Advisory Committee Minutes Fall 2019
Industrial Automation Systems
Vernon College – Skills Training Center, Room 400
September 25, 2019, 12:00pm

Ken Theimer – Chair
Chris Venegas – Vice Chair
Dakota Patterson – Recorder

Members Present:
Ken Theimer – Evans ENT.
Lori Leonard - SSI
Randy Brooks - Solvay
Marc Bradburry – Triangle Brick
Dustin Riley – Triangle Brick
Dakota Patterson – Nextera Energy
Stephen Storm – AEP Oklaunion
Kelly Easter - Vitro
Chris Venegas – Sealed Air
Casey McShan – Sealed Air

Staff and Faculty Present:
Elizabeth Crandall
Shana Drury
Chelsey Henry
Holly Scheller
Mollie Williams
Mark Holcomb

Members Absent:
Terry Smith - AEP
John Wright - Oncor

Ken Theimer discussed the new business:

Program Outcomes:

Discussion and review took place among committee members regarding the program outcomes listed below.

1. Apply basic AC/DC electrical and electronic fundamentals to wire, integrate, and troubleshoot electrical devices and systems. Devices used in industrial environments to increase the efficiency of production.
2. Incorporate local, state, and federal safety requirements and guidelines in the design of electrical systems. Automate different manufacture processes.
3. Interpret schematics and wiring diagrams and recognize the sequence of operations occurring in automated electrical systems.
4. Develop programs, calibrate devices, and tune PID parameters for various types of process control systems, including such as pressure, level, flow, and temperature control systems.
5. ~~Establish network communications to integrate electrical devices such as computers, automation controllers, vision systems, robots, drives, etc.~~
6. Calculate requirements of electrical systems utilized in commercial, industrial, and high voltage distribution and transmission applications.
7. Design, program, integrate and troubleshoot automation control devices such as PLC (Programmable Logic Controllers), PID (Proportional Integral Derivative) Controllers, and PAC (Programmable Automation Controllers).

Mark Holcomb states outcome number five is covered in outcome number seven. Chris explained that the program outcome five is geared toward innovation science side but most items are lost over other courses, as it is not geared toward the industrial side.

After discussion, Ken Theimer asked for a motion to approve program outcomes with the elimination of program outcome number five.
Randy Brooks made motion to approve program outcomes as presented.
Chris Venegas seconded the motion.

The motion to approve program outcomes passed.

Ken Theimer asked for a motion to approve the remainder of program outcomes.
Chris Venegas made motion to approve program outcomes as presented.
Dakota Patterson seconded the motion.

The motion to approve program outcomes passed.

Assessment Methods:

Ken Theimer asked that assessment methods and results be discussed and asked Mr. Holcomb to elaborate.

Industrial Automation Systems (IAS)
Capstone project #1
Program course: ELPT 2449 Industrial Automation

1. The following assignment is identified as an IAS program capstone project. It evaluates the student's knowledge of curriculum and training in CETT 1402 (Basic Electricity), ELPT 2419 (Introduction to PLCs), ELPT 1441 (Motor Control), ELMT 2433 Industrial Electronics, and ITNW 1325 Fundamentals of Networking, RBTC 1405 Robotic Fundamentals, and ELPT 2449 Industrial Automation.

Part 1: Programmable Logic Controllers (PLC)/AFD circuit design:

Project assignment: As a plant Electronic Technician, you have been assigned to design, construct, and program a PLC automated control circuit for a turntable conveyor system to paint parts. The circuit integrates conventional switching devices with PLC operations and Adjustable Frequency Drive (AFD) motion control along with an analog temperature control device (pot). The project has four tasks to be performed by the student and each task must be approved by the instructor before preceding to the next task. Students will be evaluated on the level of Mastery of Content, Proficient at Content, Competent at Content, or Not Satisfactory completing project. A time milestone of 20 hours is the course benchmark for completion of this capstone project. If course time allows, students may use extended hours to complete the project with a reduction of grading points.

Scenario: A finished mill part is placed on a conveyor belt system to move through the final stage of completion. The robotic arm will place parts onto a turntable on the conveyor belt. The conveyor belt runs a consist speed of 10 Hz and stops at the two stations (Dual Start/Stop) in the painting department (Start/Stop PB). Once the part reaches the sprayer, a limit switch (LS1) turns on the paint sprayer and starts rotating the turntable @ 20 Hz for 10 seconds. After this process, the conveyor starts back @ 10 HZ, and the turntable stops. The part continues on the conveyor until it reaches the heating unit where it again stops (LS2) and starts the turntable @ 30 Hz for 20 seconds to dry the part. The conveyor then starts to take part in the palletizing department where another robotic arm places the part onto the pallet for final drying and shipment.

The technician will, also, design a lighting system to indicate the movement (start/stop) of the conveyor, the spraying process, the heating process. Also, the process will need a flashing light to indicate a trouble situation, which is indicated by the operator pushing an emergency stop button. The student will also program a robotic arm to perform the material handling function.

A Compact logic trainer will be used to develop and construct a static wiring circuit for the project scenario. A pre-connected Allen Bradley MicroLogic 1400 units will be used as the offline/online programming controllers Fanuc robotic arms to simulate the material handling process.

Tasks: For Project assessment, the student will earn points the following as assigned through capstone rubrics.

