



# **INDUSTRIAL AUTOMATION, CONTROLS, AND NETWORKING**

**Wisconsin Indianhead Technical College  
10-631-2 Associate Degree**

**2013  
Program Review  
and  
Improvement Plan**

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# Industrial Automation, Controls, and Networking

10-631-2 Associate Degree

Financial Aid Eligible

## Program Overview

This program prepares the student to be employed at the technician level or higher on computers, industrial computer networks, programmable logic controllers (PLCs), and instruments. PLCs are often the heart of the control portion of the manufacturing process. The student will have both classroom and hands-on laboratory instruction with several systems to help students understand computer and PLC interfacing, control systems, network installation, and administration.

Campus:

New Richmond



## Special Feature

This program is unique in the state.

## Admission Requirements

Students in this program must:

- Complete application form and submit with fee (fee waiver may apply if previously submitted)
- Complete Accuplacer entrance assessment to determine placement (waiver may apply with acceptable alternative test scores and/or postsecondary degree completion)
- Complete admissions interview with a WITC counselor (above requirements should be completed prior to interview)

## Program-Specific Requirement

Students in this program must:

- Complete the SmarterMeasure Learning Readiness Indicator assessment for online learning at: <http://www.witc.edu/online/smartermeasure.htm>.

## Student Profile

Industrial Automation, Controls, and Networking students should be able to:

- Apply scientific principles and technical knowledge
- Perform mathematical computations accurately
- Evaluate data from tests and observations
- Work with precise standards
- Enjoy scientific and technical work
- Enjoy mechanical work requiring precision
- Work independently and with others
- Communicate clearly
- Be self-motivated

## Preparation for Admission

Students should strive to reach a comfort level in the following courses or skills:

- Algebra/Geometry
- English/Speech/Creative Writing
- Economics/Business
- Basic computer skills

## Program Outcomes

Employers will expect Industrial Automation, Controls, and Networking graduates to be able to:

- Identify controls systems and network requirements
- Make recommendations for hardware and software
- Perform installations and supportive functions for LAN/communication busses
- Perform installations and maintenance of controls hardware/software/cabling
- Develop system documentation
- Maintain system documentation
- Troubleshoot hardware/software of PLCs, instrumentation, and control systems
- Integrate controls systems
- Perform programming and configuration of distributed control systems

Collegewide outcomes and indicators will also be addressed to develop personal awareness, career effectiveness, and professionalism. See page 5 of the college catalog for a list of collegewide outcomes and indicators.

## Career Outlook

The Industrial Automation, Controls, and Networking graduate will be ready to start a career as a(n):

- Computer Technician
- Network Technician
- Field Service Technician
- Control Systems Technician
- Instrument Technician
- Programmable Logic Controller (PLC) Technician
- Industrial Automation Technician

## Curriculum

Number	Course Title	Credits
<b>Technical Studies Courses</b>		
10150111	Cisco Networking Fundamentals	3
10150113	Cisco Switching and Wireless <sup>▲</sup>	3
10150117	MS LAN Administration - Infrastructure <sup>▲</sup>	3
10150121	Hardware/Software Installation <sup>▲</sup>	2
10150139	IT Essentials	2
10154103	Linux Operating Systems	3
10154149	Windows Operating Systems	3
10605167	Electricity 1 <sup>▲</sup>	2
10605168	Electricity 2 <sup>▲</sup>	2
10631100	Introduction to Process Control <sup>▲</sup>	2
10631102	Industrial Power Electronics <sup>▲</sup>	2
10631103	Process Control and Instrumentation <sup>▲</sup>	3
10631104	Smart Instruments <sup>▲</sup>	2
10631105	Industrial Networks and Communication Buses	2
10631106	Supervisory and Distributed Control Systems <sup>▲</sup>	3
10631107	Industrial Automation Case Project <sup>▲</sup>	1
10631108	PLC Programming and Interfacing <sup>▲</sup>	3
10631109	Industrial AC, Motor Control, and Pilot Devices <sup>▲</sup>	3
10631110	Advanced PLC Programming and Interfacing <sup>▲</sup>	<u>3</u>
		<b>47</b>
<b>General Studies Courses<sup>§</sup></b>		
10801195	Written Communication <sup>▲</sup>	3
10801196	Oral/Interpersonal Communication	3
10801197	Technical Reporting <sup>▲</sup>	3
10804113	College Technical Mathematics 1A <sup>▲</sup>	3
10804114	College Technical Mathematics 1B <sup>▲</sup>	2
10809166	Introduction to Ethics: Theory and Application <sup>or</sup>	3
10809172	Introduction to Diversity Studies	
10809195	Economics	3
10809198	Introduction to Psychology	<u>3</u>
		<b>23</b>
<b>PROGRAM REQUIREMENTS</b>		<b>70</b>

<sup>▲</sup> Requires a prerequisite and/or corequisite that must be completed with a grade point of 2.0 or better.

<sup>§</sup> See page 40 for General Studies course descriptions.

## Course Descriptions

(See page 40 for General Studies course descriptions)

### 10150111

**Cisco Networking Fundamentals - Credits: 3**  
This course introduces the components, functions, and design of communication networks including the Internet. It uses the OSI and TCP/IP network models to examine the services provided by different layers of the model. The course examines the protocols used by the application, transport, network, datalink, and physical layers of the OSI model. TCP, IP, and Ethernet will be examined in detail. Learning will be reinforced by the creation and configuration of TCP/IP networks. Network addressing will be covered in detail as well.

### 10150113

**Cisco Switching and Wireless - Credits: 3**  
This course helps students develop an in-depth understanding of how switches operate and are implemented in the LAN environment for small and large networks. Beginning with a foundational overview of Ethernet, this course provides detailed explanations of LAN switch operation, VLAN implementation, Rapid Spanning Tree Protocol (RSTP), VLAN Trunking Protocol (VTP), Inter-VLAN routing, and wireless network operations. Students analyze, configure, verify, and troubleshoot VLANs, RSTP, VTP, and wireless networks. Campus network design and Layer 3 switching concepts are introduced. **PREREQUISITE:** 10150111 Cisco Networking Fundamentals.

### 10150117

**MS LAN Administration - Infrastructure - Credits: 3**  
This course provides students with training in the configuration of services in a Microsoft Server environment. Students will learn how to setup and troubleshoot DHCP, DNS, printing, file sharing, and remote access services. Microsoft file permissions will be examined and Active Directory will be introduced. Other topics include Windows Firewall, Network Access Protection, and IPv6. **PREREQUISITE:** 10154149 Windows Operating Systems.

### 10150121

**Hardware/Software Installation - Credits: 2**  
This course prepares students to install hardware and software. You will learn to properly install various types of hardware and software on an IBM-compatible personal computer. This lecture- and lab-based course will use both group and individual activities. **PREREQUISITE:** 10154149 Windows Operating Systems.

### 10150139

**IT Essentials - Credits: 2**  
IT Essentials covers the fundamentals of computer hardware and software as well as advanced concepts. Students who complete this course will be able to describe the internal components of a computer, assemble a computer system, install an operating system, and troubleshoot using system tools and diagnostic software.

### 10154103

**Linux Operating Systems - Credits: 3**  
In this course the Linux operating system is examined in-depth with emphasis on features, capabilities, tools, and configurations including an introduction to network configurations. Additional topics will examine other operating systems like MAC OS.

### 10154149

**Windows Operating Systems - Credits: 3**  
A review of the most common command line operations and study of more advanced commands necessary to configure the Windows 2000 operating system for a variety of environments. Topics to be studied include creating directories, batch files, menus, custom configurations, file management, multitasking, windowing, security, and disk management utilities. There will be an introduction to usage, configuration, and tools of the Windows 9.X operating system.

### 10605167

**Electricity 1 - Credits: 2**  
Electricity 1 is a lecture/hands-on course designed to introduce students to basic electrical terminology laws, concepts, instrumentation, and application. Hands-on activities will be stressed to reinforce electrical concepts related to practical applications dealing with computer networks. Topics covered will include electrical safety, terminology and symbols, electrical laws, basic circuits, multimeter use, DC power supplies, and troubleshooting. Critical-thinking skills are emphasized to develop competencies in problem solving and troubleshooting. **COREQUISITE:** 10804113 College Technical Mathematics 1A or 10804115 College Technical Math 1.

### 10605168

**Electricity 2 - Credits: 2**  
This course is designed to introduce students to the basic concepts of alternating current. Emphasis is placed on circuit analysis and problem-solving skills necessary for the maintenance of modern industrial electric systems. **PREREQUISITE:** 10605167 Electricity 1.

### 10631100

**Introduction to Process Control - Credits: 2**  
The Introduction to Process Control course explains the function of basic devices for measuring and controlling different kinds of variables in process control. It introduces closed-loop control, PID functions, analog and digital devices, and control system applications. It also covers instrumentation symbols and the interpretation and use of process diagrams. **PREREQUISITE:** 10605167 Electricity 1.

### 10631102

**Industrial Power Electronics - Credits: 2**  
The Industrial Power Electronics course is a hands-on course dealing with the electronics that are used to control, power, and operate machines and processes in the modern manufacturing plant. The course includes the study and use of the oscilloscope and digital multimeter, thyristors, AC, DC, stepper and servo motor drive systems, photoelectric switches, and miscellaneous field devices. **PREREQUISITE:** 10605167 Electricity 1 or equivalent.

### 10631103

**Process Control and Instrumentation - Credits: 3**  
The Process Control and Instrumentation course offers hands-on skill exercises on controlling and manipulating temperature, pressure, flow, and level in the manufacturing process. Students will be able to identify, connect, operate, troubleshoot, and perform preventive maintenance on the components that form a process control system. **PREREQUISITE:** 10605167 Electricity 1 or equivalent and **COREQUISITE:** 10631100 Introduction to Process Control.

### 10631104

**Smart Instruments - Credits: 2**  
The Smart Instruments course introduces students to smart instruments including temperature devices, pressure devices, and smart control valves. Students will be able to calibrate, configure, and troubleshoot smart devices. Students will be able to identify appropriate applications for smart instruments. **PREREQUISITE:** 10631100 Introduction to Process Control or equivalent.

