



**Siemens Mechatronic Systems Certification Program
Kentucky Community and Technical College System
Instructor Certification Program – Course Content Section
Madisonville Community College, Madisonville, KY, Jan. 4 – 8, 2010**

Today's globally competitive companies foster the cross-functional knowledge skills of their employees, identify system level problems early, ensure all design requirements are met and automate the controls design process. The key to the success of these companies is that they are more likely to launch products on time and under budget. These companies have adopted the "mechatronic systems approach," a design philosophy that utilizes a synergistic integration of mechanics, electronics, and computer technology to produce enhanced products, processes or systems.

The global trend towards mechatronic systems represents an opportunity for colleges to catch a great economic and workforce development wave which is transforming the nature of work from skilled to semi-skilled labor. The Siemens Mechatronic Systems Certification Program (SMSCP) uses a "System Approach" to learning that focuses on the complexities of a manufacturing system in a holistic fashion. Students are confronted with a complete complex system, which allows them to learn the parts of the system by examining their roles and keeping the "big picture" in view. Using the systems approach, students learn advanced manufacturing technology on integrated systems or operating, troubleshooting, and maintaining systems.

Mechatronic engineering, a combination of mechanical, electronic and software engineering, will dominate future hiring at motor vehicle firms – not only for vehicle design and engineering, but also manufacturing engineering. (*Beyond the Big Leave, Center for Automotive Research, Feb. 2008*)

What is SMSCP Level I?

A Siemens Certified Mechatronic Systems Assistant will function as a well-grounded machine operator in a complex system, with responsibility for efficient operation of equipment with minimal down-time. The SMSCP Level I certification is the first of three certifications in a series, which is based upon an industry-driven job profile which helps an employer determine where a person can be best placed within an organization. Normally a Siemens Certified Mechatronic Systems Assistant would carry out their work at plant assembly sites, workshops, or in connections with service operation which utilize complex mechatronic systems.

What does it take to become an SMSCP Instructor?

1. Successfully complete the SMSCP Course Paradigm Section, offered in Berlin, Germany (5 day course)
2. Successfully complete the SMSCP Course Content Section (5 day course)



What is the SMSCP Course Paradigm Section?

The SMSCP Course Paradigm is an overview of the thinking and learning paradigm using the Siemens System Approach to coursework. Participating instructors will work with the Siemens Technik Akademie Instructors. Mechatronic systems projects will replicate the format in which student projects are run at the Siemens Technik Akademie.

What is the SMSCP Course Content Section?

The SMSCP Course Content Section provides instruction on the delivery of individual coursework in the system based instruction, including how to implement the coursework in your institution. Participants will be given sample lesson units delivered by trainers and lesson units developed and delivered by participant teams. Participating instructors will further investigate project-based learning and gain insight into integrating projects into their instruction. This is the concluding section of the course that instructors must take to become Siemens Certified Instructors.

SMSCP Course Content Section Agenda

Course Description(s)

Syllabus

Logistics of Course(s)

Delivery Method of Course(s)

Objectives for the Course(s)

Job Profile Related to the Course Objectives

Course Content

Utilization of a Mechatronic System for Instruction

Why should faculty attend?

Studies have shown that the demand will continue to increase for colleges to deliver Mechatronic education programs to properly educate our workforce to ensure that the United States continues to be competitive in a global economy. Technology advances are requiring our students to be able to multi-task and have an understanding of all of the engineering technologies.

Who should attend?

Faculty that have a background in Engineering Technology disciplines, Electrical Technology, Electronics Technology, Industrial Maintenance Technology, and Pre-engineering.

What is the cost of attendance?

The tuition rate for the SMSCP Course Content Section is \$1750.00 USD per person for non KCTCS attendees.



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When and where is the SMSCP Course Content Section Scheduled?

The SMSCP Course Content Section will be held the week of January 4 - 8, 2010.

The program will be hosted by Madisonville Community College at the Brown Badgett, Sr. Energy and Advanced Technology Center in Madisonville, KY.

What accommodations are available?

There are a variety of lodging options in Madisonville. We recommend the Hampton Inn & Suites and have arranged for a special rate of \$99/night if reservations are made by December 21, 2009.

Hampton Inn & Suites

1201 Center Street

Madisonville, KY 42431

(270) 825-2226

<http://hamptoninn.hilton.com/en/hp/hotels/index.jhtml;jsessionid=NRE50KSZAM3NSCSGBIXMVCQ?ctyhocn=MVLKYHX>

Tentative Agenda for SMSCP Course Content Section

Jan. 4th (8:30 – 5:00)

Introduction to Level I Course 1 – Electrical Components

Jan. 5th (8:30 – 5:00)

Introduction to Level I Course 2 – Mechanical Components and Electrical Drives

Jan. 6th (8:30 – 5:00)

Introduction to Level I Course 3 – Pneumatic and Hydraulic Control Components

Jan. 7th (8:30 – 5:00)

Introduction to Level I Course 4 – Digital Fundamentals & Programmable Logic Controllers

Jan. 8th (8:30 – 2:00)

Participant Presentations

Course Feedback Session

Quotes from previous participants:

“What impressed me most about Mechatronics is that it could be integrated into KCTCS’s existing curriculum or be implemented as a stand-alone capstone course of study or both”

“I can visualize this high level certification program quickly becoming the criteria for labor grade promotions for many of the companies we currently serve.”

“The recent Mechatronics Instructor Certification Program training provided unique teaching and learning strategies which could be implemented by any community and technical college. As



much a philosophy as systematic approach to teaching and learning methodologies, Mechatronics should prove instrumental in driving curriculum which should satisfy industry's need to become and maintain global competitiveness.”

“I feel that working with an entire system then breaking it down to single component then fundamentals is an approach that helps to spark student interest and initiative.”

“This was a very exciting experience for me – particularly in light of the tremendous possibilities for implementing the Siemens Mechatronics System certification program within the structure of KCTCS.”

“The program was valuable and useful in that it is important for potential instructors to physically see the Siemens facilities, interact with the staff, gain knowledge of the systems approach, see concrete examples such as developing specific lesson plans, and become familiar with the software that will be used.”

“I enjoyed learning about Siemens Methodology approach to technical education. The German Education System was very interesting to learn about. This is a very different approach to education in comparison to the United States system.”