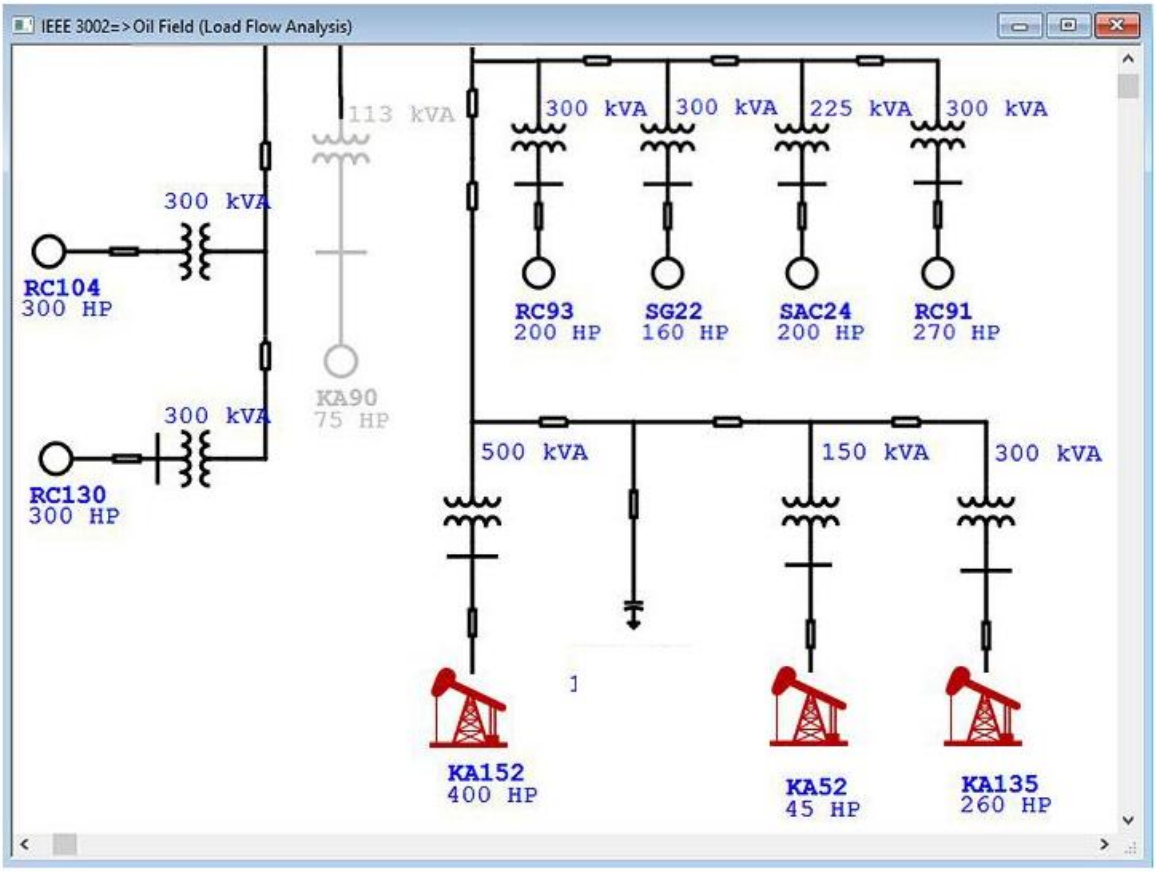
1. Connect wiring points
2. Quality of wiring
3. Programming of PLC
4. Programming of AFD
5. Edit and document of comments on PLC program
6. Design System drawings using Solidworks Electrical
7. Operational check of circuit

Industrial Automation Systems (IAS)
Capstone project #2
Program course: ELPT 2443 Electrical Systems Design

Using selected data by the instructor from the diagram below, students will use the National Electric Code (NEC) and other required standards (sources) to calculate the following
Electrical circuit values and types.

1. **Both Branch and Feeder wire type and size**
2. **Both Branch and Feeder circuit protection type and size**
3. **Motor protection values**

4. **Transformer protection type and size**
5. **Circuit Short circuit analysis**
6. **Power correction needs to .95 PF**
7. **Design a new one line diagram using Solidwork Electrical with assigned devices. All calculated values will be identified on a provided worksheet. All calculations are shown in detailed.**



CAPSTONE EXPERIENCE GRADING RUBRIC

STUDENT: _____ **STUDENT ID:**_____

Topic	Target = 5 Acceptable = 4 Borderline = 3 Unacceptable = 2 Incomplete = 1	5	4	3	2	1
Resume	The resume was clear, concise, and fully descriptive of the student's attributes?					
Programmable Logic (Automation) Control	The student will perform the 3 tasks to demonstrate knowledge on the circuit construction reading program to feature advanced programming on Allen-Bradley SLC 500 to assess learning in automated controls. **(PO1, PO3, PO5, PO7)**					
Task One: Wiring	Did the wiring meet operational and quality standards set by the instructor? (Able to integrate Mechanical devices, solid-state devices, and various loads (outputs) correctly)					
Task Two: Programming	Did the programming meet scenario as described in capstone project?					

