

## INSTRUMENTATION AND CONTROLS TECHNOLOGY

**INST-140 Applied Basic DC Circuits** 3 cr.  
Introduction to electrical fundamentals, energy sources, Ohm's law, Watt's law, series, parallel, and series-parallel circuit analysis, Kirchoff's law, Thévenin's theorem, superposition, maximum power transfer, and other theorems. Use of digital multimeters and other electronics instruments will be examined. Corequisite: MATH 096 or math Accuplacer placement. Semester Offered: Fall, Spring and Summer.

**INST-144 National Electrical Code** 3 cr.  
This course offers an introduction to the National Electrical Code with a focus on the general portion of the code up to section 100-400, plus 900. Semester offered: Fall.

**INST-145 Applied Basic AC Circuits** 3 cr.  
Alternating current theory to include impedance, capacitive reactance, and inductive reactance in series, parallel, and series-parallel combination, resonance and impedance in RLC circuits. Corequisite: MATH 113. Prerequisite: INST 140. Semester offered: Fall, Spring and Summer.

**INST-160 Digital Electronics** 5 cr.  
An introduction to combination and sequential logic circuits and logic gates, Data Bus Control, binary codes, analog to digital and digital to analog conversions, multiplexing, adders and comparators. Prerequisite: INST 140. Semester Offered: Spring.

**INST-171 Motors and Controls** 5 cr.  
This course offers an introduction to motors and motor controls. Various kinds of AC/DC machines will be investigated including AC motors and alternator, DC motors and generators, stepper and servo-motors. Prerequisite: INST 145. Semester offered: Fall and Spring.

**INST-175 Renewable Energy Instrumentation** 3 cr.  
An introduction to the basic principles of instrumentation and control for renewable energy applications. Includes techniques for measuring mechanical, thermal and electrical quantities. Corequisite: INST 145. Semester offered: Fall.

**INST-180 Semiconductor Circuits** 5 cr.  
An introduction to semiconductor devices, semiconductor theory, characteristic curves, diodes, zener diodes, bipolar transistors, CE, CC, and CB amplifiers, Class A, B, and C operation, load lines and quiescent points, FET. Prerequisite: INST 145. Semester Offered: Fall.

**INST-190 Principles of Industrial Measurement** 5 cr.  
An introduction to the basic principles of process measurement, including techniques for the measurement of flow, level, temperature, pressure, and analytical process variables. Semester offered: Spring.

**INST-215 Renewable Energy AC and DC Machines** 3 cr.  
This course offers an introduction to DC motors/generators and AC motors/alternators. The principles of operation, motor control, installation, testing and AC or DC power generation are also included. Prerequisite: INST 145. Semester offered: Spring.

**INST-220 Process Control** 5 cr.  
Introduction to automatic process control systems. Prerequisite: INST 190. Semester Offered: Spring.

**INST-235 Electromechanical Devices** 5 cr.  
This course covers the theory and applications of electro-mechanical devices and their associated control circuits. Topics include transducers, pneumatics, vacuum, AC and DC motors, stepper motors and servomechanisms. Prerequisite: INST 145. Semester offered: Fall, Spring and Summer.

**INST-265 Industrial Wiring** 4 cr.  
Course is designed to develop a student's understanding and skills in the installation and wiring of industrial electrical equipment, in compliance with the National Electric Code. With the combination of hands on wiring practice and theory, the student will be able to perform industrial electrical tasks while complying with electrical safety, codes and standards. Prerequisites: INST-171, INST-235. Semester offered: Spring and Fall.

**INST-271 PLC Applications** 5 cr.  
Introduction to Programmable Logic Controller (PLC) functions including digital and analog applications. Prerequisite, INST 160. Semester offered: Fall.

**INST-284 Print Interpretation** 3 cr.  
This course covers industrial prints and schematics as used in the industry. This course will also cover the fundamental understanding of pumps, fans, and compressors. Prerequisites: INST-190, INST-235. Semester Offered: Spring.

## JOURNALISM

**JOUR-220 Writing for Mass Media** 3 cr.  
Emphasizes writing techniques for print and electronic media. Forms, style, and brevity are stressed. Semester offered: Fall.

**JOUR-280 Cooperative Education** 1-3 cr.  
Cooperative Education is a planned instructional program designed to enhance the student's learning experience by coordinating actual on-the-job training related to his/her curriculum with classroom work. Individualized learning objectives will be developed that are measurable and observable. The student will be evaluated jointly by the college personnel and employer. Semester offered: On Demand.

## LEARNING SUPPORT

**LRNS-081 Academic Skills I** 3 cr.  
Provides large and small group instruction and tutoring to improve basic academic skills and study skills. S/U grading. Course may be repeated with instructor approval and is not applicable towards any degree or certificate. Semesters Offered Fall, Spring.

**LRNS-095 Math 095 Skills** 3 cr.  
Provides academic support for students concurrently enrolled in Math 095. Utilizes large and small group instruction and tutoring that will provide opportunities for college students to improve their math and study skills helping them to succeed in their Math 095 course. S/U grading. Course may be repeated with instructor approval and is not

applicable towards any degree or certificate. Semesters Offered: Fall, Spring and Summer.

