



Univerza v Mariboru

Fakulteta za naravoslovje  
in matematiko

Oblikovano: Levo

### UČNI NAČRT PREDMETA / COURSE SYLLABUS

<b>Predmet:</b>	Didaktika matematike
<b>Course title:</b>	Didactics of Mathematics

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Matematika, 3. stopnja		1.	2.
Mathematics, 3 <sup>rd</sup> cycle		1 <sup>st</sup>	2 <sup>nd</sup>

Vrsta predmeta / Course type	obvezni ali izbirni/compulsory or elective
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Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
45					225	9

Nosilec predmeta / Lecturer:

Jeziki / Languages:	Predavanja / Lectures:	Slovenski jezik; Slovene
	Vaje / Tutorial:	<input type="text"/>

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

Poglobljeno znanje in razumevanje temeljnih pojmov iz didaktike matematike.

Prerequisites:

Profound knowledge and understanding of fundamental notions in didactics of mathematics.

**Vsebina:**

- Didaktika matematike kot znanstvena disciplina.
- Koncepti sodobne didaktike matematike.
- Pedagoško raziskovanje in metodologija. Analiza sodobnih raziskav s področja didaktike matematike.
- Teorije učenja. Učenje matematike. Učno okolje.
- Znanstvene paradigme in sodobne teorije.
- Sodobne teorije reševanja problemov. Metodologije raziskovanja sposobnosti reševanja problemov.
- Izobraževanje učiteljev. Prepričanja in odnos do matematike. Profesionalna rast učitelja.
- Odprti problemi. Prioritete v mednarodnih raziskavah pouka matematike.

Nekatere izmed teh tem so obdelane podrobneje, druge pa le na osnovni ravni. Pri izboru se upoštevajo interesi in raziskovalne usmeritve študentov.

**Content (Syllabus outline):**

- Didactics of mathematics as a scientific discipline.
- Concepts in contemporary didactics of mathematics.
- Research design and methodology. Analysis of contemporary research in didactics of mathematics.
- Learning theories. Learning mathematics. Learning environment.
- Scientific paradigms and modern theories.
- Contemporary problem-solving theories. The research design for exploring problem-solving abilities.
- Teacher training. Attitudes toward and beliefs about mathematics. Teachers' professional development.
- Open problems. Priorities in international didactics of mathematics research.

Some of these topics are treated in detail and the others only at a basic level. The selection depends on students' interests and their research orientation.

**Temeljni literatura in viri / Readings:**

- