

Process Technology (PRT)

Community and Technical College

Process Technology Program

907-455-2800

PRT F101 Introduction to Process Technology

3 Credits

Offered Fall, Spring and Summer

Introduction to process operations in industry. Non-mathematical overview of general information, processes, procedures and equipment a process operator would be expected to know and use.

Lecture + Lab + Other: 3 + 0 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F110 Introduction to Occupational Safety, Health and Environmental Awareness

3 Credits

Offered Fall

Overview of the field of safety, health and environment within the process industry. Covers plant hazards, safety, and environmental systems and equipment, and applicable government regulations and industry standards.

Lecture + Lab + Other: 3 + 0 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F117 Drafting for Technicians

3 Credits

Offered As Demand Warrants

Skills and techniques needed to produce process piping and instrumentation drawings.

Lecture + Lab + Other: 2 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F120 Water Quality Management for Process Industries

4 Credits

Offered As Demand Warrants

Overview of the chemistry, biology, hydraulics and hydrology related to water management in industries. Water distribution systems, water processing, operation of water works, wastewater processing, advanced wastewater treatment and water reuse.

Lecture + Lab + Other: 3 + 3 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F130 Process Technology I: Equipment

4 Credits

Offered Spring

Selected process equipment including rotating machinery and process units. Emphasis on equipment components, construction, preventative maintenance and safety. Includes hands-on experience.

Prerequisites: PRT F101.

Lecture + Lab + Other: 3 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F135 Stationary Equipment

4 Credits

Offered As Demand Warrants

A detailed hands-on lecture/lab course covering stationary equipment used in a variety of process industries. Piping, valves, vessels, tanks, exchangers, heaters, boilers, mineral processing, mill equipment and distillation equipment are covered.

Lecture + Lab + Other: 3 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F140 Industrial Process Instrumentation I

3 Credits

Offered Spring

Physics of pressure, temperature, level and flow measurement; mechanical and electrical aspects of instruments used to control dynamics of processes. Dynamics of automatic control including proportional control, automatic reset, derivative action and integral timing.

Prerequisites: MATH F105.

Lecture + Lab + Other: 2 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F144 Industrial Process Instrumentation II

3 Credits

Offered Fall

Continuation of PRT F140. Emphasis on repair, maintenance and calibration, including hands-on physical training on a wide variety of process instruments.

Prerequisites: PRT F140.

Lecture + Lab + Other: 2 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F160 Oil and Gas Exploration and Production I

3 Credits

Offered As Demand Warrants

Surveys oil and gas exploration and production issues including marketing, geology, reservoir economics, legal aspects of resource ownership, drilling and production technologies, product separation, safety and environmental issues. Course may not be audited.

Prerequisites: Must be enrolled in the PRT program or permission of Program Chair.

Lecture + Lab + Other: 3 + 0 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F230 Process Technology II: Systems

4 Credits

Offered Fall

Integration of equipment concepts to show how the individual components interact as part of a system and how each system works within an entire processing facility. Systems topics include upstream oil and gas production, petrochemicals and refinery processes, refrigeration, power generation, milling, boilers and heaters, coolers and heat exchangers.

Prerequisites: PRT F130.

Lecture + Lab + Other: 3 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F231 Process Technology III: Operations

4 Credits

Offered Spring

Duties and responsibilities of the process operator on the job. Includes the details of normal operation, upset conditions, emergency action plans, startups, shutdowns, operating modes, turnarounds and routing maintenance activity.

Prerequisites: PRT F230.

Lecture + Lab + Other: 3 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F240 Industrial Process Instrumentation III

3 Credits

Offered Spring

A study of digital and analog industrial measurement and control instrumentation, including continuous analog control loops, relay logic and programmable logic controllers. Emphasis is on commonly used process measurement devices, control methods and strategies, and the proper selection, identification, design, installation and operation of instrumentation.

Prerequisites: PRT F140; PRT F144.

Recommended: MATH F113X or higher.

Lecture + Lab + Other: 2 + 2 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F248 Valve Maintenance and Instrumentation

3 Credits

Offered Fall

Covers maintenance and operation of gate, globe, ball, plug, check and special-purpose valves. Details of actuators and various accessories related to valve maintenance and control will be explained and related to valve selection based on application. Industrial process control valve maintenance and basic calibrations.

Recommended: PRT F130.

Lecture + Lab + Other: 3 + 1 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F250 Process Troubleshooting

3 Credits

Offered Spring

Troubleshooting process operations and problems. Using indicators, variables and controllers along with a formalized process of troubleshooting. Troubleshooting examples will reflect current needs of industry.

Prerequisites: PRT F230.

Lecture + Lab + Other: 3 + 0 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F255 Quality Concepts for the Process Industry

1 Credit

Offered Fall, Spring and Summer

Introduction to current quality concepts applied to role of process technician. Includes quality concepts with respect to the client and the role of statistical processes used by the operator in achieving quality.

Lecture + Lab + Other: 1 + 0 + 0

Grading System: Letter Grades with option of Plus/Minus

PRT F275 Process Technology Internship

1-9 Credits

Offered As Demand Warrants

Working experience in and exposure to various stages and settings within the process industry. Endorsed and promoted by Alaska Process Industry Careers Consortium, the internship is an intensive exposure to the various duties and responsibilities of the process operator in Alaska. A maximum of 9 credits may be earned.

Prerequisites: Permission of instructor.

Recommended: PRT F101, PRT F110, PRT F140.

Lecture + Lab + Other: 0 + 5-45 + 0

Grading System: Letter Grades with option of Plus/Minus

Repeatable for Credit: May be taken 9 times for up to 9 credits