### 10631105

**Industrial Networks and Communication Busses - Credits: 2**  
This course introduces networks, communication busses, and protocols used in industrial applications. Students will be able to discuss strengths and weaknesses of each communications solution and pick the most appropriate for given applications.

### 10631106

**Supervisory and Distributed Control Systems - Credits: 3**  
This course will provide an overview exposure to networked distributed control systems and data acquisition systems. Included are PLCs, data acquisition systems, Single Loop Controllers, Smart Devices, and Distributed Control Systems. Students will connect, configure, and operate a simulated process that includes the elements of distributed control and data acquisition systems. **PREREQUISITES:** 10631100 Introduction to Process Control and 10631108 PLC Programming and Interfacing or equivalent.

### 10631107

**Industrial Automation Case Project - Credits: 1**  
The primary focus of this course is to have the students receive exposure and experience with an industrial process control or manufacturing automation system. Students will complete a project or research dealing with an existing process in an area industry or complete an advanced project in the lab dealing with applications of industrial networks, sensors, control, and data acquisition. **PREREQUISITES:** 10631100 Introduction to Process Control; 10631102 Industrial Power Electronics; 10631103 Process Control and Instrumentation; 10631108 PLC Programming and Interfacing; and 10631109 Industrial AC, Motor Control, and Pilot Devices.

### 10631108

**PLC Programming and Interfacing - Credits: 3**  
PLC Programming and Interfacing offers students a hands-on approach to implementing industrial control by integrating typical plant floor electrical components with microprocessor-based controllers. Students will learn to identify and connect field inputs and outputs; communicate with, and program microprocessor-based controllers. Students will also connect, communicate with, and develop displays for computer-based operator interfaces. **PREREQUISITE:** 10605167 Electricity 1 or 32414358 (A) AC/DC Circuits or 32414359 (B) AC/DC Circuits.

### 10631109

**Industrial AC, Motor Control, and Pilot Devices - Credits: 3**  
This course gives students the opportunity to learn about AC theory, circuits, and control devices used in industry. The course begins with an overview of AC theory including resistance, inductance, and capacitance. The course includes topics on AC and DC motors, motor control, and pilot devices. The student will engage in hands-on activities with real industrial components to enable them to recognize, select, apply, and troubleshoot industrial electrical control circuit components. **PREREQUISITE:** 10605168 Electricity 2 or equivalent.

### 10631110

**Advanced PLC Programming and Interfacing - Credits: 3**  
Advanced PLC offers students a hands-on approach to implementing industrial control using modern controllers to implement programs that utilize advanced functions. Students will complete hands-on activities with Allen Bradley ControlLogix PLCs. The course will examine the use of basic instructions and addressing with RSLogix 5000 as well as more advanced PLC instructions in Ladder Logic and Function Block. Other topics include PLC configuration and commissioning, communications with RSLink, OPC, and RSNetwork, HMI configuration using Wonderware and/or RSView. **PREREQUISITE:** 10631108 PLC Programming and Interfacing.

## Graduate Employment Information

(WITC Graduate Survey Responses 2010-2011; for most recent data, go to [witc.edu](http://witc.edu))

Number of graduates	7	Number employed	6	% employed in WITC district	17%
Number of responses	6	Percent employed	100%	Range of yearly salary	\$40,000-\$63,500
Number available for employment	6	Employed in related field	6	Average yearly salary	\$52,465

## career vision

800.243.9482

[witc.edu](http://witc.edu)

2013-2014

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# **TEAM MEMBERSHIP**



## ACADEMIC PROGRAM REVIEW PROFILE

Program Number & Name	
10-631-2 Industrial Automation, Controls, and Networking	
Program Academic Dean	Title/Location
Nancy Cerritos	Academic Dean New Richmond
Team Lead(s)	Title/Location
Rose Cibulka	IACN Faculty New Richmond
Team Members	Title/Location
Damon Sharretts	ITNS Instructor New Richmond
Erik Pederstuen	ITNS Instructor New Richmond
Jodi Saliny	Admissions Advisor New Richmond
Kevin Salmon	General Education – Mathematics/New Richmond
Tom Findlay	Counselor New Richmond

Program Information:		
Capacity (new students admitted/year):		14
Number of Faculty:	FT: 1	PT: 0
Statewide Curriculum:	Yes?	No? X
Number of Technical Studies Courses in each of the following delivery modes: (there may be duplication for courses offered in multiple modes)		
	<i>Classroom:</i>	19
	<i>Online:</i>	0
	<i>ITV/IP:</i>	2
	<i>In Person/Web Blended:</i>	19

Program Accredited by:	NA
Date of Last Accreditation	
Date of Next Accreditation	
Is a visit required? If so, when is the next visit?	
Program Licensed by:	NA
Date of Last Licensing:	
Date of Next Licensing:	
Is a visit required? If so, when is the next visit?	
Please list other program memberships:	NA

**Note:** The accreditation, licensing, and membership information listed above will be listed in the annual WITC Fact Book.



