Univerza v Mariboru

Fakulteta za naravoslovje in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS	
Predmet:	**Seminar**
Course title:	**Seminar**

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	**/**	**3.**	**6.**
Five-year master's degree program Subject Teacher	**/**		

Vrsta predmeta / Course type	Obvezni / Compulsory
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				**90**	**4**

Nosilec predmeta / Lecturer:	David GAJSER

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

Pogoji za vključitev v delo oz. za opravljanje študijskih obveznosti:	**Prerequisits:**
Jih ni.	None.

Vsebina:	**Content (Syllabus outline):**

Študent preštudira zaključeno poglavje iz elementarne matematike in na to temo pripravi zaokroženo predavanje. Pri predstavitvi uporabi sodobna tehnična sredstva. Gradivo odda v pisni obliki. Sama tematika se lahko iz leta v leto spreminja, prav tako temeljna literatura.	A student gets a deeper insight in a topic from elementary mathematics and presents it in a concise presentation. The use contemporary technical tools at the presentation is welcome. A student also prepares a written material. The main topic of the Seminar varies as well as basic references.

Temeljni literatura in viri / Readings:

Se iz leta v leto spreminjajo. Gradivo so lahko bodisi poljudno pisane knjige, bodisi članki iz revij, ki prinašajo zanimive elementarne rezultate, kot npr. Mathematical Magazine, American Mathematical Monthly, Mathematical Gazette itd.

Ena od možnih alternativ glede tematike seminarja je obravnava raziskovalnih nalog srednješolcev ter njihova predstavitev in evalvacija. V tem primeru je smiselna debata o ključnih elementih raziskovalnega dela na tem nivoju. V tem primeru pride v poštev naslednja literatura.

The basic references change from year to year. The basic materials could be either textbooks on elementary problems, or articles from journals, bringing interesting results from elementary mathematics, as Mathematical Magazine, American Mathematical Monthly, Mathematical Gazette etc.

One of the possible alternatives regarding the seminar topic is to discuss the research tasks of secondary school students with the presentation of the mathematical contents and evaluation. In this case, a debate on the key guidelines for the research at this level is welcome. For this purpose, the following references may be considered.

- Colin Robson: How to do a Research Project: A Guide for Undergraduate Students, Blackwell Publishing, 2008.
- Linda Dickson, Margaret Brown, Olwen Gibson: Children Learning Mathematics : a Teacher's Guide to Recent Research, Cassell, 1991.
- Navodila za izdelavo raziskovalnih nalogo iz matematike v osnovnih in srednjih šolah – različna regionalna tekmovanja raziskovalnih nalog.

Cilji in kompetence:	**Objectives and competences:**
• Študent se sooči s samostojnim poglabljanjem v literaturo. • Študent pripravi daljšo seminarsko predstavitev obravnavane tematike. Pri tem uporabi sodobna tehnična sredstva, kot so programi za dinamično geometrijo, programi za simbolno računanje, programi za risanje krivulj in ploskev ter podobno. • Študent sodeluje v debati pri evalvaciji prispevkov svojih kolegov. • Študent se seznani z osnovami pisanja matematičnega teksta.	• Student faces the experience of individual access to math material. • Student prepares longer presentation of a given topic. At this presentation he uses contemporary technical tools as computer software for dynamic geometry, symbolic calculation and presenting curves and surfaces and other ICT devices. • Student participates in a debate on evaluating the contributions of his colleagues. • Student gets familiar with the basics of writing mathematical texts.

Predvideni študijski rezultati:	**Intended learning outcomes:**
Znanje in razumevanje: Po zaključku tega predmeta bo študent sposoben: • Samostojno preštudirati matematični tekst primerne zahtevnosti, ga v seminarski predstavitvi posredovati kolegom in ga evalvirati. • Svojo predstavitev povzeti v pisni obliki z upoštevanjem pravil pisanja matematičnih tekstov. Prenesljive/ključne spretnosti in drugi atributi: • *Samostojno učenje*: Spoznavanje razlike med dobesednim prevodom določenega teksta in dvofaznim postopkom, pri katerem prva faza pomeni poglobljeno razumevanje, druga pa predstavitev osebnega videnja in razumevanja tematike. • *Verbalna komunikacija*: Seminarsko predavanje pomeni vajo v komuniciranju z uporabniki pri predstavitvi matematičnih vsebin. • *Pisna komunikacija*: Priprava pisnega poročila. • *Kritično mišljenje*: Evalvacija obravnavanega matematičnega teksta upoštevajoč različne vidike. Evalvacija prispevkov kolegov.	Knowledge and Understanding: On completion of this course, the student will be able to: • Study a mathematical text of appropriate complexity, present it to colleagues in a seminar presentation and evaluate it. • Summarize the presentation in writing by observing the rules for writing mathematical texts. Transferable / Key Skills and other attributes: • *Self-learning*: introducing a two-phase process, in which the first phase represents an in-depth understanding of the contents, while the other is the presentation of a personal vision and understanding of the subject. • *Verbal communication*: A seminar lecture is a practice in communicating with users in presenting mathematical content. • *Written communication*: Preparation of a written report. • *Critical thinking*: Evaluation of the text under consideration taking into account various aspects. Evaluation of colleagues' contributions.

Metode poučevanja in učenja:	**Learning and teaching methods:**
• Samostojno delo • Analiza seminarjev • Analiza pisnega izdelka	• Individual work • Discussion on presentations • Comments on written works

Načini ocenjevanja:	Delež (v %) / Weight (in %)	**Assessment:**
Način (pisni izpit, ustno izpraševanje, naloge, projekt)		Type (examination, oral, coursework, project):
• Seminarska predstavitev teme • Oddano pisno gradivo.	50% 50%	• Oral presentation • Written presentation

Reference nosilca / Lecturer's references:

1. GAJSER, David. Verifying whether one-tape Turing machines run in linear time. *Journal of computer and system sciences*. Feb. 2020, vol. 107, str. 93-107. ISSN 0022-0000. https://doi.org/10.1016/j.jcss.2019.08.004, DOI: 10.1016/j.jcss.2019.08.004. [COBISS.SI-ID 18750041]

2. GAJSER, David. MaRS 2020. *Obzornik za matematiko in fiziko*, ISSN 0473-7466, 2020, letn. 67, št. 2, str. 79-80, VII.

3. GAJSER, David, MOHAR, Bojan. Minimal normal graph covers. *Combinatorica*. Dec. 2018, vol. 38, iss. 6, str. 1415-1436. ISSN 0209-9683. https://doi.org/10.1007/s00493-017-3559-2, DOI: 10.1007/s00493-017-3559-2. [COBISS.SI-ID 18582361

4. GAJSER, David. On convergence of binomial means, and an application to finite Markov chains. *Ars mathematica contemporanea*. [Tiskana izd.]. 2016, vol. 10, no. 2, str. 393-410. ISSN 1855-3966. http://amc-journal.eu/index.php/amc/article/download/705/958. [COBISS.SI-ID 17736025]