FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER:	EST 1531
COURSE TITLE:	Human Machine Interface and Systems Graphics
PREREQUISITE(S):	EST 1540
COREQUISITE(S):	None
CREDIT HOURS:	3
CONTACT HOURS/WEEK:	4
CONTACT HOUR BREAKDOWN:	
Lecture/Discussion:	3
Laboratory:	1
Other _____:	
FACULTY WORKLOAD POINTS:	3.67
STANDARDIZED CLASS SIZE ALLOCATION:	24

CATALOG COURSE DESCRIPTION:

This course teaches the knowledge and skills needed to configure a computer display for the graphics of a process and its control system, using a Human Machine Interface (HMI) software package. Topics include designing process graphics, designing alarm indicators, setting up trending graphs, establishing data logging files, linking the various process input to the graphic objects created, and linking the process inputs and outputs for display and data logging.

SUGGESTED TEXT(S):	CD-ROM Software Package both for the Introduction pre-Tutorial and the complete package will be provided by the school
IMPLEMENTATION DATE:	Spring Term, 2002 (20031)
REVIEW OR MODIFICATION DATE:	Fall Term, 2009 (20101) – Proposal 2009-11

COURSE TOPICS	CONTACT HOUR PER TOPIC
I. The Software	40
A. Introduction to Human Machine Interfaces (HMI)	(6)
1. Installing the pre-course tutorial package	
2. Starting the tutorial	
3. Pre-course tutorial quiz	
B. Chapter 1 - The Graphical User Interface (GUI)-The Application Explorer	(4)
1. Navigating in the Application Explorer	
2. Adding Applications to the Application Explorer	
3. The GUI Toolbars	
4. Working with the Floating/Docking Toolbars	
5. The UGI Ruler	
6. The UGI Status Bar	
7. The UGI Color Palette	
a. Using the Standard Color Palette	
b. Creating a Custom Color Palette	
8. Short Cuts and Accelerators	
9. Moving Objects with the Arrow Keys	
10. Using UGI Help	
C. Chapter 2 - Using the HMI or UGI	(4)
1. Simple Objects	
2. Complex Objects	
3. Customizing Your Development Environment	
4. Working with Window Maker Windows	
5. Working with Graphic Objects	
6. Arranging Objects in your Window	
7. Working with Images and Bitmaps	
8. Working with Text Objects	
9. Working with Lines and Outlines	
10. Working with Wizards	
11. InTouch Windows Control Wizards	
12. Working with ActiveX Controls	
13. Configuring an ActiveX Control	
14. Customizing Your Runtime Environment	
15. Using InTouch Security	
D. Chapter 3- Building a Distributed Application	(3)
1. Network Architectures	
2. Network Application Development (NAD)	
3. Configuring Network Resources	
4. Troubleshooting Networks	
5. Configuring InTouch for Common Data Sources	
6. Configuring an InTouch Application for NAD	
7. Dynamic Resolution Conversion (DRC)	
8. Running WindowViewer as an NT Service	
9. Configuring System Privileges	
10. Distributed Applications and Time Zones	

COURSE TOPICS (CONTINUED)	CONTACT HOUR PER TOPIC
11. Distributed Alarms Distributed History	
E. Chapter 4 - Tagname Dictionary	(4)
1. Tagname Dictionary Special Features	
2. Tagname Types	
3. Extended Tagname Support	
4. Defining a New Tagname	
5. Defining Tagname Details	
6. Defining Tagname Alarm Conditions	
7. Creating InTouch Super Tags	
8. Alternative Methods for Creating Super Tags	
9. Remote Tagname Referencing	
10. Creating a Tagname Server Application	
11. Dynamic Reference Addressing (DRA)	
12. The Tag Browser	
13. In-Touch Cross Reference Utility	
14. Printing Tagname Dictionary Details	
15. Deleting Tagnames from the Dictionary	
16. Displaying the Tag Usage Count	
17. Substituting Tagnames	
18. Converting placeholder Tagnames	
19. Scaling I/O Tagnames	
20. Internal System $Tagnames	
21. Tagname.Fields	
22. Tagname Dictionary Utilities	
F. Chapter 5- Creating Animation	(3)
1. Common Animation Link Features	
2. Creating Touch Links	
3. Creating Display Links	
G. Chapter 6 - Creating In-Touch Quick Scripts	(4)
1. In-Touch Quick Scripts	
2. Using the In-Touch Quick Script Editor	
3. Application Scripts	
4. Window Scripts	
5. Key Scripts	
6. Touch Pushbutton Action Scripts	
7. Condition Scripts	
8. Data Change Scripts	
9. ActiveX Event Scripts	
10. Quick Functions	
11. Using Local Variables	
12. Creating FOR-NEXT Loop Scripts	
13. Script Editing Styles and Syntax	
14. Importing Quick Scripts	
15. Printing Scripts	
16. Script Functions	
17. Script Editor Error Messages	