**LRNS-096 Math 096 Skills** **3 cr.**  
 Provides academic support for students concurrently enrolled in Math 096. Utilizes large and small group instruction and tutoring that will provide opportunities for students to improve their math and study skills helping them to succeed in their Math 096 course. S/U grading. Course may be repeated with instructor approval and is not applicable towards any degree or certificate. Semesters offered Fall, Spring and Summer.

**LRNS-111 College Success Strategies** **3 cr.**  
 Provides an in depth opportunity for students to learn and adopt methods that promote success in college and in life. Course may be applied towards an elective for an AA degree or certificate. Semesters offered: Fall, Spring, Summer.

## LEASE OPERATOR

**LSOP-111 Production Field Tech** **2 cr.**  
 Students will study producing natural resources (oil and gas), from newly drilled and existing well locations to include: minimum surface equipment operations, wellhead design, common field terminologies, pressure gauges, location and fluid flow layout, proper use of hand tools, and equipment safety devices. Safety will be strictly enforced.

**LSOP-112 Wellhead OP and Design** **2 cr.**  
 To provide students with techniques and procedures to correctly identify different wellhead designs and preventative maintenance routines. Safety will be strictly enforced. Prerequisites: MATH 095, ENGL 095, or Accuplacer equivalent. Semester Offered: Fall.

**LSOP-113 Surface Equipment P and M** **2 cr.**  
 Students will learn skills, techniques and procedures to properly perform routine preventative maintenance on surface production equipment. Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Fall.

**LSOP-180 Cooperative Work Exp I** **5 cr.**  
 The students will be employed by a company in the lease operator field which will provide relevant learning experiences related to the classroom/laboratory. The student will be supervised and evaluated jointly by his/her employer and San Juan College personnel. Prerequisites: LSOP-111, LSOP-112, LSOP-113, SAFE-114, SAFE-139, COSC-125, (MATH-095, ENGL-095, OR CPT EQUIVALENT). Semester Offered: Fall.

**LSOP-201 Basic Oil Measurement and Gauging** **1 cr.**  
 Students will study basic methods for gauging and correctly documenting hydrocarbon or oil tanks, inclusive of state and federal regulatory requirements. Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Spring.

**LSOP-202 Basic Field Gas Measurement** **2 cr.**  
 Students will be introduced to the fundamentals of gas measurement. Includes dry flow meters and remote telecommunication units (RTU's). Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Spring.

**LSOP-203 Intro to Wireline and Swab Techniques** **1 cr.**  
 Students will be introduced to wireline benefits and experience an introduction to swabbing techniques. Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Spring.

**LSOP-205 Beam Lift and Chemical Pump** **2 cr.**  
 An introduction to beam lift systems design and operation. Operation and usage of chemical injection pump. Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Spring.

**LSOP-206 Reduced Production Rates** **1 cr.**  
 Introduce the student to the causes and prevention of unexpected reduced production rates. Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Spring.

**LSOP-207 Intro Plunger Lift** **2 cr.**  
 An introduction of plunger lift systems and operation. Safety will be strictly enforced. Prerequisites: MATH-095, ENGL-095, or Accuplacer equivalent. Semester Offered: Spring.

**LSOP-225 Adv. Separator Valve Training** **0.5 cr.**  
 Students will receive comprehensive training with separator valves in partnership with industry. Safety will be strictly enforced.

**LSOP-230 Theory of Line Locating** **0.5 cr.**  
 Students will receive basic training in theory of line locating, including buried utility lines and well location flow lines. Safety will be strictly enforced.

**LSOP-280 Cooperative Work Experience II** **15 cr.**  
 The students will be employed by a company in the lease operator field which will provide relevant learning experiences related to classroom/laboratory. The student will be supervised jointly by his/her employer and San Juan College personnel. Prerequisites: LSOP-111, LSOP-112, LSOP-113, LSOP-180, LSOP-201, LSOP-202, LSOP-203, LSOP-205, LSOP-206, LSOP-207, SAFE-139, SAFE-114. Semester Offered: Summer.

## LEGAL ASSISTANT

**LEAS-120 Introduction for Paralegals** **3 cr.**  
 An introduction to the role of the paralegal including regulation of the legal profession, legal ethics, law office management, human relations skills, legal terminology, techniques of interviewing, and methods of discovery. Prerequisites: ENGL 099 or APEN 085 and RDNG 113 or APRD 081. Corequisites: LEAS 121 and LEAS 127. Semester Offered: Fall.

**LEAS-121 American Law for Paralegals** **3 cr.**  
 This course is designed to introduce the paralegal student to the American legal system beginning with the history and then on state and tribal legislative processes and administrative agencies. The course provides an introduction to the structure of the federal and state court systems and the method by which lawsuits are initiated and resolved. Prerequisites: ENGL 099 or APEN 085 and RDNG 113 or APRD 081. Corequisites: LEAS 120 and LEAS 126. Semester Offered: Spring.