# **SELF-STUDY REPORT**



## SELF-STUDY SUMMARY REPORT

Program Information	
Program Name: <b>Industrial Automation, Controls, and Networking</b>	Team Chair: <b>Rose Cibulka</b>
Academic Dean: <b>Nancy Cerritos</b>	Divisional Dean: <b>Randy Deli</b>
Process Used to Complete the Self-Study	
Meeting format (in-person, IP, conference calls etc.)	<b>Face to face meetings</b>
Number of meetings	<b>2</b>
How was the self-study handled? (as a group, assigned to individuals to report back to group, etc.)	<b>The instructor and dean met for a planning meeting and completed a draft of the self-study. Then a face-to-face meeting with the self-study team to complete the self-study and do team ratings.</b>
Additional comments:	<b>There will be overlap from the last program review as not all items on the previous program review were completed due to a change in program instructor.</b>
Summary of Findings	
As you completed this self study section of the program review, what areas "stand out" in your program? Please explain.	<b>The new shop/classroom improvement from last review has taken the program to a new level of excellence as well as making it easier to showcase with a dedicated space. However, the noise issue and ventilation is a serious problem.</b>
What has surprised you? Please explain.	<b>Everything is really in pretty good shape. There are not any glaring deficiencies. We do have some assessment work to do. We are behind there.</b>
List two or three of the items identified through your self-study that you will focus on to make improvements to your program.	<b>We will be working on assessment more than anything this cycle as there is a system wide push for more documentation of assessment practices. This will include assessment at the course, program, and college level- and TSA. Although we have not been identified on the TSA schedule, internal pressure makes this an important item to focus on this review cycle.</b>
When/where in your program will you implement these improvements?	<b>Some will be throughout the program- many will be in the last semester of the program.</b>

	<b>Completing the analyzer will help identify when and where to focus our attention.</b>
What methods (direct or indirect) will you use to assess the success of this implementation?	<b>We will use a combination of focus group, student survey and tests and quizzes as well as any other forms of assessment we add to the curriculum, including work on TSA documentation.</b>
What new outcomes or benchmarks do you hope to achieve through these recommended changes?	<b>Continued program improvement.</b>
Additional comments:	<b>From a Student Services perspective, the IACN program is unique in that it shares nearly all of the first year curriculum with IT-NS. This offers students some limited flexibility to change direction and majors at the mid-point of the program. This is not completely seamless, but it does emphasize the inter-connectedness of this technical area. It offers selected students the option of opting in or out of IACN into or from a related field.</b>

## SELF-STUDY CATEGORY RESULTS

Program and Category			
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: WITC Program Statistics</b> <i>(fill out a Self-Study Category Sheet for each section of the self-study. (Additional sections may be added if desired))</i>			
PLUSES (Strengths)		DELTAS (Opportunities)	
-FTE has been on a growth trend since 2006-2007.  -Headcount has been on a growth trend since 2006-2007.  -Graduate employed related is overall good.  -Graduate satisfaction has been at 100% with the exception of FY10.  -Graduate salary is above average for WITC.		-Retention fall to spring has dropped the past two years.  -FTE cannot grow in the second year due to facility and equipment restrictions.	
Select one PLUS item and explain the root cause:	<b>Graduate salary is above average as our graduates are highly skilled and qualify for highly skilled jobs.</b>		
Select one DELTA item and explain the root cause:	<b>Second year cannot grow due to size and equipment restrictions.</b>		
What items in this category MUST be addressed on our improvement plan?			
What items in this category MIGHT be addressed on the improvement plan?			
What items in this category may be considered a BEST PRACTICE OR INNOVATION?			
Team Rating			
Please indicate by an <b>(X)</b> the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i>Exemplary—all areas exceed expectations—use as a model for other programs</i>
		<b>X</b>	
Additional Comments: (optional)			
<b>Why is the intent to graduate fee not included in tuition? Or as other than a separate cost? Can we update program page with either Rose or a student photo?</b>			



## SELF-STUDY CATEGORY RESULTS

Program and Category	
<p><b>Program: Industrial Automation, Controls, and Networking</b>  <b>Category: Curriculum</b>  <i>(fill out a Self-Study Category Sheet for each section of the self-study. (Additional sections may be added if desired)</i></p>	
PLUSES (Strengths)	DELTAS (Opportunities)
<ul style="list-style-type: none"> <li>-Comprehensive curriculum - touches many competencies.</li> <li>-Partially shares first year with ITNS.</li> <li>-Program outcomes are pretty good.</li> <li>-Course outcomes are current and updated in WIDS.</li> <li>-No modification is needed at this time.</li> <li>-Curriculum Checklist is accurate.</li> <li>-Good industry support of curriculum and in college presence.</li> </ul>	<ul style="list-style-type: none"> <li>-First year curriculum is subject to modifications by ITNS program.</li> <li>-Most recent modification by ITNS has had impacts on IACN. Students must decide before enrolling - no longer have a semester to decide unless they choose electricity as an elective.</li> <li>-Program has an extremely ambitious curriculum; difficult for one instructor to maintain.</li> <li>-Not all Collegewide outcomes are incorporated.</li> <li>-There are no online classes.</li> <li>-Catalog page and website need to be reviewed and updated if necessary.</li> <li>-Program description requires update and clarification to more accurately describe program content to potential students. Employers understand the description, but potential students do not.</li> <li>-We have not started TSA processes.</li> <li>-Curriculum does not cover pneumatic instrumentation. Xcel energy has asked for this (this was in last program review- we didn't do anything with it).</li> <li>-Certificates were dropped as there are not funds to offer the courses.</li> <li>-Safety training media requires update.</li> </ul>
<p>Select one PLUS item and explain the root cause:</p>	<p><b>Partially shares first year curriculum with ITNS- program was set up that way to grow out of an existing program.</b></p>
<p>Select one DELTA item and explain the root cause:</p>	<p><b>Program description requires update and clarification to more accurately describe program content to potential students. Employers understand the description, but potential students do not.</b></p> <p><b>(Need to create dual descriptions?)</b></p>

