

Smart cities - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Smart cities
Kod przedmiotu	04.2-WE-BizEIP-SC-Er
Wydział	Wydział Informatyki, Elektrotechniki i Automatyki
Kierunek	Biznes elektroniczny
Profil	praktyczny
Rodzaj studiów	Program Erasmus pierwszego stopnia
Semestr rozpoczęcia	semestr zimowy 2022/2023

Informacje o przedmiocie	
Semestr	6
Liczba punktów ECTS do zdobycia	3
Typ przedmiotu	obieralny
Język nauczania	angielski
Sylabus opracował	dr inż. Tomasz Gratkowski

Formy zajęć					
Forma zajęć	Liczba godzin w semestrze (stacjonarne)	Liczba godzin w tygodniu (stacjonarne)	Liczba godzin w semestrze (niestacjonarne)	Liczba godzin w tygodniu (niestacjonarne)	Forma zaliczenia
Wykład	15	1	-	-	Zaliczenie na ocenę
Projekt	15	1	-	-	Zaliczenie na ocenę

Cel przedmiotu

Presentation of models for building information systems supporting the life of the computerized city. Solutions to help public institutions observe and analyze various areas of city management. Analyze specific areas of the city's functioning, such as crisis response, public safety, social welfare, transport and water management. Students will learn about methods that will allow them to design and build urban monitoring systems as well as systems for responding to events and incidents based on information provided by various institutions and units. As part of the course, rules will be presented on how to involve citizens and businesses in reporting incidents and respond to them through IT systems.

Wymagania wstępne

Geographic information system, Internet resource exploration, Internet resource exploration, Cloud computing, Big data technologies, Internet technologies

Zakres tematyczny

Introduction to the idea of a smart city. Historical view. Theoretical foundations used to build solutions dedicated to the construction of a smart city. Integration of existing IT solutions systems with systems used in cities. Information generated by cities needed for their functioning. Data visualization methods from public institutions. Data modeling. Modeling of agent systems for the needs of urban agglomerations. Urban agglomeration information systems: from Small to Big Data. Virtual city. Symulacja i przewidywanie sytuacji w mieście. A city on the Internet.

As part of practical classes, students will learn about the most important issues related to building a IT for a smart city. In addition, they will become familiar with the tools that enable building elements of the smart city support system.

Metody kształcenia

Lecture - standard lecture using a video projector.

Project - practical classes in the computer laboratory.

Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

Opis efektu	Symbole efektów	Metody weryfikacji	Forma zajęć
The student knows the methods of data mining and visualization for the city		zaliczenie - ustne, opisowe, testowe i inne	Wykład
The student is able to prepare the elements included in the IT infrastructure of a smart city		projekt	Projekt
The student knows the methods and technologies that enable simulation and prediction of the situation in an urban agglomeration		zaliczenie - ustne, opisowe, testowe i inne	Wykład
The student is able to use technologies to build systems supporting the functioning of an intelligent city		zaliczenie - ustne, opisowe, testowe i inne	Wykład
The student is able to solve the real problems of city infrastructure management		projekt	Projekt

Warunki zaliczenia

Lecture - writing and/or oral exam, carried out at the end of the semester

Project - the final grade is the weighted sum of the marks obtained for the implementation of individual project exercises and control tests verifying the substantive preparation for the exercises.

Final grade = 50% of the grade in the form of classes lecture + 50% of the grade in the form of project classes.

Literatura podstawowa

1. Michael Batty; The New Science of Cities Hardcover, The MIT Press, 2013

Literatura uzupełniająca

1. de Smith, Goodchild, Longley, Geospatial Analysis - 4th Edition <http://www.spatialanalysisonline.com/HTML/index.html>
2. Batty M.: Cities and Complexity - Understanding Cities with Cellular Automata, Agent-Based Models, and Fractals The MIT Press, 2007.
3. Singleton A.D., Spielman S., Folch D. - Urban Analytics (Spatial Analytics and GIS) First Edition, SAGE Publications Ltd; First edition (January 5, 2018)
4. Mohammed J. Zaki, Wagner Meira Jr, Data Mining and Analysis: Fundamental Concepts and Algorithms, Cambridge University Press, 2014.
5. Kluever C.A. - Dynamic Systems: Modeling, Simulation, and Control 1st Edition, Wiley; 1 edition (April 6, 2015)
6. Stone J.V. - Artificial Intelligence Engines: A Tutorial Introduction to the Mathematics of Deep Learning, Sebtel Press (March 28, 2019)

Uwagi

Zmodyfikowane przez dr hab. inż. Marek Kowal, prof. UZ (ostatnia modyfikacja: 06-04-2022 09:00)

Wygenerowano automatycznie z systemu SylabUZ