

Designing computer networks - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Designing computer networks
Kod przedmiotu	11.3-WE-INFP-DesComNet-Er
Wydział	Wydział Informatyki, Elektrotechniki i Automatyki
Kierunek	WIEiA - oferta ERASMUS / Informatyka
Profil	-
Rodzaj studiów	Program Erasmus pierwszego stopnia
Semestr rozpoczęcia	semestr zimowy 2018/2019

Informacje o przedmiocie	
Semestr	6
Liczba punktów ECTS do zdobycia	5
Typ przedmiotu	obieralny
Język nauczania	angielski
Sylabus opracował	dr hab. inż. Marcin Mrugalski, prof. UZ

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	30	2	-	-	Zaliczenie na ocenę
Projekt	15	1	-	-	Zaliczenie na ocenę

Cel przedmiotu

Developing the skills necessary to design small enterprise LANs and WANs; Introducing customer requirements, translating those requirements into equipment and protocol needs, and creating a network topology which addresses the needs of the customer; Familiarization how to create and implement a design proposal for a customer. To provide basic knowledge about fundamentals of computer system structure and principles of operation.

Wymagania wstępne

Computer networks I

Computer networks II

Zakres tematyczny

Introducing networking design concepts. The benefits of a hierarchical network design. Network design methodology. Functions of the core, distribution and access layers. Investigating servers farms and security of the computer networks. Investigating wireless network. Supporting WANs and remote workers. Gathering networks requirements. Introducing a lifecycle of computer networks. Explaining the computer network sales process. Preparing for the design process. Identifying technical requirements and constraints. Identifying manageability design considerations.

Characterizing the existing network. Documenting the existing network. Updating the existing internetworking operation system software. Upgrading the existing computer devices. Performing a wireless site survey. Documenting network design requirements.

Identifying application impacts on network design. Characterizing network applications. Explaining common network applications. Introducing quality of service (QoS). Examining voice and video options. Documenting application and traffic flows.

Creating the network design. Analyzing the requirements. Selecting the appropriate LAN topology. Designing the WAN and remote worker support. Designing wireless networks. Incorporating security.

IP addressing in the network design. Creating an appropriate IP addressing design. Creating the IP addresses and naming scheme. Plan for summarization and route distribution. Describing IPv4 and IPv6. Migration from IPv4 to IPv6.

Prototyping the campus network. Building a prototype to validate a design. Creating a test plan. Prototyping the LAN. Validating LAN technologies and devices. Testing the redundancy and resiliency of the network. Identifying risks or weaknesses in the design. Prototyping the server farm.

Prototyping the WAN. Prototyping remote connectivity. Simulating WAN connectivity in the simulation software and the laboratory environment. Validating the choice of devices and topologies. Prototyping remote worker support. Prototyping the VPN.

Preparing the proposal. Assembling the existing proposal information. Developing the plan of the implementation of the computer network. Estimating timelines and resources. Creating and presenting the proposal.

Metody kształcenia

Lecture, project.

Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

Opis efektu	Symbol e efektów	Metody weryfikacji	Forma zajęć
Is able to collect client requirements related to the properties of the designed computer network.		• projekt	• Projekt
Can analyze and interpret technical requirements of the designed computer network and identify potential threats hindering the construction of the computer		• projekt	• Projekt
Can describe the role of core, distribution and access layers in the functioning of computer network.		• test	• Wykład
Can develop a construction and implementation schedule of a designed computer network.		• test	• Wykład
Can estimate the time and resources necessary to implement the network.		• projekt	• Projekt
Can design convergence computer network according to client expectations.		• projekt	• Projekt
Is able to present a design offer		• test	• Wykład
Can characterize hierarchical design model for local (LAN) and wide (WAN) computer networks		• test	• Wykład

Warunki zaliczenia

Lecture – the passing condition is to obtain a positive mark from the final test.

Project – the passing condition is to obtain positive marks from a prepared project.

Literatura podstawowa

1. McCabe J.D.: Network Analysis, Architecture and Design, 3rd ed. San Francisco. California: Morgan Kaufmann Publishers, Inc., 2007.
2. Oppenheimer P.: Top-Down Network Design, 3rd ed. Indianapolis, Indiana: Cisco Press, 2010.
3. Wilkins S.: CCDA Self-Study: Designing for Cisco Internetwork Solutions (DESGN), 2nd ed. 640-861, Indianapolis, Indiana: Cisco Press, 2007.

Literatura uzupełniająca

Uwagi

Zmodyfikowane przez dr hab. inż. Marcin Mrugalski, prof. UZ (ostatnia modyfikacja: 06-04-2018 21:42)

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