What items in this category MUST be addressed on our improvement plan?			
What items in this category MIGHT be addressed on the improvement plan?	<b>Update web page and catalog page.</b>		
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	<b>Sharing first year with established program.</b>		
<b>Team Rating</b>			
Please indicate by an <b>(X)</b> the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		<b>X</b>	
Additional Comments: (optional)			

## SELF-STUDY CATEGORY RESULTS

Program and Category	
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: Assessment of student learning</b> <i>(fill out a Self-Study Category Sheet for each section of the self-study. (Additional sections may be added if desired))</i>	
PLUSES (Strengths)	DELTAS (Opportunities)
<ul style="list-style-type: none"> <li>-Collegewide outcomes of Communication and Critical Thinking have been assessed and embedded in the program.</li> <li>-Direct assessment measures are being used.</li> <li>-Authentic assessments are employed.</li> <li>-Project based learning supports performance-based assessment.</li> <li>-Written and performance-based assessments are rigorous and have been validated as applicable to employer expectations.</li> </ul>	<ul style="list-style-type: none"> <li>-Program does not have an assessment plan.</li> <li>-There is no documentation as to where the program outcomes are covered in the program.</li> <li>-The program has not identified specific standards and levels of achievement for each program outcome.</li> <li>-Although some performance-based assessments exist in courses throughout the first-year, still more are needed to ensure that student competence is accurately measured.</li> <li>-Rubrics need to be developed and validated for some hands-on competencies.</li> </ul>
Select one PLUS item and explain the root cause:	<b>College wide outcomes of Communication and Critical Thinking have been assessed and embedded in the program.</b>
Select one DELTA item and explain the root cause:	<b>Rubrics need to be developed and validated for some hands-on competencies.</b>
What items in this category MUST be addressed on our improvement plan?	<b>Rubrics need to be developed and validated for some hands-on competencies.</b>
What items in this category MIGHT be addressed on the improvement plan?	<b>The program has not identified specific standards and levels of achievement for each program outcome.</b>
What items in this category may be considered a BEST PRACTICE OR INNOVATION?	

### Team Rating

Please indicate by an **(X)** the team rating of your program on this category.

<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		<b>X</b>	
Additional Comments: (optional)			

## SELF-STUDY CATEGORY RESULTS

Program and Category			
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: Advisory Committees</b>			
PLUSES (Strengths)		DELTAS (Opportunities)	
<ul style="list-style-type: none"> <li>-Advisory Committee has been helpful in offering training to students by coming in to class and doing training.</li> <li>-They participate in interview day and have employed graduates as well as referred job openings to the instructor.</li> <li>-Meetings are held regularly.</li> <li>-They have been a good source of donations as well as offering educational discounts.</li> </ul>		<ul style="list-style-type: none"> <li>-Difficult to get all members to a meeting; hard to find a common time.</li> <li>-Most members need to travel to attend.</li> <li>-Only one meeting is held per year.</li> <li>-Student service and general studies instructors are not always represented.</li> </ul>	
Select one PLUS item and explain the root cause:	<b>Advisory Committee has been helpful in offering training to students by coming in to class and doing training.</b>		
Select one DELTA item and explain the root cause:	<b>Student service and general studies instructors are not always represented.</b>		
What items in this category MUST be addressed on our improvement plan?			
What items in this category MIGHT be addressed on the improvement plan?	<b>Student service and general studies instructors are not always represented.</b>		
What items in this category may be considered a BEST PRACTICE OR INNOVATION?			
Team Rating			
Please indicate by an <b>(X)</b> the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i>Exemplary—all areas exceed expectations—use as a model for other programs</i>
			<b>X</b>
Additional Comments: (optional)			



## SELF-STUDY CATEGORY RESULTS

Program and Category	
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: Equipment and Facilities</b> <i>(fill out a Self-Study Category Sheet for each section of the self-study. (Additional sections may be added if desired))</i>	
PLUSES (Strengths)	DELTAS (Opportunities)
<p><b>-Most major equipment is up to date and all equipment budgeted for and purchased is used in delivery of instruction through the year.</b></p> <p><b>-Facilities are updated and remodeled from last program review. The new space allows classroom and shop to take place in the same area. It is a much larger area and eliminates many of the safety hazards inherent in the old space.</b></p> <p><b>-There is adequate room for most equipment and additional storage exists behind the shop and on the mezzanine.</b></p> <p><b>-The college has done a good job at supporting the program development through the major equipment budget increasing the quality of instruction. We are considered to be a leader in our training area by industry because of the major equipment support.</b></p>	<p><b>-IACN has no voice in planning for major equipment in the first year of the program.</b></p> <p><b>-The new space allows classroom and shop to take place in the same area.</b></p> <p><b>-There is not a lot of ventilation when the weather outside is extremely hot.</b></p> <p><b>-Purchasing guidelines make it difficult to purchase the same equipment for all students.</b></p> <p><b>-Shop still needs some organization.</b></p>
Select one PLUS item and explain the root cause:	<b>We are considered to be a leader in our training area by industry because of the major equipment support.</b>
Select one DELTA item and explain the root cause:	<b>Purchasing guidelines make it difficult to purchase the same equipment for all students.</b>
What items in this category <b>MUST</b> be addressed on our improvement plan?	
What items in this category <b>MIGHT</b> be addressed on the improvement plan?	
What items in this category may be considered a <b>BEST</b>	