Task Three: Editing Program	Did the programmer edit the program to allow easy understanding to non-technical observers?					
Task Three: PID Control	Did the student follow assignment instruction properly and completed all tasking for adjustment of PID loop?					
Task four: Adjustable Frequency Drive	Using an Allen-Bradley Flex 40, students will develop an operational program which utilizes Scaled parameter Analog signal Control. **(PO1, PO3, PO4, PO5)**					
Task Five: Wiring	Was wiring completed with meeting Quality standards and function properly?					
Task Two: Advanced Parameter Setting	Were all parameters programmed correctly so drive integrated properly with PLC to perform tasks?					
Motor Control Troubleshooting	Following proper safety procedures, students will use the schematic wiring diagram and digital Multi-meter to locate fault. **(PO1, PO3, PO4, PO5)**					
Task One: Fault One	Did the student use a systematic approach and locate the fault in the control circuit?					
Task Two: Fault Two	Did the student use a systematic approach and locate the fault in the control circuit?					
Task Three: Fault Three	Did the student use a systematic approach and locate the fault in the control circuit?					
Task Four: Fault Four	Did the student use a systematic approach and locate the fault in the control circuit?					
Electrical Design Calculation	Students calculated per National Electric Code (NEC) sizing of conductor, overcurrent protection, and overload protection for motor circuit. **(PO1, PO2, PO3, PO6)**					
Using solidworks, Design a feeder circuit for 3 motors						
Task one: One line diagram	Student created a one wiring diagram detailing the motors connections as per the calculated values from the Electrical Design using Solidworks Electrical Drawing Software.					
Task two: Construct control circuits	Student created a motor control circuit as instructed in assigned Scenario using Solidwork Electrical Drawing software.					
Task three: Bill of Material	The student provided advanced calculations for adjusted Power Correction Factor, Short Circuit Analysis rating at instructor selected locations.					
Task four: Electrical Advanced Calculation	The student will be evaluated using results of midterm and final exam from ELPT 2443, Electrical Systems Design Questions: ??????					
	Instructor Notes:					
Total (80)						

MASTERY OF PROGRAM CONTENT: 80 to 76 points

PROFICIENT AT PROGRAM CONTENT: 75 to 70 points

COMPETANT AT PROGRAM CONTENT: 69 to 64 points

UNSATISFACTORY SCORE: Below 64 points

Chris Venegas asked Mark Holcomb where industrial maintenance class would be in the capstone.

Mark Holcomb states that a program outcome would need to be added.

The committee agreed that a revision can be made to program outcome one as
* "Apply basic AC/DC electrical and electronic and *mechanical* fundamentals to wire, integrate, and troubleshoot electrical devices and systems. Devices used in industrial environments to increase the efficiency of production."

Chris Venegas made the motion to revise the program outcome
Casey McShan seconded the motion

The motion to revise the program outcome passed.

Ken Theimer asked for a motion to approve assessment methods and results.
Chris Venegas made motion to approve assessment methods and results as presented.
Dakota Patterson seconded the motion.

The motion to approve assessment methods and results passed.

Workplace Competency

Workplace competencies were discussed in detail as the table reflects below.

Insert workplace competencies (Capstone course or licensure exam). Use the table below to fill in data:

Program Outcome	Number of students who took course or licensure exam	Results per student	Use of results
1. Apply basic AC/DC electrical and electronic fundamentals to wire, integrate, and troubleshoot	11	2 students @ Mastery 9 students@ Competent	More individual lab projects

electrical devices and systems. Devices used in industrial environments to increase the efficiency of production.			
2. Incorporate local, state, and federal safety requirements and guidelines in the design of electrical systems. Automate different manufacture processes.	8	8 students @ Proficient	More repetition in exercises
3. Interpret schematics and wiring diagrams and recognize the sequence of operations occurring in automated electrical systems.	11	11 students @ Proficient	Introduce content in fundamental courses
4. Develop programs, calibrate devices, and tune PID parameters for various types of process control systems, including such as pressure, level, flow, and temperature control systems.	11	2 students @ Mastery 9 students @ Competent	Add more lab stations to allow individual projects; More equipment
5. Establish network communications to integrate electrical devices such as computers, automation controllers, vision systems, robots, drives, etc.	11	11 students @ proficient	Build more lab opportunities; More equipment
6. Calculate requirements of electrical systems utilized in commercial, industrial, and high voltage distribution and transmission applications.	8	8 students@ proficient	Add Math course
7. Design, program, integrate and troubleshoot automation control devices such as PLC (Programmable Logic Controllers), PID (Proportional Integral Derivative) Controllers, and PAC (Programmable Automation Controllers).	10	2 students@ Mastery 9 students@ competent	Add more lab opportunities; More equipment

Dakota Patterson asked if there was a plan to have students tour or follow a hired employee in the field.
Ken Theimer states they cover a lot of vital information in the basic principles class. He started integrating last year the inquiry based learning. The students do investigation on jobs that are related in the electrical field.
Chris Venegas explains that his students do a great deal of hand on learning in his classes.
Randy Brooks understands it is hard to get on the field due to safety issues.

After discussion, Ken Theimer asked for a motion to approve workplace competency.
Chris Venegas made motion to approve workplace competency as presented.
Randy Brooks second the motion.

The motion to approve workplace competency as presented passed.

Review program curriculum:

Industrial Automation Systems, A.A.S.

