Program Title:  Industrial Technology

Course Instructor(s):  Anthony Valente, Instructor
Denny Fulk, Adjunct Instructor
Daryl Mummert, Adjunct Instructor
Jonas Smith, Adjunct Instructor

Cross Walk:  Learning Outcomes and Relevant Courses

<table>
<thead>
<tr>
<th>Learning Outcome</th>
<th>Relevant Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outcome #1: Identify typical tools and proper use of a variety of devices including precision measurement.</td>
<td>INT 101 Introduction to Industrial Technology</td>
</tr>
</tbody>
</table>
| Outcome #2: Perform test procedures (start-up) for a variety of industrial equipment such as hydraulics, pneumatic, pumps, hvac systems, boilers, compressed air systems etc. | INT 101 Introduction to Industrial Technology  
INT 102 Introduction to PLC  
INT 110 Fundamentals of Electricity  
INT 105 Plumbing and Pipefitting  
INT 107 Introduction to HVAC |
| Outcome #3: Perform data collection and evaluation for equipment used in the industrial environment. | INT 101 Introduction to Industrial Technology  
INT 110 Fundamentals of Electricity  
INT 105 Plumbing and Pipefitting  
INT 107 Introduction to HVAC  
INT 106 Welding |
| Outcome #4: Understand and use proper communications. | INT 101 Introduction to Industrial Technology |
Program Outcomes Guide Spring 2016

| Outcome #5: Maintain and troubleshoot a variety of systems. | INT 101 Introduction to Industrial Technology  
INT 102 Introduction to PLC  
INT 110 Fundamentals of Electricity  
INT 105 Plumbing and Pipefitting  
INT 107 Introduction to HVAC |
|----------------------------------------------------------|------------------------------------------|
| Outcome #6: Recognize standard safety practices, procedures, and personal protection equipment. | INT 104 Facilities Safety and Compliance  
INT 106 Welding |

### Expected Learning Outcomes

- Identify typical tools and proper use of a variety of devices including precision measurement.

- Perform test procedures (start-up) for a variety of industrial equipment such as hydraulics, pneumatic, pumps, hvac systems, boilers, compressed air systems etc.

- Perform data collection and evaluation for equipment used in the industrial environment.

- Understand and use proper communications.

- Maintain and troubleshoot a variety of systems.

- Recognize standard safety practices, procedures, and personal protection equipment.

### Assessment (How do students demonstrate achievement of these outcomes?)

Final Project: Students will install components, test and start-up systems, and collect and analyze data.

Satisfactory scores on exams and projects.

Satisfactory scores on exams modeled after industry standard certification exams.

### Validation (What methods are used to validate your assessment?)

1. Approval by Industrial Technology/Alternative Energy Technology Advisory Committee


3. Faculty Review

2. Project similar in scope real world experience/installation.
Results (What do the data show?)

Course testing data and feedback from full time and adjunct instructors show student performance is meeting targeted outcomes. Students were again advised to use tutoring services to improve their math skills, and some cases brush up on their math skills based on results of some classroom calculation activities.

Due to the new advanced Manufacturing program being implemented, course materials are being adjusted as needed.

Testing results and hands-on exercises show acceptable level of accomplishing student learning outcomes. It is evident that the more hands on one activities the students participate in, the more they understand the theory behind the applications. It is noticeable that a single student who struggles with theory related test questions can better answer the same questions after given application exposure. Videos shown in class that represent equipment that is not available on campus also have had a positive result on understanding the concepts described in the textbooks. Students seem to be more and more laxed on turning in homework on time when no penalty is conveyed up front.

The first students to complete INT 206 AWS certification completed this spring. Three students passed the AWS D1.1 industry certification for welding the first time out of 5 who tested.

Follow-up (How have you used the data to improve student learning?)

The Advanced Manufacturing Systems Degree is in the process of replacing the outdated Industrial Technology Degree. The Industrial Technology Certificate is still being offered with modified course requirements and content. Also a new Basic Electronics Certificate has been added. The HVAC and Plumbing LOR as well as the Welding LOR are continued as stand-alone offerings.

We continue to modify presentations, course content, and add higher technology hands-on exercises using Advanced Manufacturing Equipment has been in process, in particular using the robotic assembly system.

We have expanded use of the Siemens PLC Training equipment to complement the Allen Bradley PLC equipment on campus to address regional business needs.

Budget Justification
(What resources are necessary to improve student learning?)

Unit Planning request for updated Precision alignment equipment.