An internship is a formal agreement between the student, an employer, and the college resulting in practical work experience on a real job site. Internships may be paid or unpaid at the employer’s discretion, but to receive credit for this internship course you must register and pay for it like any other college course.

Expectations and standards for the internship are entirely set by the employer. This is a pass-fail course, your status being solely determined by your supervisor’s assessment of your performance.
Program Outcomes for Instrumentation and Control Technology (BTC)

#1 Communication
Communicate and express concepts and ideas across a variety of media (verbal, written, graphical) using industry-standard terms.

#2 Time Management
Arrives on time and prepared to work; Budgets time and meets deadlines when performing tasks and projects.

#3 Safety
Complies with national, state, local, and college safety regulations when designing and performing work on systems.

#4 Analysis and Diagnosis
Analyze, evaluate, and diagnose systems related to instrumentation and control including electrical and electronic circuits, fluid power and signaling systems, computer networks, and mechanisms; Select and apply correct mathematical techniques to these analytical and diagnostic problems; Select and correctly use appropriate test equipment to collect data.

#5 Design and Commissioning
Select, design, construct, configure, and install components necessary for the proper function of systems related to instrumentation and control, applying industry standards and verifying correct system operation when complete.

#6 System optimization
Improve technical system functions by collecting data and evaluating performance; Implement strategies to optimize the function of these systems.

#7 Calibration
Assess instrument accuracy and correct inaccuracies using appropriate calibration procedures and test equipment; Select and apply correct mathematical techniques to these calibration tasks.

#8 Documentation
Interpret and create technical documents (e.g. electronic schematics, loop diagrams, functional diagrams, P&IDs, graphs, narratives) according to industry standards.

#9 Independent learning
Select and research information sources to learn new principles, technologies, and techniques.

#10 Job searching
Develop a professional resume and research job openings in the field of industrial instrumentation.
Each and every outcome in this course is assessed at a mastery level (i.e. 100% competence)

- Report to work on time, every day, abiding by all worksite policies on safety, attendance, attire, and general behavior. [Ref: Program Learning Outcomes #2, #3, and #10]
- Complete all assigned tasks in a timely and safe manner. [Ref: Program Learning Outcomes #2, #3, and #10]
- Communicate professionally with co-workers. [Ref: Program Learning Outcome #1]
- Demonstrate technical knowledge, skill, and attitude meeting or exceeding supervisor expectations. [Ref: Program Learning Outcomes #4, #5, #7, #8, and #9]
Sequence of second-year Instrumentation courses

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>INST 233</td>
<td>Protective Relays (elective)</td>
<td>4 cr</td>
</tr>
<tr>
<td></td>
<td>INST 200</td>
<td>Intro. to Instrumentation</td>
<td>1 wk</td>
</tr>
<tr>
<td>Fall</td>
<td>INST 240</td>
<td>Pressure/Level Measurement</td>
<td>6 cr</td>
</tr>
<tr>
<td></td>
<td>INST 241</td>
<td>Temp./Flow Measurement</td>
<td>6 cr</td>
</tr>
<tr>
<td></td>
<td>INST 242</td>
<td>Analytical Measurement</td>
<td>5 cr</td>
</tr>
<tr>
<td>Winter</td>
<td>INST 250</td>
<td>Final Control Elements</td>
<td>5 cr</td>
</tr>
<tr>
<td></td>
<td>INST 251</td>
<td>PID Control</td>
<td>5 cr</td>
</tr>
<tr>
<td></td>
<td>INST 252</td>
<td>Loop Tuning</td>
<td>4 cr</td>
</tr>
<tr>
<td>Spring</td>
<td>INST 260</td>
<td>Data Acquisition Systems</td>
<td>4 cr</td>
</tr>
<tr>
<td></td>
<td>INST 262</td>
<td>Digital Control Systems</td>
<td>5 cr</td>
</tr>
<tr>
<td></td>
<td>INST 263</td>
<td>Control Strategies</td>
<td>5 cr</td>
</tr>
<tr>
<td></td>
<td>ENGT 134</td>
<td>CAD 1: Basics</td>
<td>5 cr</td>
</tr>
</tbody>
</table>

**Core Electronics -- 3 qtrs**
including MATH 141 (Precalculus 1)

Prerequisite for all INST24x, INST25x, and INST26x courses

Offered 1st week of Fall, Winter, and Spring quarters

All courses completed?