CIP 15.0303

Instructional Location – Skills Training Center
ASSOCIATE IN APPLIED SCIENCE DEGREE (Probable Completion Time - 2 years)

General Education Requirements (15 SH)

ENGL 1301	Composition I	3
GOVT 2305	Federal Government (Federal Constitution and Topics)	3
MATH 1314	College Algebra	3
	or	
MATH 1332	Contemporary Mathematics	3
SPCH 1315	Public Speaking	3
SFF>	Language, Philosophy, and Culture or Creative Arts Elective	3

Related Requirements (3 SH)

ITNW 1325	Fundamentals of Networking Technologies (A)	3

Major Requirements (42 SH)

ELPT 1411	Basic Electrical Theory (A)	4

	or	
HART 1401	Basic Electricity for HVAC	4
CBFM 2417	Mechanical Maintenance	4
ELMT 2433	Industrial Electronics	4
ELPT 1441	Motor Control	4
ELPT 1457	Industrial Wiring	4
ELPT 2339	Electrical Power Distribution	3
ELPT 2355	Programmable Logic Controllers II	3
ELPT 2419	Programmable Logic Controllers I	4
ELPT 2443	Electrical Systems Design	4
ELPT 2449	Industrial Automation	4
RBTC 1405	Robotic Fundamentals	4
	Total Credit Hours:	**60**

*> To be selected from the following: **ARTS 1301**, **DRAM 1310**, **DRAM 2366**, **ENGL 2322**, **ENGL 2323**, **ENGL 2327**, **ENGL 2328**, **ENGL 2332**, **ENGL 2333**, **HIST 2311**, **HIST 2312**, **MUSI 1306** **ELPT 1411**, **ELPT 1441**, **ELPT 1457**: Apprentice Credit - Credit will be awarded for these courses to individuals who have completed an electrical apprenticeship program.*
** Approved elective to be selected from the following courses: **CETT 1307**(A), **COSC 1301** or **ITSC 1301**(A) or **BCIS 1305**, **EEIR 2366**, **ELMT 2339**, **ITSE 1402** (A), **MCHN 2444***
***(A)** Course included on the State's Advanced Technical Credit list. (See **Advanced Technical Credit**.)*

Verification of Workplace Competencies: Capstone Experience –

ELPT 2443	Electrical Systems Design	4
ELPT 2449	Industrial Automation	4

* For CNC option, students must have completed or be concurrently enrolled in the MCHN certificate program courses. Students in the Machining-CNC Certificate of Completion have the option to complete the Industrial Automation Systems A.A.S. degree. This option applies to the following block of machining courses to the IAS degree plan: **MCHN 1426**, **MCHN 2433**, **MCHN 2441**, and **MCHN 2444**. This block of MCHN courses replaces the following block of IAS courses: **ELPT 1457**, **ELPT 2339**, **ELPT 2443**, **ITNW 1325**. Other course substitutions will not be approved for the MCHN and the IAS blocks of courses.

Industrial Automation Systems Electrical/Energy Technology, Level 1 Certificate

CIP 15.0303

Level 1 Certificate

Instructional Location - Skills Training Center
CERTIFICATE OF COMPLETION (Probable Completion Time – 9 months or 32 weeks)

Major Requirements (34 SH)

ELPT 1411	Basic Electrical Theory (A)	4
	or	
HART 1401	Basic Electricity for HVAC	4
ELMT 2433	Industrial Electronics	4
ELPT 1441	Motor Control	4
ELPT 1457	Industrial Wiring	4
ELPT 2339	Electrical Power Distribution	3
ELPT 2419	Programmable Logic Controllers I	4
ELPT 2443	Electrical Systems Design	4
ITNW 1325	Fundamentals of Networking Technologies (A)	3
RBTC 1405	Robotic Fundamentals	4
	Total Credit Hours:	**34**

ELPT 1411, ***ELPT 1441***, ***ELPT 1457****: Apprentice Credit - Credit will be awarded for these courses to individuals who have completed an electrical apprenticeship program.*
(A) *Course included on the State's Advanced Technical Credit list. (See* ***Advanced Technical Credit****.)*

Verification of Workplace Competencies: Capstone Experience –

ELPT 2443	Electrical Systems Design	4

Industrial Automation Systems Occupational Skill Award (12 Semester Hours):

ELPT 1411	Basic Electrical Theory (A)	4

	or	
HART 1401	Basic Electricity for HVAC	4
ELPT 1441	Motor Control	4
ELPT 1457	Industrial Wiring	4

ELPT 1411 Basic Electrical Theory - Basic theory and practice of electrical circuits. Includes calculations as applied to alternating and direct current.

Explain atomic structure and basic values such as voltage, current, resistance, and power; determine electrical values for combination circuits in direct current (DC) and alternating current (AC) containing resistance, inductance, and capacitance; summarize the principles of magnetism; calculate voltage drop based on conductor length, type of material, and size; and utilize electrical measuring instruments.

HART 1401 Basic Electricity for HVAC - Principles of electricity as required by HVAC, including proper use of test equipment, electrical circuits, and component theory and operation.

Demonstrate knowledge of basic principles of electricity, electrical current, circuitry, and air conditioning devices; apply Ohm's law to electrical calculations; perform electrical continuity, voltage, and current tests with appropriate meters; and demonstrate electrical safety.

CBFM 2417 Mechanical Maintenance - General principles of mechanical and electrical systems related to inspection, repair, and preventative maintenance of facility equipment.

Identify mechanical and electrical components; perform inspections, repairs, and preventative maintenance; and distinguish between critical and non-critical equipment conditions.

ELMT 2433 Industrial Electronics - Devices, circuits, and systems primarily used in automated manufacturing and/or process control including computer controls and interfacing between mechanical, electrical, electronic, and computer equipment. Includes presentation of programming schemes.

Describe how electronic input and output circuits are used to control automated manufacturing and/or process systems; identify basic elements used for input, output, timing, and control; define how programmable electronic systems use input data to alter output

responses; troubleshoot a representative system; and demonstrate how system operation can be altered with software programming.

ELPT 1441 Motor Control - Operating principles of solid-state and conventional controls along with their practical applications. Includes braking, jogging, plugging, safety interlocks, wiring, and schematic diagram interpretations.

Identify practical applications of jogging and plugging; describe the types of motor braking and their operating principles; explain different starting methods for large motors; and demonstrate proper troubleshooting methods on circuits using wiring and schematic diagrams.

ELPT 1457 Industrial Wiring - Wiring methods used for industrial installations. Includes motor circuits, raceway and bus way installations, proper grounding techniques, and associated safety procedures.

Interpret electrical blueprints/drawings; compute circuit sizes and overcurrent protection for the installation of branch circuits, feeders, and service entrance conductors; explain the proper installation of wiring devices according to electrical codes; demonstrate grounding methods; identify industrial wiring methods including conduit bending; and demonstrate proper safety procedures.

ELPT 2339 Electrical Power Distribution - Design, operation, and technical details of modern power distribution systems including generating equipment, transmission lines, plant distribution, and protective devices. Includes calculations of fault current, system load analysis, rates, and power economics.

Explain major parts of utility systems; compare overhead systems versus underground systems; discuss mechanical design considerations to meet codes, standards, climate, and terrain relating to the utility systems; explain considerations for utility line; analyze energy economics; explain how smart grid technologies and standards effect power distribution systems.

ELPT 2355 Programmable Logic Controllers II - Advanced concepts in programmable logic controllers and their applications and interfacing to industrial controls.

Convert ladder diagrams into programs; explain digital/analog devices used with programmable logic controllers; apply advanced programming techniques; execute and evaluate control system operation; and implement interfacing and networking schemes.

ELPT 2419 Programmable Logic Controllers I - Fundamental concepts of programmable logic controllers, principles of operation, and numbering systems as applied to electrical controls.

Identify and describe digital logic circuits and explain numbering systems; explain the operation of programmable logic controllers; convert ladder diagrams into programs; incorporate timers and counters utilizing programmable logic controllers; and execute and evaluate programs.

ELPT 2443 Electrical Systems Design - Electrical design of commercial and/or industrial projects including building layout, types of equipment, placement, sizing of electrical equipment, and all electrical calculations according to the requirements of the National Electrical Code (NEC).

Strategically locate electrical equipment within a building; calculate electrical loading for a building; manipulate electrical loads to balance systems; size service equipment feeding a building; and analyze the layout of materials and equipment for special or hazardous locations; calculate a Return on Investment including current funding options for energy efficient and renewable energy products.

ELPT 2449 Industrial Automation - Electrical control systems, applications, and interfacing utilized in industrial automation.

Apply advanced programming techniques utilizing programmable logic controllers; implement digital/analog interfacing schemes; explain the operation of communication and network methods; devise control system specifications; and explain the operation and applications of distributed control systems.

RBTC 1405 Robotic Fundamentals - An introduction to flexible automation. Topics include installation, repair, maintenance, and development of flexible robotic manufacturing systems.

Describe the history of robotics and its impact on production and the labor force; define the term "robot" and describe general characteristics; explain the physics of robot motion and use different teaching pendants; and describe the characteristics of different types of robot control systems, applications of robots, and end-of-arm tooling.

❖ **Approve program revisions (if applicable)**

Industrial Automation Systems Electrical/Energy Technology, Level 1 Certificate

Energy & Electrical Technology, Change CIP to 46.0301

CIP	Course	Title	SCH	Lec	Lab	Contact Hrs	
46.0301	ELPT 1411		4	3	2	80	
	or						
	HART 1401						
15.0403	ELMT 2433		4	3	2	80	
46.0301	ELPT 1441		4	3	2	80	
46.0301	ELPT 1457		4	3	2	80	
46.0301	ELPT 2339		3	3	1	64	
46.0301	ELPT 2419		4	3	2	80	
46.0301	ELPT 2443		4	3	2	80	
~~11.1002~~	~~ITNW 1325~~	-	-	~~2~~	~~2~~	-	
27.0301	TECM 1303		3	3	0	48	No Pre-req
15.0405	RBTC 1405		4	3	2	80	
			34			672	

Industrial Automation Systems, A.A.S.

CIP	Course	Title	SCH	Lec	Lab	Contact Hrs
	ENGL 1301	Comp I	3	3	0	48

	GOVT 2305	Fed Govt	3	3	0		48
	~~MATH 1314~~	~~College Alg~~	-	~~3~~	~~0~~	-	
	MATH 1332 or	Contem Math	3	3	0		48
	MATH 1342	Elem Stats					
	~~SPCH 1315~~	~~Public Spk~~	-	~~3~~	~~0~~	-	
	ECON 2301	Macroecon	3	3	0		48
	Humanities		3	3	0		48
46.0301	ELPT 1411		4				
	or						
	HART 1401			3	2		80
~~11.1002~~	~~ITNW 1325~~	-	-	~~2~~	~~2~~	-	
27.0301	TECM 1303		3	3	0		48
46.0401	CBFM 2417		4	3	2		80
15.0403	ELMT 2433		4	3	2		80
46.0301	ELPT 1441		4	3	2		80
46.0301	ELPT 1457		4	3	2		80
46.0301	ELPT 2339		3	3	1		64
46.0301	ELPT 2355		3	2	2		64
46.0301	ELPT 2419		4	3	2		80
46.0301	ELPT 2443		4	3	2		80
46.0301	ELPT 2449		4	3	2		80
15.0405	RBTC 1405		4	3	2		80
			60				1136

TECM 1303 Technical Calculations - Specific mathematical calculations required by business, industry, and health occupations.

Solve technical math problems using addition, subtraction, multiplication, and division; convert between whole numbers, fractions, mixed numbers, and decimals; perform calculations involving percents, ratios, and proportions; and convert numbers to different units of measurement (standard and/or metric).

