ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Career and Technical Programs

COURSE: ELT-2210; HMI, SCADA & Fiber Optics

Date: 1/20/2011

Credit Hours: 3

Prerequisite(s): ELE 1204

Delivery Method:		
	☒ **Lecture**	**2 Contact Hours (1 contact = 1 credit hour)**
	☐ **Seminar**	**0 Contact Hours (1 contact = 1 credit hour)**
	☒ **Lab**	**2 Contact Hours (2 contact = 1 credit hour)**
	☐ **Clinical**	**0 Contact Hours (3 contact = 1 credit hour)**
	☐ **Online**	
	☐ **Blended**	

Offered: ☒ **Fall** ☐ **Spring** ☐ **Summer**

IAI Equivalent –***Only for Transfer Courses***-go to *http://www.itransfer.org*:

CATALOG DESCRIPTION:

This Course Is a continuation of the PLC automation classes utilizing software and hardware to build and use a Human Machine Interface (HMI) and the introduction of the System Control and Data Acquition (SCADA) sytem.

GENERAL EDUCATION GOALS ADDRESSED

[See the last page of this form for more information.]

Upon completion of the course, the student will be able:

[Choose those goals that apply to this course.]

☐ To apply analytical and problem solving skills to personal, social and professional issues and situations.
☐ To communicate orally and in writing, socially and interpersonally.
☐ To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
☐ To understand and use contemporary technology effectively and to understand its impact on the individual and society.
☒ To work and study effectively both individually and in collaboration with others.
☐ To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
☐ To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
☒ To appreciate the ongoing values of learning, self-improvement, and career planning.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals.]

Upon completion of the course, the student will be able to:

Competency 1 Basics of HMI
- Competency 1.1 Interpret a control Panel
- Competency 1.2 Build a simulated Control Panel
- Competency 1.3 Create a Scenario-based Display
- Competency 1.4 Animate the display
- Competency 1.5 Create an Alarm screen

Competency 2 Basics of SCADA
- Competency 2.1 Explain system control
- Competency 2.2 interpret Data
- Competency 2.3 Apply software to Trend DATA
- Competency 2.4 Describe DATA security

Competency 3 Maintenance and Troubleshooting
- Competency 3.1 Interpret HMI alarm messages
- Competency 3.2 Troubleshoot and repair a Fiber Optic Cable
- Competency 3.3 Predict System Performance
- Competency 3.4 Document Maintenance, CQI

COURSE TOPICS AND CONTENT REQUIREMENTS:

HMI history
HMI justification
A Process
Important DATA
Displays
Objects and symbols

Alarms
Animation
Process Controllers
Trends
Best Practices
Communication over Fiber
System Control
Data Acquisition
Securing DATA
Continuous Quality Control
Maintenance Documentation

INSTRUCTIONAL METHODS:
Lecture
Lab
Simulation
Group work

INSTRUCTIONAL MATERIALS:

- The High Performance HMI Handbook ISBN: 0977896919

Automation Studio Software
Rockwell Automation Studio Software
AB Panel View Hardware

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

90% and up	**A**
80% - 89%	**B**
70% - 79%	**C**
60% - 69%	**D**
00% - 59%	**F**

Quizzes	**10%**
Labs	**30%**
Tests	**20%**
Midterm	**20%**
Final	**20%**

Some quizzes and test may be performance based

OTHER REFERENCES

www.ab.com

Course Competency/Assessment Methods Matrix

ELT-2210; HMI, SCADA, & Fiber Optics	Assessment Options																																
For each competency/outcome place an "X" below the method of assessment to be used.	**Assessment of Student Learning**	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.	**Direct/ Indirect**	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D							
1.1 Interpret a control Panel				x	x				x																								x
1.2 Build a simulated Control Panel				x	x										x					x								x	x				x
1.3 Create a Scenario-based Display					x															x									x				x
1.4 Animate the display				x	x															x								x	x				x
1.5 Create an Alarm screen				x	x															x													x
2.1 Explain system control									x																								
2.2 interpret Data					x				x																								
2.3 Apply software to Trend DATA					x															x													x
2.4 Describe DATA security									x				x																				
3.1 Interpret HMI alarm messages					x															x								x					
3.2 Fiber Optic Cable Maint.				x	x															x													
3.3 Predict System Performance				x	x				x																				x				
3.4 Document Maintenance, CQIP					x															x											x		x