- Yes: Graduate!!
- No: Inst 205 -- 1 cr Job Prep I, Inst 206 -- 1 cr Job Prep II

Jobshadow and/or Internship strongly recommended

(Only if 4th quarter was Summer: INST25x)

Prerequisite for INST206
The particular sequence of courses you take during the second year depends on when you complete all first-year courses and enter the second year. Since students enter the second year of Instrumentation at four different times (beginnings of Summer, Fall, Winter, and Spring quarters), the particular course sequence for any student will likely be different from the course sequence of classmates.

Some second-year courses are only offered in particular quarters with those quarters not having to be in sequence, while others are offered three out of the four quarters and must be taken in sequence. The following layout shows four typical course sequences for second-year Instrumentation students, depending on when they first enter the second year of the program:

### Possible course schedules depending on date of entry into 2nd year

#### Beginning in Summer

**July**
- Summer quarter
  - INST 233 -- 4 cr
    - Protective Relays (elective)
  - Jobshadow and/or Internship strongly recommended

**Aug.**
- Fall quarter
  - INST 200 -- 1 wk
    - Intro. to Instrumentation
  - INST 240 -- 6 cr
    - Pressure/Level Measurement
  - INST 241 -- 6 cr
    - Temp./Flow Measurement
  - INST 242 -- 5 cr
    - Analytical Measurement

#### Beginning in Fall

**Sept.**
- Fall quarter
  - INST 200 -- 1 wk
    - Intro. to Instrumentation
  - INST 240 -- 6 cr
    - Pressure/Level Measurement
  - INST 241 -- 6 cr
    - Temp./Flow Measurement
  - INST 242 -- 5 cr
    - Analytical Measurement

**Dec.**
- Winter quarter
  - INST 205 -- 1 cr
    - Job Prep I
  - INST 250 -- 5 cr
    - Final Control Elements
  - INST 251 -- 5 cr
    - PID Control
  - INST 252 -- 4 cr
    - Loop Tuning

#### Beginning in Winter

**Jan.**
- Winter quarter
  - INST 200 -- 1 wk
    - Intro. to Instrumentation
  - INST 240 -- 6 cr
    - Pressure/Level Measurement
  - INST 241 -- 6 cr
    - Temp./Flow Measurement
  - INST 242 -- 5 cr
    - Analytical Measurement

**Mar.**
- Spring quarter
  - INST 205 -- 1 cr
    - Job Prep II
  - INST 260 -- 4 cr
    - Data Acquisition Systems
  - INST 262 -- 5 cr
    - Digital Control Systems
  - INST 263 -- 5 cr
    - Control Strategies
  - ENGT 134 -- 5 cr
    - CAD 1: Basics

#### Beginning in Spring

**Apr.**
- Spring quarter
  - INST 200 -- 1 wk
    - Intro. to Instrumentation
  - INST 240 -- 6 cr
    - Pressure/Level Measurement
  - INST 241 -- 6 cr
    - Temp./Flow Measurement
  - INST 242 -- 5 cr
    - Analytical Measurement

**Aug.**
- Fall quarter
  - INST 205 -- 1 cr
    - Job Prep I
  - INST 250 -- 5 cr
    - Final Control Elements
  - INST 251 -- 5 cr
    - PID Control
  - INST 252 -- 4 cr
    - Loop Tuning

**Dec.**
- Winter quarter
  - INST 205 -- 1 cr
    - Job Prep II
  - INST 260 -- 4 cr
    - Data Acquisition Systems
  - INST 262 -- 5 cr
    - Digital Control Systems
  - INST 263 -- 5 cr
    - Control Strategies
  - ENGT 134 -- 5 cr
    - CAD 1: Basics

**Graduation!**