) programs. Members of the ESS scholarship are required to take an active role in their education. They participate in activities to help provide program publicity and awareness.

Our Goals

Energy System Scholars aims to prepare graduate ESS members for successful placement in technical occupations in energy and related industries.

Your Opportunities

- Access to ESTEC graduate mentors who are working in the field
- Academic and social support, networking, Professional development opportunities, including conferences
- Work experience including internships
- Job placement assistance
- Opportunity to become a mentor to another ESTEC student after graduation
- Assistance identifying and applying for scholarships!

Apply Now!

http://www2.isu.edu/estec/scholarships.shtml

Providing Opportunities for Women in Energy Related (POWER) Careers is a National Science Foundation project that aims to support and recruit women into ESTEC programs. These women help to contribute to society through providing energy, supplying the technician world with in-demand female workers, and gaining a career that offers a good income and stability for their families.

Our Goals

POWER Careers aims to provide women of all ages a pathway to a high-tech, high-wage, & high-demand career.

Your Opportunities

- Access to female mentors who are ESTEC graduates working in the field
- Networkink and social support
- Work experience, including internships
- Professional development opportunities, including conferences
- Job placement assistance
- Opportunity to become a mentor to another ESTEC student after graduation
- Assistance identifying and applying for scholarships!

Contact Us

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POWER Careers is funded with an award from the National Science Foundation Advanced Technological Education (ATE) program. (Award #15-02015)
I love Pocatello’s mountain bike trails. I have ridden in the City Creek Pedal Fest a couple of times. The first time, I did not finish as my chain broke on the final big uphill!

Sean Mcbride
Cyber-Physical Security Program Coordinator

Education and women are both very close to my heart! I love living in Southeast Idaho! Spending time with my husband and five kids, enjoying the great outdoors, and running are my favorite activities.

Katie Leishman
POWER Careers Advocate

I wish that I could convince women that STEM careers are a great choice for them. The opportunity to work in a field where they can contribute to advances in technology, help solve world problems, and earn a good living are just some of the advantages that STEM careers offer everyone, including women.

Sharie Ellis
1st Year Instructor

“Education and women are both very close to my heart! I love living in Southeast Idaho! Spending time with my husband and five kids, enjoying the great outdoors, and running are my favorite activities.”

Join our Facebook group to connect with alumni, faculty, and potential employers! https://www.facebook.com/groups/IdahoStateESTEC

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