# PROCESS TECHNOLOGY (PRT)

**Community and Technical College**  
Process Technology  
907-455-2800

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Offered As Demand Warrants</th>
<th>Description</th>
<th>Prerequisites</th>
<th>Lecture + Lab + Other</th>
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</thead>
<tbody>
<tr>
<td>PRT F101</td>
<td>Introduction to Process Technology</td>
<td>3</td>
<td></td>
<td>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.</td>
<td></td>
<td>3 + 0 + 0</td>
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<tr>
<td>PRT F110</td>
<td>Introduction to Occupational Safety, Health and Environmental Awareness</td>
<td>3</td>
<td></td>
<td>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.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>PRT F117</td>
<td>Drafting for Technicians</td>
<td>3</td>
<td></td>
<td>Skills and techniques needed to produce process piping and instrumentation drawings.</td>
<td></td>
<td>2 + 2 + 0</td>
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<tr>
<td>PRT F120</td>
<td>Water Quality Management for Process Industries</td>
<td>4</td>
<td></td>
<td>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.</td>
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<td>3 + 3 + 0</td>
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<tr>
<td>PRT F130</td>
<td>Process Technology I: Equipment</td>
<td>4</td>
<td></td>
<td>Selected process equipment including rotating machinery and process units. Emphasis on equipment components, construction, preventative maintenance and safety. Includes hands-on experience.</td>
<td>PRT F101</td>
<td>3 + 2 + 0</td>
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<tr>
<td>PRT F135</td>
<td>Stationary Equipment</td>
<td>4</td>
<td></td>
<td>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.</td>
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<td>3 + 2 + 0</td>
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<tr>
<td>PRT F140</td>
<td>Industrial Process Instrumentation I</td>
<td>3</td>
<td></td>
<td>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.</td>
<td>MATH F105</td>
<td>2 + 2 + 0</td>
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<tr>
<td>PRT F144</td>
<td>Industrial Process Instrumentation II</td>
<td>3</td>
<td></td>
<td>Continuation of PRT F140. Emphasis on repair, maintenance and calibration, including hands-on physical training on a wide variety of process instruments.</td>
<td>PRT F140</td>
<td>2 + 2 + 0</td>
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<tr>
<td>PRT F160</td>
<td>Oil and Gas Exploration and Production I</td>
<td>3</td>
<td></td>
<td>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.</td>
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<td>3 + 0 + 0</td>
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<tr>
<td>PRT F230</td>
<td>Process Technology II: Systems</td>
<td>4</td>
<td></td>
<td>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. Emphasis on the common systems found in each Alaska process industry. Systems topics include upstream oil and gas productions, petrochemicals and refinery processes, refrigeration, power generation, milling, boilers and heaters, coolers and heat exchangers.</td>
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<td>3 + 2 + 0</td>
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<tr>
<td>PRT F231</td>
<td>Process Technology III: Operations</td>
<td>4</td>
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<td>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.</td>
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<td>3 + 2 + 0</td>
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PRT F240  Industrial Process Instrumentation III
3 Credits
Offered As Demand Warrants
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

PRT F248  Valve Maintenance and Instrumentation
3 Credits
Offered As Demand Warrants
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

PRT F250  Process Troubleshooting
3 Credits
Offered As Demand Warrants
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

PRT F255  Quality Concepts for the Process Industry
1 Credit
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

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