

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Sistem varovanja kritične infrastrukture
Course title:	Critical Information Infrastructure Protection

Študijski program in stopnja Study programme and level	Modul Module	Letnik Academic year	Semester Semester
Informacijske in komunikacijske tehnologije, 2. stopnja	Digitalna transformacija	1	2
Information and Communication Technologies, 2 nd cycle	Digital Transformation	1	2

Vrsta predmeta / Course type Izbirni / Elective

Univerzitetna koda predmeta / University course code: IKT2-658

Predavanja Lectures	Seminar Seminar	Sem. vaje Tutorial	Lab. vaje Laboratory work	Druge oblike	Samost. delo Individ. work	ECTS
15	15			15	105	5

**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: Doc. dr. Rok Bojanc
Prof. dr. Borka Jerman Blažič

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

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

Zaključen študijski program prve stopnje s področja naravoslovja, tehnike ali računalništva.

Prerequisites:

Student must complete first-cycle study programmes in natural sciences, technical disciplines or computer science.

Vsebina:

Kritična informacijska infrastruktura
Definicija osnovnih pojmov, informacijski sistemi, varnost, zanesljivost, splošna infrastruktura in uporaba v kritičnih sektorjih, prepletenost in soodvisnost, uporabniki in izvajalci infrastrukture.

Grožnje

Grožnje informacijskim sistemom v javnem in industrijskem sektorju, primeri izvrševanja groženj in napak kritičnih informacijskih sistemov, viri in motivi groženj, posledice groženj, razvrstitev groženj in njihovo preprečevanje.

Content (Syllabus outline):

Critical information infrastructure
Definition of basic concepts, information systems, security, dependability, common infrastructure and usage in critical sectors, interconnection and interdependencies, critical infrastructure stakeholders.

Threats

Threats to public and critical infrastructure information systems, critical information systems failures, threat sources and motivation, threat consequences, threat classification and mitigation.

Public policies and initiatives

<p>Javne politike in pobude Zgodovina, kritični sektorji, Slovenija, EU in svet, pravni vidiki, zgodnje obveščanje.</p> <p>Varovanje Informacijski sistemi, varnost, zaščita, varnostne arhitekture, storitve in mehanizmi, načrtovanje, nadzor, upravljanje, vzdrževanje, varnostni standardi; fizično varovanje.</p> <p>Kompleksni sistemi Lastnosti in modeli kompleksnih sistemov, pristopi obravnave in upravljanja tveganja, zanesljivosti ter povezanosti, obravnava napadov na sisteme in napak delovanja sistemov.</p> <p>Izzivi varovanja kritične informacijske infrastrukture Novi sektorji in tehnologije, trendi evolucije pristopov varovanja, človeški in socialni vidiki</p>

<p>History, critical sectors, Slovenia, European Union and world, legalization and regulation, early warning systems.</p> <p>Protection Information systems, security, safety, security architectures, services, mechanisms, design, control, management, maintenance, security standards; physical security.</p> <p>Complex systems Complex systems properties and models, approaches to risk, dependability and interconnection modelling and management, attack and system failure modelling.</p> <p>Critical information infrastructure trends New market sectors and technology, future protection trends, human and social aspects</p>
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Temeljna literatura in viri / Readings:

<p>Izbrana poglavja iz naslednjih knjig: / Selected chapters from the following books:</p> <ul style="list-style-type: none"> • S. Das, K. Kant, N. Zhang, <i>Handbook on Securing Cyber-Physical Critical Infrastructure</i>, P.C Morgan Kaufmann, 2012. ISBN: 978-0-124-15815-3 • A. Wenger, V. Mauer, M. Dunn Cavelty, <i>International CIIP Handbook: An Inventory and Analysis of National Protection Policies</i>, Vol. I, II, 2006, ISSN: 1660-3222 • D. J. Landoll, <i>The Security Risk Assessment Handbook: A Complete Guide for Performing Security Risk Assessments</i>. Auerbach Publications, 2006. ISBN 978-1-439-82148-0. • J. Lopez, R. Setola, S. Wolthusen, <i>Critical Infrastructure Protection: Advances in Critical Infrastructure Protection: Information Infrastructure Models, Analysis, and Defense</i>. Springer, 2012. ISBN: 978-3-642-28920-0 • P. Theron, S. Bologna, <i>Critical Information Infrastructure Protection and Resilience in the ICT Sector Hardcover</i>. IGI Global, 2013. ISBN: 978-1-466-62964-6 • J. R. Vacca, <i>Cyber Security and IT Infrastructure Protection</i>. Syngress, 2013. ISBN: 978-0-124-20047-0

Cilji in kompetence:

<p>Cilji predmeta so zagotoviti, da bo študent, ki bo uspešno končal ta predmet, pridobil:</p> <ul style="list-style-type: none"> • Sposobnost analize, sinteze in predvidevanja rešitev ter posledic • Obvladanje raziskovalnih metod, postopkov in procesov, razvoj kritične in samokritične presoje • Sposobnost uporabe znanja v praksi • Avtonomnost v strokovnem delu • Razvoj komunikacijskih sposobnosti in spretnosti, posebej komunikacije v mednarodnem okolju • Etična refleksija in zavezanost profesionalni etiki

Objectives and competences:

<p>Objectives of the subject is to assure that student who completes this course successfully will acquire:</p> <ul style="list-style-type: none"> • An ability to analyse, synthesise and anticipate solutions and consequences • To gain the mastery over research methods, procedures and processes, a development of the critical judgment • An ability to apply the theory in to a practice • An autonomy in the professional work • Communicational-skills development; particularly in international environment • Ethical reflection and obligation to a professional ethics
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- Kooperativnost, delo v skupini (in v mednarodnem okolju)
- Predmet pripravlja študente, da bodo sposobni:
- Razumeti in oceniti grožnje kritični informacijski infrastrukturi
 - Zaščititi kritično informacijsko infrastrukturo v skladu z javnimi politikami in iniciativami v svetu

- Cooperativity, team work (in international environment)
- This course prepares students to be able to:
- Understand and evaluate threats to critical information infrastructure
 - Protect critical information infrastructure in compliance with world wide public policies and initiatives

Predvideni študijski rezultati:

Študent bo znal izbrati ter uporabiti pristope in metodologije za obravnavo in upravljanje tveganja, zanesljivosti in povezanosti sistemov kritičnih informacijskih infrastruktur

Intended learning outcomes:

The student will be capable to select and use approaches and methodologies for addressing and management of risk, dependability and interconnection of critical infrastructure systems

Metode poučevanja in učenja:

Predavanja, seminar, konzultacije, individualno delo

Learning and teaching methods:

Lectures, seminar, consultancy, individual work

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Pisni ali ustni izpit	50 %	Exam
Seminarska naloga	25 %	Seminar work
Ustni zagovor	25 %	Oral defense of the Seminar work

Reference nosilca / Lecturer's references:

- **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. Mörec, M. Tekavčič, B. Jerman-Blažič. Model določitve optimalnega obsega vlaganj v informacijsko varnost. *IB revija*, vol. 46, no. 3/4, pp. 53-61, 2012.
- **R. Bojanc**, B. Jerman-Blažič, M. Tekavčič. Managing the investment in information security technology by use of a quantitative modeling. *Information processing & management*, vol. 48, no. 6, pp. 1031-1052, 2012.
- **R. Bojanc**, B. Jerman-Blažič. Quantitative model for economic analyses of information security investment in an enterprise information system. *Organizacija*, vol. 45, no. 6, pp. 276-288, 2012.
- **R. Bojanc**, B. Jerman-Blažič. Towards a standard approach for quantifying an ICT security investment. *Computer standards & interfaces*, vol. 30, no. 4, pp. 216-222, 2008.