PRACTICE OR INNOVATION?			
<b>Team Rating</b> Please indicate by an <b>(X)</b> the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations — few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
			<b>X</b>
Additional Comments: (optional)			

## SELF-STUDY CATEGORY RESULTS

Program and Category			
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: Staff Development and Program Innovation</b>			
PLUSES (Strengths)		DELTAS (Opportunities)	
<p><b>-Instructor is a Professional Engineer (two exams and work for 8 years - Electrical engineering and Controls engineering).</b></p> <p><b>-Performance reviews are conducted annually and dean and instructor meet frequently on an informal basis.</b></p> <p><b>-Instructor is on track with certification classes.</b></p>		<p><b>-There is not enough time for training.</b></p> <p><b>-There is not adequate funding for staff development.</b></p> <p><b>-New instructor needs to not only learn all the equipment, but also how to teach, follow college policies and stay active on the current equipment with an eye to future trends and changes.</b></p>	
Select one PLUS item and explain the root cause:	<b>Qualifications of instructor- best qualified when hired.</b>		
Select one DELTA item and explain the root cause:	<b>Not adequate funding for staff development.</b>		
What items in this category <b>MUST</b> be addressed on our improvement plan?			
What items in this category <b>MIGHT</b> be addressed on the improvement plan?			
What items in this category may be considered a <b>BEST PRACTICE OR INNOVATION?</b>			
Team Rating			
Please indicate by an <b>(X)</b> the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
<b>X</b>			
Additional Comments: (optional)			



## SELF-STUDY CATEGORY RESULTS

Program and Category	
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: Collaboration Across the College</b> <i>(fill out a Self-Study Category Sheet for each section of the self-study. (Additional sections may be added if desired)</i>	
PLUSES (Strengths)	DELTAS (Opportunities)
<p><b>-Communication with ITNS faculty is excellent and they work well as a team.</b></p> <p><b>-Continuing Education is a collaborative partner and there are opportunities for continuing education for graduates.</b></p> <p><b>-Dean and instructor have a highly collaborative functional relationship.</b></p> <p><b>-Communications with student services is positive and results in effective advising for new and current student issues. Counselors, admissions, and the instructors communicate well to lay out plans for potential students and to rectify enrollment and scheduling difficulties.</b></p>	<p><b>-No time in instructor's schedule to pursue continuing education opportunities.</b></p> <p><b>-Student service personnel do not all have good understanding of the nature of the program.</b></p> <p><b>-Regular meetings about program planning and improvement don't take place.</b></p> <p><b>-Instructor needs to collaborate with communications instructors to develop projects that help graduates in project management and engineering communications. This can be done through the Technical Reporting course.</b></p> <p><b>-General studies courses often include students from many different programs in a single class, making it difficult to tailor projects to specific programs.</b></p> <p><b>-More collaboration and discussion is needed among general studies and program instructors. Time restraints make this difficult. There is no structured framework within the college for supporting such collaboration.</b></p> <p><b>-Instructor needs to help counseling staff by explaining the course better. It is difficult for many staff members to explain exactly what the program is.</b></p>
Select one PLUS item and explain the root cause:	<b>Communication with ITNS faculty is excellent and they work well as a team.</b>
Select one DELTA item and explain the root cause:	<b>Instructor needs to help counseling staff by explaining the course better. It is difficult for many staff members to explain exactly what the program is.</b>
What items in this category MUST be addressed on our improvement plan?	

What items in this category MIGHT be addressed on the improvement plan?	<b>Instructor needs to help counseling staff by explaining the course better. It is difficult for many staff members to explain exactly what the program is.</b>		
What items in this category may be considered a BEST PRACTICE OR INNOVATION?			
<b>Team Rating</b> Please indicate by an <b>(X)</b> the team rating of your program on this category.			
<i>All areas need improvement</i>	<i>Some areas meet expectations, but most areas need improvement</i>	<i>All areas meet expectations —few areas need improvement</i>	<i><u>Exemplary</u>—all areas exceed expectations—use as a model for other programs</i>
		<b>X</b>	
Additional Comments: (optional)			

# **Perkins Data Review**



## PERKINS DATA REVIEW

(replaces QRP Analysis for 2013 reviews only)

