ENERGY SERVICES AND RENEWABLE TECHNICIAN (ESRE)

ESRE 100. Safe Climbing Practices
Credits: 1
Prerequisite: Admitted into Energy Services and Renewable Technician Program or departmental approval.
Typically Offered: FALLSPR
This introductory course teaches essential skills for safely working at heights, focusing on elevated work practices, proper PPE usage, and basic knot tying techniques. Students will learn how to define elevated work areas, apply safe climbing practices, and perform basic at height rescue procedures. The course emphasizes effective communication, both oral and written, to ensure safe and efficient operations when working in elevated environments.

ESRE 210. Electrical and Safe Work Practices
Credits: 3
Typically Offered: FALL
This course covers specific work practices in the areas of basic electrical safety, principles of electricity, basic process controls, elevated work and rigging. OSHA standards and safe permitting practices are components of this course.

ESRE 213. Hydraulic Fundamentals
Credits: 3
Typically Offered: FALL
This course covers principles and operation of hydraulic systems. Hydraulic system analysis and troubleshooting in the lab setting is part of this course.

ESRE 216. Mechanical Drive Systems
Credits: 4
Typically Offered: FALL
Introducing the fundamentals of mechanical drives and the application of mechanical skills and knowledge to the industrial setting. Topics covered will include couplings, chain drives, pulley drives, motor leveling and alignment, bearings, gaskets and gear drives. Demonstration by the student in the areas of torqueing, measurements, gap adjustments and shaft alignments is included.

ESRE 218. Distributed Power Systems
Credits: 4
Typically Offered: FALL
This course includes an in-depth study of grid-direct solar arrays, small wind systems and other distributed grid systems. Curriculum also includes sizing and installation of systems.

ESRE 226. Analog PLCs
Credits: 3
Typically Offered: SPRING
The operation and use of analog systems is the focus of this course. PLC analog modules are used to demonstrate analog system operation. Commercial wind turbine systems are used to discuss and demonstrate how analog systems operate. Commercial wind turbine subsystem operations, including the distribution of generated power are covered in this course. The technicians role in the successful operation of a facility is another component of this course.

ESRE 228. Technician Applications and Troubleshooting
Credits: 4
Typically Offered: SPRING
This course, primarily a hands-on course, takes the core skills learned and integrates them into practice. Lab systems included are hydraulic, mechanical, electric motors, PLCs, and other control systems. This course develops and tests the students troubleshooting skills and prepares them to work safely and effectively in an industrial or renewable power generation facility.