COURSE TOPICS (CONTINUED) — CONTACT HOUR PER TOPIC

H. Chapter 7- Alarms/Events (4)
1. Alarms and Events
2. Alarm Priorities
3. Alarm Groups
4. Defining Tagname Alarm Conditions
5. The Standard Alarm Display
6. Configuring a Standard Alarm Display
7. Alarm .Fields
8. Acknowledging Local Alarms
9. The Distributed Alarm System
10. Distributed Alarm Group Lists
11. The Distributed Alarm Display
12. Distributed Alarm Properties and Functions
13. Configuring a Node for Distributed Alarms
14. Using Both Alarm Systems in an Application

I. Chapter 8 - Real-time and Historical Trending (4)
1. Real-time Trends
2. Historical Trends
3. Historical Trend .Fields
4. Historical QuickScript Functions
5. The Distributed History System
6. Creating Historical Trend Scooters
7. Historical Trending and Daylight Savings Time
8. Historical Data Merge Utility Program
9. HistData Utility Program

J. Chapter 9 – I/O Communications (4)
1. Supported Communication Protocols
2. Wonderware SuiteLink
3. The InTouch I/O Address Convention
4. The InTouch I/O Address
5. InTouch Access Names
6. Defining an I/O Item in InTouch
7. Monitoring the Status of a I/O Conversation
8. Monitoring I/O Server Communications Status
9. Monitoring Multiple Input Device Status

II. The Hardware 20

A. Instrumentation Applied to Manufacturing Machinery (5)
1. Mechanical Instrumentation
2. Transfer Line Production Instrumentation
3. Manufacturing Instrumentation with Numerical Control
4. Computer Controlled Machines

B. Strategies of Production Automation (5)
5. Manufacturing Cells
6. Flexible Manufacturing

COURSE TOPICS (CONTINUED)

CONTACT HOUR PER TOPIC

7. Robot Classifications
8. Controllers for Robots
9. Power Supply

C. Strategy of Automation With Computers (5)

10. Computer Integrated Manufacturing (CIM)
11. Identification of Inventory and Storage
12. The Automated Factory

D. Programmable Logic Controllers (PLC) (5)

1. Review of The Workings of a Programmable Logic Controller
2. Interfacing of the Instruments and sensors to the PLC input cards
3. Overview of the different manufactures of Programmable Logic Controllers
4. Learning the software for the configuration and programming for two of the most industrial common used types.

PROGRAM TITLE: Engineering Technology Specialization Tract
Advanced Manufacturing

COURSE TITLE: Human Machine Interface and Systems Graphics

CIP NUMBER: 1615.061300 AS

LIST PERFORMANCE STANDARDS ADDRESSED:
NUMBER(S): TITLE(S):

17.0 USE PROFICIENTLY HUMAN MACHINE INTERFACES TO OPERATE AUTOMATED SYSTEMS - The student will be able to:

17.01 Match computer graphic icons to real field equipment.
17.02 Route data flow between computer and controlled machines.
17.03 Identify the computer input and output signals and equipment destinations.
17.04 Implement manual override appropriately.
17.05 Perform computer based system and/or machine troubleshooting.
17.06 Define the essential components of an integrated HMI system.

Florida State College At Jacksonville

Course Learning Outcomes & Assessment For All College Credit Courses

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1	
COURSE PREFIX AND NUMBER: **EST 1531**	SEMESTER CREDIT HOURS: **3**
COURSE TITLE: **Human Machine Interface and Systems Graphics**	

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- ☐ **AA Elective**
- ☒ **AS Required Professional Course**
- ☐ **College Prep**
- ☐ **AS Professional Elective**
- ☐ **AAS Required Professional Course**
- ☐ **Technical Certificate**
- ☐ **Other** ____
- ☐ **General Education: (For General Education courses, you must also complete Section 3 and Section 7)**

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- ☐ **Communications**
- ☐ **Social & Behavioral Sciences**
- ☐ **Mathematics**
- ☐ **Natural Sciences**
- ☐ **Humanities**

Section 4

INTELLECTUAL COMPETENCIES:

- ☒ **Reading**
- ☒ **Speaking**
- ☒ **Critical Analysis**
- ☒ **Quantitative Skills**
- ☒ **Scientific Method of Inquiry**
- ☒ **Writing**
- ☒ **Listening**
- ☐ **Information Literacy**
- ☐ **Ethical Judgment**
- ☒ **Working Collaboratively**

Section 5 **LEARNING OUTCOMES**		**METHOD OF ASSESSMENT**
•	Match computer graphic icons to real field equipment.	Hands-on application exercises,
•	Identify the computer input and output signals and equipment destinations.	Hands-on application exercises, written quizzes, tests, or simulation hardware exercises
•	Implement manual override appropriately.	
•	Perform computer based system and/or machine trouble shooting.	Hands-on application exercises, written quizzes, tests, or simulation hardware exercises
•	Define the essential components of an integrated HMI system.	Written quizzes and tests,
•	Route data flow between computer and controlled machines.	Hands-on application exercises, written quizzes, tests, or simulation hardware exercises
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Section 6 Name of Person Completing This Form: Evan Kuharich Date: 05/6/08