Program and Category	
<b>Program: Industrial Automation, Controls, and Networking</b> <b>Category: Perkins Data Review</b>	
PLUSSES (Strengths)	DELTAS (Opportunities)
<p><b>-1P1 - 89.19 Average of three years of course completion exceeds the benchmark of 82.22.</b></p> <p><b>-2P1 Average degree attainment of 55.26 surpasses the benchmark of 55.</b></p> <p><b>-2P1+3P1 Average degree attainment + retention of 76.31 surpasses the benchmark of 66.78.</b></p> <p><b>-4P1 Average job placement percentage of 76.31 reported at six-month graduate survey exceeds benchmark of 66.78.</b></p>	<p><b>-1P1 Course completion is trending downward from 100% in 2010 to 76.92 in 2012.</b></p> <p><b>-1P2 General studies course completion does not meet the benchmark of 83.71, except for 2010.</b></p> <p><b>-2P1 Degree attainment is down over the three years.</b></p> <p><b>-2P1+3P1 Degree attainment + retention % is trending downward over the three year period, from 90% to 61.58%.</b></p>
Select one PLUS item and explain the root cause:	<p><b>Our job placement percentage is higher than the benchmark as this is a high demand field.</b></p>
Select one DELTA item and explain the root cause:	<p><b>IP2 - General studies course completion does not meet the benchmark of 83.71 as this is a very rigorous program. Students tend to focus on their program courses at the expense of the general studies courses. That being said, the N for this program is a very small number and a single student can significantly impact the percentages.</b></p>
What items in this category <b>MUST</b> be addressed on our improvement plan?	<p><b>We will address the declining level of general studies course completion.</b></p>
What items in this category <b>MIGHT</b> be addressed on the improvement plan?	
What items in this category may be considered a <b>BEST PRACTICE OR INNOVATION?</b>	



## FUTURE TRENDS AND EXTERNAL FACTORS

Program	Industrial Automation, Controls, and Networking
<b>Future Trends</b>	
•	Intersection and collaboration of ITNS, IACN and packaging where curriculum competencies mesh.
•	Sharing of equipment with IACN, particularly where network equipment it required.
•	Continued growth in industry and particularly in technology.
•	More integration of equipment as companies try to minimize number of “touches” of product.
•	
<b>External Factors</b>	
•	Continued shortage of skilled technicians.
•	Increased interest on the part of manufacturing to partner with education to fill the vacancies being left by retirements.
•	
•	
•	
<b>Employment Trends</b>	
Local	Local jobs are available- plus Bosch, the biggest packaging plant in the area is continuing to grow and looking to us for collaboration and graduates.
•	Due to the versatile graduate produced by the program, local employment as maintenance technicians is frequently available.
State	Need for graduates is always high in many areas of the state if students are willing to move.
•	
•	



