



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	
Enovit magistrski študijski program druge stopnje Predmetni učitelj	/			4.	8	
Five-year master's degree program Subject Teacher	/					
Vrsta predmeta / Course type				Obvezni / Obligatory		
Univerzitetna koda predmeta / University course code:						
Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Teren. vaje Field work	Samost. delo Individ. work	ECTS
30		3	42		75	5
Nosilec predmeta / Lecturer:				Janez Brest		
Jeziki / Languages:	Predavanja / Lectures:		slovenščina / Slovenian			
	Vaje / Tutorial:		slovenščina / Slovenian			
Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:				Prerequisites:		
Ni pogojev.				None.		
Vsebina:				Content (Syllabus outline):		
<ul style="list-style-type: none">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				<ul style="list-style-type: none">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,		

<p>konfiguriranje stikal in usmerjevalnikov, upravljanje in konfiguriranje mobilnih omrežij.</p> <ul style="list-style-type: none"> • 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. 	<p>management and configuration of switches and routers, management and configuration of mobile networks.</p> <ul style="list-style-type: none"> • 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.
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Temeljni literatura in viri / Readings:

<ul style="list-style-type: none"> • M. Burgess: <i>Principles of Network and System Administration</i>, Second Edition, John Wiley & Sons, Ltd, West Sussex, 2004. • E. Nemeth, G. Snyder, T. R. Hein, B. Whaley, D. Mackin: <i>UNIX and Linux System Administration Handbook</i>, Addison-Wesley Professional, 5 edition, 2017. • C. Benvenuti: <i>Understanding Linux Network Internals</i>, O'Reilly, Sebastopol, 2006. • M. Bishop: <i>Computer Security: Art and Science</i>. Addison Wesley ,2nd edition, 2017.
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Cilji in kompetence:

<p>Cilj predmeta je seznaniti študente z osnovnimi principi sistemske administracije in varnosti.</p>

Objectives and competences:

<p>The objective of this course is to acquaint students with the basic principles of computer system administration and security.</p>

Predvideni študijski rezultati:

<p><u>Znanje in razumevanje:</u></p> <p>Po zaključku tega predmeta bo študent sposoben:</p> <ul style="list-style-type: none"> • 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 priporočati določen operacijski sistem za določene potrebe, • identificirati, opisati in analizirati situacije, kjer so potrebne administrativne aktivnosti.

Intended learning outcomes:

<p><u>Knowledge and understanding:</u></p> <p>On completion of this course the student will be able to:</p> <ul style="list-style-type: none"> • 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 and recommend a particular operating system to satisfy given needs, • identify, describe and analyse situations, which interfere with administrative activities.
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Prenosljive/ključne spretnosti in drugi atributi:

- *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, namestitve in vzdrževanje računalniških sistemov.

Transferable/Key skills and other attributes:

- *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:

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- **Predavanja:** pri predavanjih študentje spoznajo teoretične vsebine predmeta. Predavanja se izvajajo kot klasična predavanja v frontalni obliki z diskusijo ob primerih uporabe konceptov programiranja.
- **Seminarske vaje:** pri seminarskih vajah se študentje seznanijo s potekom računalniških vaj.
- **Računalniške vaje:** pri računalniških vajah študentje uporabljajo usvojeno znanje programiranja na konkretnih problemih.

Learning and teaching methods:

- **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.
- **Tutorials:** in tutorial exercises, students are informed about lab work.
- **Lab work:** in laboratory exercises, students work on individual programming tasks.
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Načini ocenjevanja:Delež (v %) /
Weight (in %)**Assessment:**

<ul style="list-style-type: none"> • laboratorijske vaje, • 1. kolokvij, • 2. kolokvij. 	50 % 25 % 25 %	<ul style="list-style-type: none"> • lab work, • 1st midterm examination, • 2nd midterm examination.
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Opomba: Kolokvija se lahko nadomestita s pisnim izpitom v deležu 50 %.

Note: The midterm examinations may be replaced by a written exam in the weight of 50%.

Reference nosilca / Lecturer's references:

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- 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]
- SEPEŠY MAUČEC, Mirjam, BREST, Janez. Slavic languages in phrase-based statistical machine translation: a survey. Artificial intelligence review, ISSN 0269-2821. [Print ed.], Jan. 2019, vol. 51, iss. 1, str. 77-117, ilustr., doi: 10.1007/s10462-017-9558-2. [COBISS.SI-ID 20561174]