

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Internetna omrežja
Course title:	Internet Networks

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 3. stopnja	Napredne internetne tehnologije	1	1
Information and Communication Technologies, 3 rd cycle	Advanced Internet Technologies	1	1

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code: IKT3-663

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Druge oblike	Samost. delo Individ. work	ECTS
30	30			30	210	10

**Navedena porazdelitev ur velja, če je vpisanih vsaj 15 študentov. Drugače se obseg izvedbe kontaktnih ur sorazmerno zmanjša in prenese v samostojno delo. / This distribution of hours is valid if at least 15 students are enrolled. Otherwise the contact hours are linearly reduced and transferred to individual work.*

Nosilec predmeta / Lecturer: Prof. dr. Borka Jerman Blažič

Jeziki / Predavanja / Lectures: Slovenščina, angleščina / Slovenian, English
Languages: Vaje / Tutorial:

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:

Zaključen študij druge stopnje s področja informacijskih ali komunikacijskih tehnologij ali zaključen študij druge stopnje na drugih področjih z znanjem osnov s področja predmeta. Potrebna so tudi osnovna znanja matematike, računalništva in informatike.

Prerequisites:

Completed second cycle studies in information or communication technologies or completed second cycle studies in other fields with knowledge of fundamentals in the field of this course. Basic knowledge of mathematics, computer science and informatics is also requested.

Vsebina:

Internetna skladovnica protokolov
 Podatkovna linija in protokol – NAL
 Lokalna omrežja – primer Etherneta
 Hrbtenična omrežja
 Omrežni sloj
 Logično naslavljanje
 Internetni protokoli IP
 Usmerjanje
 Preslikave naslovov
 Transportni sloj
 Komunikacija med procesi

Content (Syllabus outline):

Internet Protocol Stack
 Data Link Layer – NAL
 LAN- Ethernet
 Backbone networks
 Network Layer
 Logical addressing
 Internet Protocol (s)
 Routing
 Address Mapping
 Transport Layer
 Process to Process Delivery

Transportni protokol TCP
 Transportni protokol UD
 Širokopasovni internet
 Fiksna infrastruktura
 Mobilna omrežja in njihove tehnologije
 Širokopasovnega interneta
 Ad hoc omrežja in njihova uporaba
 Internet prihodnosti
 Evolucijski razvoj – scenariji
 Gridi, oblachno računalništvo

TCP
 UDP
 Broadband networks and the used technologies
 Fixed infrastructure
 Mobile broadband networks
 Ad hoc networks and their use
 Future Internet
 Evolutionary approach
 Grids, cloud computing

Temeljna literatura in viri / Readings:

Izbrana poglavja iz naslednjih knjig: / Selected chapters from the following books:

- B. A. Forouzan, *Data Communications and Networking*, McGraw Hill, 4th edition, 2007, N.Y. ISBN 978-0-07-296775-3
- A. S. Tanenbaum, *Computer Networks*, 4th, edition, Prentice Hall, 2007, N.J. ISBN 978-0-132-12695-3
- J. F. Kurose, K. W. Ross, *Computer Networking*, 6th edition, Addison-Wesley, 2014, New York. ISBN 0136079679
- M.Pagani, *Mobile and Wireless Systems Beyond 3G, Managing New Business opportunity*, IRM Press, Hershey, 205, USA
- M.Tatipamula, B.Khasnabish, *Multimedia communication networks: technologies and services*, Artech House, 1998, ISBN 0-89006936-0, London, UK

Cilji in kompetence:

Cilji:
 Pridobiti znanja Internetne skladovnice protokolov.

Kompetence o:
 - delovanju internetnih protokolov in omrežij
 - novejših tehnologija v razvoju internetnih omrežij
 - novih internetnih tehnologijah in novejših infrastrukturnih tehnologij (LTE, 4G,5G)

Objectives and competences:

Objectives
 Acquiring knowledge in IP networking, addressing, routing, packet switching and reliable data transfer in the IP networks.

Competences about:
 - TCP/IP protocol stack
 - emerging internet technologies
 - new internet network infrastructure (LTE, 4G, 5G)

Predvideni študijski rezultati:

Obvladovanje protokolov internetnih omrežij
 Sposobnost načrtovanja in izvedbe omrežij zasnovanih na skladovnici protokolov TCP/IP
 Sposobnost upravljanja in vzdrževanja omrežij zasnovanih na skladovnici protokolov TCP/IP

Intended learning outcomes:

TCP/IP protocol stack and network operation
 Capacity to design a network based on internet technology
 Capacity to run and maintain internet based network with implemented TCP/IP technology

Metode poučevanja in učenja:

Predavanja, seminar, konzultacije, individualno delo

Learning and teaching methods:

Lectures, seminar, consultancy, individual work

	Delež (v %) / Weight (in %)	Assessment:
Načini ocenjevanja: Seminarska naloga	50 %	Seminar work
Ustni zagovor seminarske naloge	50 %	Oral defense of seminar work

Reference nosilca / Lecturer's references:

- **B. Jerman-Blažič.** Designing a large cross - border secured eID service for e-government and e-business. In: *2014 International Conference on Multimedia Computing and Systems*, April 14-16, 2014, Marrakech, Morocco.
- C. Callanan, **B. Jerman-Blažič**, A. Jerman Blažič. User tolerance of privacy abuse on mobile Internet and the country level of development. *Information development*, ISSN 0266-6669, vol. 32, pp. 3, iss. 728-750, 2016.
- C. Callanan, **B. Jerman-Blažič**. User understanding of privacy in emerging mobile markets. *IEEE technology & society magazine*, ISSN 0278-0097, vol. 33, no. 4, pp. 48-56, 2014.
- R. Bojanc, **B. Jerman-Blažič**. A quantitative model for information-security risk management. *Engineering management journal*, vol. 25, no. 3, pp. 25-37, 2013.
- R. Bojanc, **B. Jerman-Blažič**, M. Tekavčič, *Informacijska varnost v podjetniškem okolju: potrebe, ukrepi in ekonomika vlaganj*, Ekonomska fakulteta, VI, 168 p. 2014.