# **2013 Improvement Plan**



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> TSA is completed and in place	<b>Perkins?</b> no	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  <i>Program outcomes are explored and indicators are extracted.</i> <i>TSA Phase I is created and submitted to state.</i> <i>TSA Phase I is approved at state level.</i> <i>Assessments/artifacts or capstone projects are chosen for outcomes.</i> <i>Rubrics are developed and validated for some of the hands-on competencies.</i> <i>Plan for assessment is created.</i>		Instructors Dean Advisory Committee	Fall 2013-Spring 2015	Cindy King
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<b>Update:</b> (A mid-year and year-end update will be required each year during implementation.) May 2014: We will begin this in the fall of 2014. This is a unique program and we are waiting to see how Automated Packaging does with approvals before beginning. December 2014: I believe our timeline is too aggressive- we are extending our timeline and not starting this process until spring. May 2015: We are looking at outcomes and will revise and present to the advisory committee in the fall. December 2015: TSA phase 1 papers need to be completed and submitted to state. New outcomes were prepared and validated by the advisory committee.				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> Catalog page is current and updated	<b>Perkins?</b> no	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  Review both catalog page and web page at fall Advisory Committee meetings. Consider updating/reviewing program description. Add newer photos. Seek testimonials of recent graduates. Complete each fall before October 1.		Instructors Dean Advisory Committee	Fall 2013 Fall 2014 Fall 2015	Web Manager
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<p><b>Update:</b> (A mid-year and year-end update will be required each year during implementation.)</p> <p>May 2014: We will begin this in the fall at the fall advisory committee meetings.</p> <p>December 2014: We forgot to do this. We will review in the spring.</p> <p>May 2015: we will review this summer and present recommendation to advisory committee.</p> <p>December 2015: Catalog and web page were reviewed by committee. No suggestions were made.</p>				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> <b>Current and updated program course curriculum</b>	<b>Perkins?</b> no	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  <i>Create plan for updating curriculum.</i> <i>Transition to WEB version of WIDS.</i> <i>Enhance BB elements of courses.</i> <i>Align with program and collegewide outcomes.</i> <i>Update WIDS analyzer.</i>		Instructors Dean Curriculum Designer	Fall 2013-Fall 2014	Curriculum office
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<p><b>Update:</b> (A mid-year and year-end update will be required each year during implementation.)</p> <p>May 2014: The instructor has begun work on this, by moving to the WEB version of WIDs. We need to wait for TSA to begin to do the rest or we will be duplicating work.</p> <p>December 2014: We have done work on the first two items, but will be examining program outcomes in depth next semester as step one of TSA preparation.</p> <p>May 2015: this is deferred to fall as must be done AFTER the program outcomes are revised and validated.</p> <p>December 2015: We will map the courses in WIDS next semester with the new outcomes.</p>				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> <b>Improved Advisory Committee Meetings</b>	<b>Perkins?</b> no	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items</b>  <i>Offer choices of meeting times, maybe using a web voting app.</i> <i>Ensure agenda has at least one solid discussion topic.</i> <i>Invite specific General Studies and Student Services personnel to ensure their presences.</i> <i>Consider expanding membership of committee.</i>		Instructors Dean	Fall 2013-Fall 2014	Advisory Committee
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<p><b>Update:</b> (A mid-year and year-end update will be required each year during implementation.)</p> <p>May 2014: We will implement these steps in Fall 2014 for our advisory meeting. We added a new member in the fall and will continue to scrutinize membership.</p> <p>December 2014: We implemented these steps and still barely made a quota. However, we had a good meeting and our new member was a good addition nto the group.</p> <p>June 2015: We will have solid topic for discussion- we will try a survey method to ensure a quorum- also email and follow up with another email a couple of days before the meeting.</p> <p>December 2015: Had successful Advisory committee meeting this fall.</p>				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> Improve General Studies course completion by 10%	<b>Perkins?</b> yes	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  <i>Investigate course pass rates and identify barrier courses.</i> <i>Arrange periodic meetings with GS instructors to monitor student progress.</i> <i>Implement proactive advising measures.</i>		Instructors Dean GS Instructors	Fall 2013-Fall 2015	Institutional Research
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<p><b>Update:</b> (A mid-year and year-end update will be required each year during implementation.) C200</p> <p>May 2014: We were able to raise the course completion rate by 5%. We are considering adding another action step here- working with the ITNS instructors (they have the first year of the program) and encouraging students to take at least one general studies course in the summer to lighten their academic load in the fall.</p> <p>December 2014: No new results as it is mid-year. However, we have modified the course sequence and moved Written Communication to the second semester. This was done for two reasons: to give students a semester to improve their skills and enable them to take written com and to lighten the course load for the first semester.</p> <p>May 2015: We have achieved a 38 per cent increase in course completion rate in General studies for this year.</p> <p>December 2015: Completed last May.</p>				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> <b>Improve degree attainment percentage by 11%</b>	<b>Perkins?</b> yes	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  <i>Investigate course pass rates and identify barrier courses.</i> <i>Arrange periodic meetings with GS instructors to monitor student progress.</i> <i>Implement proactive advising measures.</i> <i>Meet annually with Student Services to update program changes and needs.</i>		Instructors Dean GS Instructors	Fall 2013-Fall 2015	Institutional Research
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<b>Update:</b> (A mid-year and year-end update will be required each year during implementation.) F600 May 2014: We increased this statistic from 46.15 in 2012 to 72.73 in 2013. December 2014: No new statistics to report at mid-year. May 2015: We increased this statistic to 81.82% from 55.56% in 2013. December 2015: We will not have statistics to check progress until the May update.				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> <b>Create embedded certificate or diploma</b>	<b>Perkins?</b> no	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  <i>Review existing certificates for relevance and employability.</i>  <i>Meet and discuss possible options with focus group.</i>  <i>Garner Advisory Committee validation of employability potential of suggested certificates.</i>  <i>Embed certificate with proper approvals.</i>		<b>Instructors</b>  <b>Dean</b>  <b>Advisory Committee</b>	<b>Fall 2013-Fall 2015</b>	<b>Curriculum Office</b>
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<b>Update:</b> (A mid-year and year-end update will be required each year during implementation.) <span style="color: red;">May2014: We will not begin this outcome until fall of 2014.</span> <span style="color: green;">December 2014: An embedded diploma has been established- IT Technician- this is the first year of the program, but only the technical core courses. No General Studies.</span> <span style="color: blue;">May 2015- We have two internal certificates and the one embedded Technical Diploma.</span>				



## ACADEMIC PROGRAM IMPROVEMENT PLAN

<b>PROGRAM:</b>	Industrial Automation, Controls, and Networking			
<b>Defined Outcome:</b> <b>More comfortable learning environment</b>	<b>Perkins?</b> no	<b>Responsibility</b>	<b>Timeline</b>	<b>Resources</b>
<b>Action Plan/Action Items:</b>  <i>Discuss options with facility manager.</i>  <i>Consider most feasible option.</i>  <i>Put solution into planning process.</i>		<b>Instructor</b>  <b>Dean</b>  <b>Facilities Manager</b>  <b>Campus Administrator</b>	<b>Fall 2013-2015</b>	<b>Planning process</b>  <b>Facilities Manager</b>  <b>Campus Administrator</b>
<b>WTCS QRP Indicator Name &amp; Number:</b> (from those potential solutions selected from the WTCS QRPDS Analysis)				
<b>Update:</b> (A mid-year and year-end update will be required each year during implementation.) May 2014: We believe we were successful in getting this through planning but we don't know when improvements may take place. December 2014: A great deal of HVAC work took place through the summer. The temperature does seem more comfortable and noise levels have decreased, so I believe we can consider this item completed. May 2015: Air conditioning has been installed and it is a dramatic improvement in comfort level. However, the tables are too small for student work and we will need to make a request in major equipment in the planning cycle next year.				