KARTA PRZEDMIOTU

Nazwa przedmiotu: ***Automatic identification systems (ZIPAOZ>SM3AIS19S)***
Nazwa w języku polskim:
Nazwa w jęz. angielskim: ***Automatic identification systems***

Dane dotyczące przedmiotu:

Jednostka oferująca przedmiot: Wydział Organizacji i Zarządzania
Przedmiot dla jednostki: Politechnika Śląska

Domyślny typ protokołu dla przedmiotu:

ZAL

Język wykładowy:

angielski

Skrócony opis:

Automatic identification systems enable direct entry of data into a computer system, programmable logic controller (PLC) or other microprocessor-controlled device without using a keyboard.
AutoID technologies provide a quick, accurate and cost-effective way to track items, collect and enter data, and encode a wide range of information, from a simple detail to comprehensive statistics about an item or person.
In this Automatic Identification Systems Course, your will be introduced to the most popular AutoID technologies:
Bar codes, Magnetic stripe cards, Smart cards, Biometric technologies and Radio frequency (RF).
You will observe how different automatic identification technologies offer different solutions to data collection and storage problems.
You will determine the advantages/disadvantages, features and typical applications of each technology.
In this course, you will explore a variety of systems used for the automatic identification of objects or individuals.

Opis:

Course 01. This unit includes the following topics: Identification, What is Automatic Identification? AutoID Technologies, The Automatic Identification Systems. In this unit you will accomplish the following: Measure your knowledge of automatic identification systems. Key a number of random serial numbers into the computer to simulate a grocery store operation. Identify the components used in a variety of automatic identification systems.

Course 02. This unit includes the following topics: What is Barcode? History of Barcode, Why Use Barcode Technology? Barcode Standards, and Barcode Facts. In this unit you will accomplish the following: Define barcode. Review the history of barcode technology. Explore the uses of barcode in industry. Consider several pieces of barcode trivia.

Course 03. In this unit, you will discover how barcodes are created, and characterize common barcode symbologies, or languages. This unit includes the following topics: Symbologies, Barcode Density, Barcode Structure, and Barcode Symbologies In this unit you will accomplish the following: Define the concept of barcode symbologies. Characterize barcodes by density. Identify the structure common to most barcode symbologies. Explore four of the most commonly used barcode symbologies.

Course 04.
In this unit, you will examine the basic components of a barcode system, and learn how barcodes are read and decoded. This unit includes the following sections: Barcode System Components, Types of Barcode Readers, How Barcodes Are Decoded, and Scanner Operating Parameters. In this unit you will accomplish the following: Describe the components of a complete barcode system. Examine how barcodes are read and decoded. Identify different types of barcode readers. Change a barcode scanner scanning mode from flash to trigger and then back to flash.

Course 05. This unit includes the following topics: Scanner Operating Parameters, Intercharacter Delay, Interblock Delay, Terminators, Preambles and Postambles, and What is the Barcode Error Rate? In this unit you will accomplish the following: Determine the distance from which the scanner can read code. Adjust additional scanner parameters, such as the intercharacter delay and interblock delay. Explore the concepts of preambles, postambles and terminators. Explore the latest developments in barcode technology. Design a barcode system.

Course 06. In this unit, you will be introduced to another automatic identification technology, which utilizes magnetic stripes to store information.
This unit includes the following topics: What is Magnetic Stripe Technology? Magnetic Stripe Card Standards, Magnetic Stripe Card Tracks, Magnetic Stripe Card Systems In this unit you will accomplish the following: Examine the basic principles of magnetic stripe technology. Review the history of magnetic stripe technology. Identify the advantages and disadvantages of magnetic stripe technology. Define magnetic stripe card tracks. Characterize magnetic stripe card systems. Explore uses of magnetic stripe technology in industry.

Course 07. In this unit, you will learn how data is encoded onto a magnetic stripe, before implementing all you have learned about magnetic stripe technology to design a magnetic stripe card system. This unit includes the following topics: Magnetism, How Magnetic Stripe Cards Are Created? Personalizing Magnetic Stripe Cards, Designing a Magnetic Stripe Card System
In this unit you will accomplish the following: Review the basic principles of magnetism. Examine how magnetic stripes are created. Explore the concept of coercivity. Observe the three-track structure of a magnetic stripe. Examine magnetic stripe reader operating parameters. Design a magnetic stripe card system. Observe the effects of a magnetic field on data stored in a magnetic stripe.

Course 08. In the previous units, you explored AutoID systems based on barcode and magnetic stripe technologies. In this unit, you will be introduced to an additional AutoID card technology - smart cards.
This unit includes the following topics: AutoID Card Technologies, Introducing Smart Cards, History of Smart Cards, Advantages of Smart Cards, Smart Card Applications In this unit you will accomplish the following: Examine different card technologies. Define smart card technology. Compare smart cards and magnetic stripe cards. Review the history of the smart card, and applications in which it is commonly used.