Randy Brooks states that he works with quite a few people who have difficulties speaking to others. He believes the speech class should stay put.
Chris Venegas agreed with speech staying, says that is a big issue with people able to communicate with co-workers.
Randy Brooks went on to say that you must know how to communicate to be successful.
Dakota says speech is a skill that is needed in the industry.
Chris Venegas says when he went to speech class, he did not enjoy it but now realizes that it was needed and has helped him in his career.

Shana Drury explained to Mark Holcomb that the committee could take out Macroeconomics. Randy said he has taken macro and micro and marco is needed in the program.
Kelly states that speech must stay in because the students have to communicate with others in the field and must learn how to do that.

Shana states that the program can keep speech and macroeconomics and take out the humanity elective.
Chris Venegas says the students do not favor the humanity elective. That removing the course would be a good benefit.

After much discussion, Ken Theimer asked for a motion to approve program with revisions of removing MATH 1314 and removing the humanities elective.
Chris Venegas made motion to approve program with revisions.
Lori Leonard second the motion.

The motion to approve program with revisions passed.

Mark Holcomb explains that he would like to change the name of the program. Mark Holcomb explained that this would help the program receive more funding. Mr. Holcomb presented the committee with the name of "Energy and Electrical Technology."

Ken Theimer asked the committee for discussion on this change.
Mr. Theimer states that it makes sense. Mr. Holcomb said this will be easier to recruit students to see the program is a wide covering.
Randy Brooks does not like the name change.
Chris Venegas does not agree with the new name. He states there is more automation in the program than there is energy.
Dakota explained the name should have what is more beneficial for the students. What is more marketable to the students to keep the program viable?
Casey McShan agrees the name needs to be changed. The current title is misleading.
Mark Holcomb said he is fine with changing the name to something other than what he presented.
Ken Theimer said "Automation and Electrical Technology" sounds like a fair name.
Randy Brooks states that he likes "Automation and Electrical Technology." He also said when you are hired on in the field there aren't that many people hired on to do both automation and electrical work.

After much discussion, Ken Theimer asked for a motion to approve the program name change to Automation and Electrical Technology.
Randy Brooks made motion to approve the program name change as presented.
Casey McShan second the motion.

The motion to approve the program name change as presented passed.

Review of Matrices:

Ken Theimer led the discussion on Review Secretary's Commission on Achieving Necessary Skills (SCANS), General Education, Program Outcomes Matrices, and Institutional Outcomes Matrices and asks the faculty to expand on them.

Mark Holcomb explains the matrices below.

- **SCANS Matrix: The SCANS (Secretary's Commission on Achieving Necessary Skills) Matrix represents the 8 Federal requirements that must be taught. The matrix shows how we are mapping them back to each of the courses in the program.**

<table>
<tr><td colspan="8">Program: Industrial Automation Systems</td><td colspan="2" rowspan="3">Credential: Associate in Applied Science (AAS) Degree</td></tr>
<tr><td colspan="8">Award: Industrial Automation Systems Associate in Applied Science (AAS) Degree</td></tr>
<tr><td colspan="8">Cip: 15.0303</td></tr>
<tr><td colspan="10">LIST OF ALL COURSES REQUIRED AND IDENTIFIED COMPETENCIES</td></tr>
<tr><td colspan="8">SCANS COMPETENCIES</td><td rowspan="2">Course Number</td><td rowspan="2">Course Title</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ITNW 1325</td><td>Fundamentals of Networking Technologies</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td></td><td>ELPT 1411 Or</td><td>Basic Electrical Theory</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td></td><td>HART 1401</td><td>Basic Electricity for HVAC</td></tr>
<tr><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>CBFM 2417</td><td>Mechanical Maintenance</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ELMT 2433</td><td>Industrial Electronics</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td></td><td>ELPT 1441</td><td>Motor Control</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td></td><td>ELPT 1457</td><td>Industrial Wiring</td></tr>
<tr><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ELPT 2339</td><td>Electrical Power Distribution</td></tr>
<tr><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ELPT 2355</td><td>Programmable Logic Controllers II</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ELPT 2419</td><td>Programmable Logic Controllers I</td></tr>
<tr><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ELPT 2443</td><td>Electrical Systems Design</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td>ELPT 2449</td><td>Industrial Automation</td></tr>
<tr><td>X</td><td>X</td><td></td><td>X</td><td>X</td><td></td><td>X</td><td></td><td>RBTC 1405</td><td>Robotic Fundamentals</td></tr>
<tr><td rowspan="8"></td><td rowspan="7"></td><td rowspan="6"></td><td rowspan="5"></td><td rowspan="4"></td><td rowspan="3"></td><td></td><td colspan="3">8. BASIC USE OF COMPUTERS</td></tr>
<tr><td colspan="3">7. WORKPLACE COMPETENCIES</td></tr>
<tr><td colspan="4">6. PERSONAL QUALITIES</td></tr>
<tr><td colspan="5">5. THINKING SKILLS</td></tr>
<tr><td colspan="6">4. SPEAKING AND LISTENING</td></tr>
<tr><td colspan="7">3. WRITING</td></tr>
<tr><td colspan="8">2. WRITING</td></tr>
<tr><td colspan="10">1. READING</td></tr>
</table>

- **General Education Matrix: The General Education Matrix is state mandated. You will see the 6 requirements that the college is tasked with teaching and how they map back to the courses.**

