Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	SISTEMSKA ADMINISTRACIJA
Course title:	SYSTEM ADMINISTRATION

Študijski program in stopnja **Study programme and level**	**Študijska smer** **Study field**	**Letnik** **Academic year**	**Semester** **Semester**
PREDMETNI UČITELJ Enovit magistrski študijski program druge stopnje	IZOBRAŽEVALNO RAČUNALNIŠTVO	4.	8.
SUBJECT TEACHER Five-year master's degree program Subject Teacher	EDUCATIONAL COMPUTER SCIENCE		

Vrsta predmeta / Course type	Obvezni / Compulsory
Univerzitetna koda predmeta / University course code	UR14

Predavanja **Lectures**	**Seminar** **Seminar**	**Vaje** **Tutorial**	**Klinične vaje** **work**	**Druge oblike študija**	**Samost. delo** **Individ. work**	**ECTS**
30	0	45	0	0	75	5

Nosilec predmeta / Lecturer:	JANEZ BREST

Jeziki / Languages:	**Predavanja / Lectures:**	Slovenščina / Slovene
	Vaje / Tutorial:	Slovenščina / Slovene

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Ni pogojev	None

Vsebina:	**Content (Syllabus outline):**
• Uvod: operacijski sistemi, aplikacije, administrativna opravila. • Nameščanje, konfiguriranje in upravljanje operacijskih sistemov. • Skriptno programiranje: primeri bash, ... • Storitve, ki jih ponuja internet: upravljanje storitev, konfiguriranje storitev. • Upravljanje in konfiguriranje: upravljanje in konfiguriranje omrežij, upravljanje in konfiguriranje stikal in usmerjevalnikov, upravljanje in konfiguriranje mobilnih omrežij. • Upravljanje računalniških sistemov in podatkovnih baz. • Računalniška varnost, pogoste napake pri programiranju. • Programska oprema: programska oprema za analizo omrežnega prometa, programska oprema za ugotavljanje vdorov. • Kriptografija. • Uporabniki: tehnična podpora uporabnikom. • Odpornost na napake: metode, študij primerov.	• Introduction: operating systems, applications, administrative activities. • Installation, configuration and management of operating systems. • Script programming: examples: bash, ... • Internet services: service management, service configuration. • Management and configuration: networks management and configuration, management and configuration of switches and routers, management and configuration of mobile networks. • Management of computer systems and databases. • Computer security, common programming mistakes. • Software: software tools for network traffic analysis, intrusion detection systems. • Cryptography. • Users: technical support. • Fault tolerance: methods, case study.

Temeljna literatura in viri / Readings:

• M. Burgess: Principles of Network and System Administration, Second Edition, John Wiley & Sons, Ltd, West Sussex, 2004.
• E. Nemeth, G. Snyder, T. R. Hein, B. Whaley, D. Mackin: UNIX and Linux System Administration Handbook, Addison-Wesley Professional, 5 edition, 2017.
• C. Benvenuti: Understanding Linux Network Internals, O'Reilly, Sebastopol, 2006.
• M. Bishop: Computer Security: Art and Science. Addison Wesley (2nd edition), 2017.

Cilji in kompetence:	**Objectives and competences:**
Cilj predmeta je seznaniti študente z osnovnimi principi sistemske administracije in varnosti	The objective of this course is to acquaint students with the basic principles of computer system administration and security

Predvideni študijski rezultati:	**Intended learning outcomes:**
<u>Znanje in razumevanje:</u> • prikazati sposobnost namestitve vsaj enega izmed operacijskih sistemov • izkazati sposobnost vzdrževanja različnih operacijskih sistemov • ločevati med storitvami na serverju in odjemalcu • uporabiti različne operacijske sisteme in analizirati ter priporočati določen operacijski sistem za določene potrebe • identificirati, opisati in analizirati situacije, kjer so potrebne administrativne aktivnosti <u>Prenosljive/ključne spretnosti in drugi atributi:</u> • Spretnosti komuniciranja: ustni zagovor laboratorijskih vaj, pisno izražanje pri pisnem izpitu. • Uporaba informacijske tehnologije: uporaba programskih orodij in skript za avtomatizacijo opravil v sistemski administraciji. • Reševanje problemov: načrtovanje, namestitev in vzdrževanje računalniških sistemov.	<u>Knowledge and understanding:</u> • illustrate the ability to install at least one operating system • demonstrate the ability to support various operating systems • distinguish between server and client services • demonstrate knowledge and understanding of various operating systems,analyse and recommend a particular operating system to satisfy given needs • identify, describe and analyse situations, which interfere with administrative activities <u>Transferable/Key skills and other attributes:</u> • Communication skills: oral lab work defence, manner of expression at written examination. • Use of information technology: use of software tools and scripts to automate routine tasks in system administration. • Problem solving: designing, installing and managing of computer systems

Metode poučevanja in učenja:	Learning and teaching methods:
• Predavanja: pri predavanjih študentje spoznajo teoretične vsebine predmeta. Predavanja se izvajajo kot klasična predavanja v frontalni obliki z diskusijo ob primerih uporabe sistemske administracije. • Seminarske vaje: pri seminarskih vajah se študentje seznanijo s potekom računalniških vaj. • Računalniške vaje: pri računalniških vajah študentje uporabljajo usvojeno znanje na konkretnih problemih.	• Lectures: in lectures • students get to know the theoretical contents of the course. Lectures are conducted as classical lectures in frontal form • interleaved with discussions on practical examples of system administration. • Tutorials: in tutorial exercises • students are informed about lab work. • Lab work: in laboratory exercises • students work on individual programming tasks.

Načini ocenjevanja:	Assessment:
Računalniško delo - 50% Pisni izpit - 50%	Computer skills - 50% Written exam - 50%

Opombe: Pisni izpit se lahko nadomesti s kolokviji v enakem deležu 50 %.
Comments: The exam may be replaced by midterm examinations in the weight of 50 %.

Reference nosilca / Lecturer's references:

• HERZOG, Jana, BREST, Janez, BOŠKOVIĆ, Borko. Analysis based on statistical distributions: A practical approach for stochastic solvers using discrete and continuous problems. Information Sciences. [Online ed.]. Available online 15 March 2023, 49 str. ISSN 1872-6291. DOI: 10.1016/j.ins.2023.03.081. [COBISS.SI-ID 145298947]
• FISTER, Iztok, BREST, Janez, IGLESIAS, Andres, GÁLVEZ, Akemi, DEB, Suash, FISTER, Iztok. On selection of a benchmark by determining the algorithms' qualities. IEEE access, ISSN 2169-3536, 9 Feb. 2021, vol. 9, str. 51166 – 51178. https://ieeexplore.ieee.org/document/9350587/keywords#keywords, doi: 10.1109/ACCESS.2021.3058285. [COBISS.SI-ID 59061763]
• BREST, Janez, BOŠKOVIĆ, Borko. Low autocorrelation binary sequences: best-known peak sidelobe level values. IEEE access, ISSN 2169-3536, 4 May 2021, vol. 9, str. 67713 - 67723, doi: 10.1109/ACCESS.2021.3077541. [COBISS.SI-ID 63018499]
• BOŠKOVIĆ, Borko, BREST, Janez. Two-phase protein folding optimization on a three-dimensional AB off-lattice model. Swarm and evolutionary computation, ISSN 2210-6502, Sep. 2020, vol. 57, str. 1-16, doi: 10.1016/j.swevo.2020.100708. [COBISS.SI-ID 19046659]