Course 09. In this unit, you will explore different types of smart cards, before using all you have learned to design a smart card system. This unit includes the following topics: Memory vs. Microprocessor Cards, Contact vs. Contactless Smart Cards, Smart Card Standards,

Smart Card System Components In this unit you will accomplish the following: Characterize different types of smart cards. Compare contact smart cards with contactless smart cards. Compare memory smart cards with microprocessor smart cards.
Identify the components of a smart card system. Define smart card standards.
Design a smart card system. Example Project: Designing a Smart Card System

Course 10. In this unit, you will be introduced to a fourth type of AutoID system - radio frequency identification. This unit includes the following topics: Evaluating Barcode Technology, What is Radio Frequency Identification (RFID)? History of RFID Technology, Advantages of RFID Technology, Applications, and RFID Standards In this unit you will accomplish the following: Evaluate the primary limitations of barcode technology. Define Radio Frequency Identification (RFID). Review the history of RFID technology.
Explore the uses of RFID technology in industry.

Course 11. In this unit you will explore how these systems work, before designing your own RFID system. This unit includes the following topics: RFID System Components, How Does RFID Work? Types of RFID Tags, RFID System Types. In this unit you will accomplish the following: Describe the components of a complete RFID system. Explore how RFID works. Define the different types of RFID tags.

Course 12. In this unit, you will begin to explore an automatic identification technology that is used solely for personal identification - biometric identification. This unit includes the following topics: Personal Identification, What is a Biometric Identification System? Accuracy of Biometric Systems, Applications of Biometric Identification Systems, In this activity you will accomplish the following: Explore the basic principles behind biometric identification systems. Define and identify different biometrics. Analyze the stages of implementing a biometric system. Review popular applications of biometric identification systems.

Course 13. In this unit, you shall explore two types of biometrics: fingerprint and hand geometry. This unit includes the following topics: Fingerprint Biometric Systems, Hand Geometry Biometric Systems, Designing a Biometric Identification System. In this activity, you will accomplish the following:
Identify the uses of various biometric characteristics. Consider how fingerprint biometric systems function. Explore the functionality of hand geometry biometric systems. Design and implement a biometric identification system.

Course 14. In this unit, you will explore automatic identification systems that are based on other biometrics. This unit includes the following topics: Eye Biometric Systems, Behavioral Biometrics, Voice Biometric Systems, and Signature Recognition Biometric Systems. In this unit you will accomplish the following: Explore biometric systems that identify people according to the unique patterns in their eyes. Describe how a person's voice can be analyzed to verify their identity. Identify the characteristics of a person's signature that are used to verify their identity.

Course 15. In this course, you explored a variety of automatic identification technologies, and considered the advantages, disadvantages and applications of systems based on each type of technology.
In this unit, you will integrate all this information to design a system that incorporates multiple automatic identification technologies.
This unit includes the following topics: The Future of Automatic Identification, Designing an Automatic Identification System, and Project Presentations.
In this unit you will accomplish the following: Identify trends in the future development of automatic identification systems.

Efekty uczenia się:

KNOWLEDGE: Student knows and understands
K2A_W02 - Main trends of development in the discipline of mechanical engineering in connection with other disciplines.
K2A_W10 - Selected issues in the field of advanced detailed knowledge typical of the field of study of management and production engineering.
K2A_W13 - Fundamental dilemmas of the contemporary world, especially in relation to the development of technology.

SKILLS: is able to
K2A_U02 - Perform tasks as well as formulate and solve problems using new knowledge, including the knowledge from other fields.
K2A_U12 - Communicate on specialist topics with diverse audiences, act as the debate leader and adequately present and justify different opinions and positions.

SOCIAL COMPETENCE: is ready for
K2A_K06 - Creating and developing patterns of proper conduct in the work and life environment, taking initiatives, critically assessing him/herself, the teams and organizations in which he/she participates, as well as leading a group and taking responsibility for it.

Praktyki zawodowe:

not aplicable

Przynależność do grup przedmiotów w cyklach:

Opis grupy przedmiotów	Cykl pocz.	Cykl kon.
Przedmiotu obowiązkowe/specjalnościowe ZiIP anglojęzyczny, stacj.semestr 3. 2020/2021 (ZIPAOZ>SM3-19S-PLSIE)	2020/2021-Z	

Punkty przedmiotu w cyklach:

Zarządzanie i Inżynieria Produkcji, stacjonarne II stopnia magisterskie 3 sem. (ZIPAOZ-SM3)

Typ punktów	Liczba	Cykl pocz.	Cykl kon.
Europejski System Transferu Punktów (ECTS)	4	2020/2021-Z	