

ECET Curriculum Improvement Project

Certificate II Program

April 27, 2006

Topics

- Motivation for program changes & FTCP relationship
- ECET Technology Program courses added
- Next steps in improving the program

Motivation & FCTP

- More applications content
- Technology changes
- Interactive
- Hands-on for Technology majors

Curriculum Improvement

- Two new course sequences will be offered in Fall06 for EET & CET majors.
 - Integrated Computer Technology I, II, & III, 4cr each
 - New technology students.
 - I & II required for both EET & CET. III required for CET students.
 - Replaces ECET introductory digital course and Computer Science courses.
 - Industrial Automation I & II, 4 cr each
 - Required for all technology students.
 - Equipment ordered for labs, funded by Center of Excellence & Rockwell.
 - Course proposals submitted to Course & Curriculum Committee. Bulletin updates submitted.
 - New member of faculty will teach Int. Comp Tech

EET 141 Integrated Computer Technology I (4 credits)

Description: Digital circuit, logic, and C programming skills needed for electronic and computer engineering. Covers binary arithmetic, clock distribution, timing, TTL, CMOS, logic gates, Boolean algebra, multiplexer, counter, adder, logic simulation, C language elements, C programming techniques and use of digital test equipment. Students design, build and test an Arithmetic Logic Unit (ALU) using TTL gates and simulate each block in C.

- Binary & Hexadecimal arithmetic
- Switch-level transistor model
- Logic gates
- C variables, data and constants
- C arithmetic expressions and assignment operators
- C simulation of logic gates
- TTL and CMOS logic circuits, clocking & timing
- Introduction to PLDs
- Boolean algebra & C simulation
- C conditional operators & programming examples
- Two's-complement arithmetic
- Half-adder, full-adder and 4-bit adder circuits
- C simulation of adder logic circuits
- Gate-level logic simulation using ORCAD
- C arrays, functions, and variables.
- ALU – work on in parallel with the above topics
- ALU logic circuit design using individual TTL gates
- ALU test plan & documentation requirements
- ALU ORCAD simulation
- ALU C simulation

EET 461 Industrial Automation I (4 credits)

Class Schedule: 3 lecture, 1 2-hour lab

Description: Automation components and subsystems involving sensors, transistors, logic, amplifiers, software, microprocessors, PLCs, actuators, encoders, stages, motors, controllers and drives. Students design, simulate, build, test and document automation systems for Capstone projects.

Plan:

Automation introduction.

Motors, drives, controllers, and encoders - AC, DC, stepper, linear.

LogixPro programming and simulation software.

Rockwell Automation PLC's.

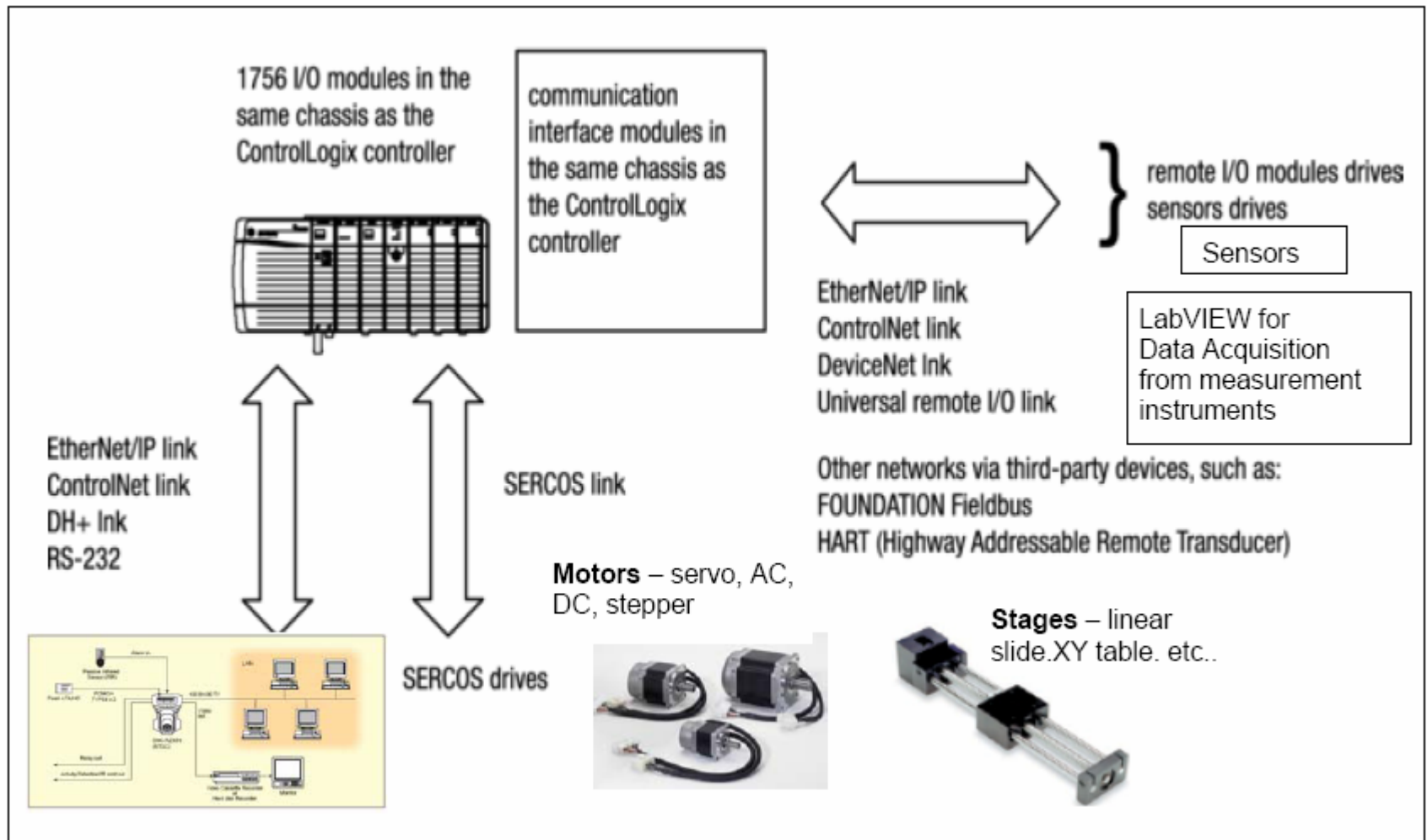
Rockwell digital and analog modules including analog control and resolution.