Program: Industrial Automation Systems							**Credential: Associate in Applied Science (AAS) Degree**
Award: Industrial Automation Systems Associate in Applied Science (AAS) Degree							
Cip: 15.0303							
LIST OF ALL COURSES REQUIRED AND IDENTIFIED CORE OBJECTIVES							
GENERAL EDUCATION CORE OBJECTIVES						**Course Number**	**Course Title**
1	**2**	**3**	**4**	**5**	**6**		
X	X	X	X		X	ITNW 1325	Fundamentals of Networking Technologies
X		X	X			ELPT 1411	Basic Electrical Theory
X		X	X			HART 1401	Basic Electricity for HVAC
X	X		X	X	X	CBFM 2417	Machanical Maintenance
X						ELMT 2433	Industrial Electronics
X			X			ELPT 1441	Motor Control
X		X	X			ELPT 1457	Industrial Wiring
X		X				ELPT 2339	Electrical Power Distribution
X	X		X	X		ELPT 2355	Programmable Logic Controllers II
X			X			ELPT 2419	Programmable Logic Controllers I
X	X	X			X	ELPT 2443	Electrical Systems Design
X	X		X		X	ELPT 2449	Industrial Automation
X	X		X			RBTC 1405	Robotic Fundamentals
					6. Personal Responsibility		
				5. Social Responsibility			
			4. Teamwork				
		3. Empirical and Quantitative Skills					
	2. Communication Skills						
1. Critical Thinking Skills							

- **Program Outcomes Matrix: The Outcomes Matrix represents the Vernon College mandated requirements. They are the Program outcomes just approved and how they map back to the courses.**

Program: Industrial Automation Systems								**Credential: Associate in Applied Science (AAS) Degree**
Award: Industrial Automation Systems Associate in Applied Science (AAS) Degree								
Cip: 15.0303								
LIST OF ALL COURSES REQUIRED AND OUTCOMES								
OUTCOMES							**Course Number**	**Course Title**
1	**2**	**3**	**4**	**5**	**6**	**7**		
				X			ITNW 1325	Fundamentals of Networking Technologies
X		X	X	X		X	ELPT 1411	Basic Electrical Theory
X	X	X			X		HART 1401	Basic Electricity for HVAC
X	X	X					CBFM 2417	Mechanical Maintenance
X		X	X	X		X	ELMT 2433	Industrial Electronics
X	X	X			X		ELPT 1441	Motor Control
X	X	X			X		ELPT 1457	Industrial Wiring
	X	X			X		ELPT 2339	Electrical Power Distribution
		X	X	X		X	ELPT 2355	Programmable Logic Controllers II
X	X	X	X	X		X	ELPT 2419	Programmable Logic Controllers I
X	X	X			X		ELPT 2443	Electrical Systems Design
X		X	X	X		X	ELPT 2449	Industrial Automation
X				X		X	RBTC 1405	Robotic Fundamentals
						7. Design, program, integrate and troubleshoot automation control devices such as PLC (Programmable Logic Controllers), PID (Proportional Integral Derivative) Controllers, and PAC (Programmable Automation Controllers).		
					6. Calculate requirements of electrical systems utilized in commercial, industrial, and high voltage distribution and transmission applications.			
				5. Establish network communications to integrate electrical devices such as computers, automation controllers, vision systems, robots, drives, etc.				
			4. Develop programs, calibrate devices, and tune PID parameters for various types of process control systems, including such as pressure, level, flow, and temperature control systems.					
		3. Interpret schematics and wiring diagrams and recognize the sequence of operations occurring in automated electrical systems.						
	2. Incorporate local, state, and federal safety requirements and guidelines in the design of electrical systems.automate different manufacture processes.							
1. Apply basic AC/DC electrical and electronic fundamentals to wire, integrate, and troubleshoot electrical devices and systems.devices used in industrial environments to increase the efficiency of production.								

- **Institutional Outcomes Matrix: The Institutional Outcomes Matrix represents the Vernon College mandated requirements. This matrix represents how the program outcomes map back to the institutional outcomes/general education outcomes.**

<table>
<tr><td colspan="7">Program: Industrial Automation Systems</td><td rowspan="3">Credential: Associate in Applied Science (AAS) Degree</td></tr>
<tr><td colspan="7">Award: Industrial Automation Systems Associate in Applied Science (AAS) Degree</td></tr>
<tr><td colspan="7">Cip: 15.0303</td></tr>
<tr><td colspan="8">LIST OF ALL COURSES REQUIRED AND OUTCOMES</td></tr>
<tr><td colspan="7">OUTCOMES</td><td rowspan="2">General Education Outcomes</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr>
<tr><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>1. Critical Thinking Skills</td></tr>
<tr><td></td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>2. Communication Skills</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td>X</td><td></td><td></td><td>3. Empirical and Quantitative Skills</td></tr>
<tr><td>X</td><td></td><td></td><td>X</td><td></td><td></td><td>X</td><td>4. Teamwork</td></tr>
<tr><td></td><td>X</td><td></td><td></td><td></td><td></td><td></td><td>5. Social Responsibility</td></tr>
<tr><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>6. Personal Responsibility</td></tr>
<tr><td rowspan="6"></td><td rowspan="5"></td><td rowspan="4"></td><td rowspan="3"></td><td rowspan="2"></td><td></td><td colspan="2">7. Design, program, integrate and troubleshoot automation control devices such as PLC (Programmable Logic Controllers), PID (Proportional Integral Derivative) Controllers, and PAC (Programmable Automation Controllers).</td></tr>
<tr><td></td><td colspan="2">6. Calculate requirements of electrical systems utilized in commercial, industrial, and high voltage distribution and transmission applications.</td></tr>
<tr><td></td><td colspan="3">5. Establish network communications to integrate electrical devices such as computers, automation controllers, vision systems, robots, drives, etc.</td></tr>
<tr><td></td><td colspan="4">4. Develop programs, calibrate devices, and tune PID parameters for various types of process control systems, including such as pressure, level, flow, and temperature control systems.</td></tr>
<tr><td></td><td colspan="5">3. Interpret schematics and wiring diagrams and recognize the sequence of operations occurring in automated electrical systems.</td></tr>
<tr><td colspan="6">2. Incorporate local, state, and federal safety requirements and guidelines in the design of electrical systems.automate different manufacture processes.</td></tr>
<tr><td colspan="8">1. Apply basic AC/DC electrical and electronic fundamentals to wire, integrate, and troubleshoot electrical devices and systems.devices used in industrial environments to increase the efficiency of production.</td></tr>
</table>

