NOVO

Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

FERI Fakulteta za elektrotehniko, računalništvo in informatiko

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
Izobraževalno računalništvo 1. stopnja UN		3.	poletni Sping
Educational Computer Science, 1st cycle Academic undergraduate			

Vrsta predmeta / Course type Obvezni / Obligatory

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
30		45			105	6

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:

Osnovno znanje operacijskih sistemov GNU/Linux in Windows.

Prerequisits:

Basic knowledge of GNU/Linux and Windows operating systems.

Vsebina:

- Uvod: operacijski sistemi, aplikacije, administrativna opravila.
- Nameščanje, konfiguriranje in upravljanje operacijskih sistemov.
- Skriptno programiranje: primeri bash, perl, …
- Storitve, ki jih ponuja internet: upravljanje storitev, konfiguriranje storitev.

Content (Syllabus outline):

- Introduction: operating systems, applications, administrative activities.
- Installation, configuration and management of operating systems.
- Script programming: examples: bash, perl, …
- Internet services: service management, service configuration.

- Upravljanje in konfiguriranje: upravljanje in konfiguriranje omrežij, upravljanje in konfiguriranje stikal in usmerjevalnikov, upravljanje in konfiguriranje mobilnih omrežij.
- Upravljanje računalniških sistemov in podatkovnih baz.
- Programska oprema: programska oprema za analizo omrežnega prometa, programska oprema za ugotavljanje vdorov.
- Uporabniki: tehnična podpora uporabnikom.
- Odpornost na napake: metode, študij primerov.

- 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.
- Software: software tools for network traffic analysis, intrusion detection systems.
- Users: technical support.
- Fault tolerance: methods, case study.

Temeljni 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: UNIX and LINUX System Administration Handbook, Fourth Edition, Prentice Hall, New Jersey, 2010.
- C. Benvenuti: Understanding Linux Network Internals, O'Reilly, Sebastopol, 2006.

Cilji in kompetence:

Cilj predmeta je seznaniti študente z osnovnimi principi sistemske administracije.

Objectives and competences:

The objective of this course is to acquaint students with the basic principles of computer system administration.

Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben

- prikazati sposobnost namestitve vsaj enega izmed operacijskih sistemov,
- izkazati sposobnost vzdrževanja različnih operacijskih sistemov,
- ločevati med storitvami na serverju in odjemalcu,
- izkazati znanje in razumevanje različnih operacijskih sistemov in priporočati določen operacijski sistem za določene potrebe,
- identificirati, opisati in analizirati situacije, kjer so potrebne administrativne aktivnosti.

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, namestitev in vzdrževanje računalniških sistemov.

Intended learning outcomes:

Knowledge and understanding:

On completion of this course the student will be able to

- illustrate the ability to install at least one operating system,
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- 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.

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.
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- Problem solving: designing, installing and managing of computer systems.

Metode poučevanja in učenja:

Learning and teaching methods:

• predavanja, • seminarske vaje, • laboratorijske vaje, • reševanje domačih nalog.	• lectures, • tutorials, • lab work, • homework assignments.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
• opravljene domače naloge, • laboratorijske vaje, • 1. vmesni pisni izpit, • 2. vmesni pisni izpit, • 3. vmesni pisni izpit.	15 % 35 % 16 % 17 % 17 %	• completed homeworks, • lab work, • 1st midterm written exam, • 2nd midterm written exam, • 3rd midterm written exam.

Opomba: Če študent ni uspešno opravil vseh treh vmesnih izpitov, jih nadomesti s pisnim izpitom v deležu 50%.
Note: If a student has not completed all three midterm exams, he replaces them with a written exam in the weight of 50%.

Reference nosilca / Lecturer's references:

- ZAMUDA, Aleš, BREST, Janez. Vectorized procedural models for animated trees reconstruction using differential evolution. Information sciences, ISSN 0020-0255. 2014, vol. 278, str. 1-21, [COBISS.SI-ID 17793558].
- BREST, Janez, SEPESY MAUČEC, Mirjam. Self-adaptive differential evolution algorithm using population size reduction and three strategies. Soft computing, ISSN 1432-7643. 2011, vol. 15, no. 11, str. 2157-2174, [COBISS.SI-ID 14398230], [JCR, SNIP, WoS do 5. 8. 2014: št. citatov (TC): 19, Scopus : št. citatov (TC): 32]
- FISTER, Iztok, FISTER, Iztok, YANG, Xin-She, BREST, Janez. A comprehensive review of firefly algorithms. Swarm and evolutionary computation, ISSN 2210-6502, Dec. 2013, vol. 13, str. 34-46, doi: 10.1016/j.swevo.2013.06.001. [COBISS.SI-ID 17010454], [SNIP, Scopus do 8. 10. 2014: št. citatov (TC): 29]
- ZAMUDA, Aleš, BREST, Janez. Environmental framework to visualize emergent artificial forest ecosystems. Information sciences, ISSN 0020-0255. 2013, vol. 220, str. 522-540, doi: 10.1016/j.ins.2012.07.031. [COBISS.SI-ID 16157206], [JCR, SNIP, WoS do 6. 8. 2014: št. citatov (TC): 1, čistih citatov (CI): Scopus do 13. 8. 2014: št. citatov (TC): 3]
- BREST, Janez, GREINER, Sašo, BOŠKOVIĆ, Borko, MERNIK, Marjan, ŽUMER, Viljem. Self-adapting control parameters in differential evolution: a comparative study on numerical benchmark problems. IEEE transactions on evolutionary computation, ISSN 1089-778X. 2006, vol. 10, no. 6, str. 646-657. [COBISS.SI-ID 10376982], [JCR, SNIP, WoS do 2. 11. 2014: št. citatov (TC): 352, Scopus: št. citatov (TC): 857]