Sensors.

Communications, ControlLogix and DeviceNet.

Automation instrument control and data acquisition using LabVIEW.

Industrial Automation Equipment Funding from Center of Excellence



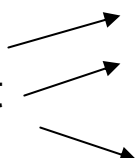
Equipment - continued

Equipment Summary	Value	COE Funded	MSU Funded
Rockwell Automation Equipment, 7 Stations SERCOS Interface, Kinetix 6000 Servo Drive & Motors, DeviceNet, EtherNet, Input/Output Devices, DC Drive & Motors, AC Drive & Motors, Photoelectric and Proximity sensors, Limit Switches, Software	\$166,905	\$41,726	
Nook Industries – linear slides (7)	\$11,020	\$7,871	\$3,149
Measurement Instruments (7 sets) Fluke ScopeMeter 199/CS, Fluke Multimeter, &Accessories	\$32,282		\$32,282
Cameras	\$3,060		\$3,060
TOTALS	\$213,267	\$49,597	\$38,491

CET Program Improvement – Next Steps

Required Core for Major (CET, xx credits):		
EET 113 DC Circuits (3)		3
EET 114 AC Circuits (3)		3
EET 222 Electronics I (4)		4
EET 223 Electronics II (4)		4
EET 140 Integrated Computer Technology I (4)		4
EET 141 Integrated Computer Technology II (4)		4
EET 240 Integrated Computer Technology III (4)		4
EET 270 Electronic Practices (4)		4
EET 271 Printed Circuits (2)		2
EET 254 Microprocessors I (4)		4
EET 354 Microprocessors II (4)		4
EET 310 Programming Tools (4)		4
EET 340 FPGA & PLC Systems (4)		4
EET 351 Industrial Automation & Test I (4)	& Ind Automation II	4
EET 441 Embedded Systems (4)		4
EET 356 Communications I (4)		4
EET 430 Computer Networking I (4)		4
EET 497* Internship (3)		3
* You may substitute one EET advanced elective for internship. Permission required.		

next



EET Program Improvement – Next Steps

Required Core for Major (EET, xx credits):		
EET 113 DC Circuits (3)		3
EET 114 AC Circuits (3)		3
EET 222 Electronics I (4)		4
EET 223 Electronics II (4)		4
EET 140 Integrated Computer Technology I (4)		4
EET 141 Integrated Computer Technology II (4)		4
EET 240 Integrated Computer Technology III (4)		4
EET 270 Electronic Practices (4)		4
EET 271 Printed Circuits (2)		2
EET 254 Microprocessors I (4)		4
EET 354 Microprocessors II (4)		4
EET 340 FPGA & PLC Systems (4)		4
EET 351 Industrial Automation & Test I (4)	Req	4
EET 355 Electrical Power Systems (3)		3
EET 352 Operational Amplifier Applications (3)		3
EET 356 Communications I (4)		4
EET 482 Device Technology (4)		4
EET 497* Internship (3)		3
Choose a minimum of 6 credits from the following courses:		
EET 425 EET 430 EET 455 EET 486		
EET 487 EET 492 EET 452(Industrial Automation II)		6
* You may substitute one EET advanced elective for internship.		

next

To Be Continued