Ken Theimer asked for a motion to approve matrices.
Dakota Patterson made motion to approve matrices as presented.
Casey McShan seconded the motion.

The motion to approve matrices as presented passed.

Program statistics:

Mr. Theimer proceeded into discussing Program statistics

- Program Statistics:
  - Graduates 2018-2019: (9 Associates/9 Certificates)
  - Enrollment Summer 2019: (6)
  - Majors Fall 2018-2019: 30
  - Enrollment Fall 2019: 68

Local Demand:

Casey McShan explains to the committee that Sealed Air currently has two open positions. Within the next year he will have about four tech jobs open.
Ken Theimer states he needs 1-2 guys within the next year.
Kelly Easter explains that Vitro is always hiring but unsure of how many openings currently.
Stephen Storm said that AEP really enjoys seeing applicants with this degree on their resume. As of now they do not have any openings.
Dakota Patterson explains Nextera currently has four openings. They tend to hire more people with industrial experience on the windfarms.
Randy Brooks states they have openings in other locations and they lean towards applicants with this degree.
Marc Bradburry explains Triangle Brick does not have any openings at this time.

Evaluation of facilities and equipment:

Ken Theimer opened up discussion on evaluation of facilities, equipment, and technology. Recommendation for acquisition of new equipment and technology.

9 - Compact Logic Controllers
2 - MicroLogic 1400s
1 – FLIR E6 IR camera
1 – FLIR E75 camera
1 – Fanuc Fanuc Robotic Arm (Dec 2018)
8 – HP laptop
1 – 65” 4K Monitor
1 – Surface Pro Tablet

Future Possible Purchases:
Motor Control Center/ Control Panels
Collaborative Universal Robotic Arm

External learning experiences:

Ken Theimer moved discussion to external learning experiences, employment, and placement opportunities

Currently 6 students are enrolled in Practicums for Fall 2019 at Oncor, Advanced Electrical and Electronics, Cryovac, Alliance Petroleum

Employment:
Cryovac, Oncor, EMD, Alliance Petroleum

*Due to Perkins transition this is the most recent report

State reported completer placement rate for 15030000-Electrical Engineering Technologies/Technicians is 95% for 2013-16.

Professional development of faculty:

The Chair moves to professional development of faculty and recommendations:

Last Year:
Introduction to Thermography Level I and Texas Association of Career and Technical Educators conference
Scheduled this year:
Thermography Level II and Texas Association of Career and Technical Educators conference

Promotion and publicity:

Ken Theimer proceeds to promotion and publicity (recruiting) about the program to the community and to business and industry

Recruiting Events held at STC

October 2018: Youth Expo (area 8th graders) Workforce Solutions/Region 9

2/20/2019: Group Tour of STC - Goldburg ISD Seniors (13)

3/29/2019: Group Tour of STC - City View ISD Seniors (50)

4/03/2019: Group Tour of STC - Region IX Visually Impaired Students (9)

4/09/2019: Group Tour of STC - Youth Leadership Wichita Falls (Select Juniors from WFISD Schools) (25)

4/26/2019: Group Tour of STC - Seymour ISD 8th Grade (48)

+ 9 total individual tours of STC given to prospective students

Recruiting Events where STC Programs Participated

4/5/2019: Preview Day – CCC (Jrs and Srs from Burkburnett, City View, Electra, Goldburg, Hirschi, Holliday, Iowa Park, Northside, Vernon, Wichita Christian, and Wichita Falls High School) (268)

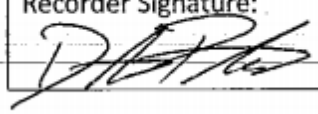
4/18/2019: Senior Send-Off - WFISD Graduating Seniors (79)

Serving students from special populations:

Ken Theimer would like to discuss serving students from special populations.

1. Special populations new definitions:
    a. Individuals with disabilities;
    b. Individuals from economically disadvantaged families, including low-income youth and adults;
    c. Individuals preparing for non-traditional fields; 29/1
    d. Single parents, including single pregnant women;
    e. Out-of-workforce individuals;
    f. English learners;
    g. Homeless individuals described in section 725 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11434a);
    h. Youth who are in, or have aged out of, the foster care system; and
    i. Youth with a parent who—
        i. a. is a member of the armed forces (as such term is defined in section 101(a)(4) of title 10, United States Code);
        ii. b. is on active duty (as such term is defined in section 101(d)(1) of such title).

Adjourn at 2:00PM

Recorder Signature:	Date:	Next Meeting: Fall 2020
	10-29-19	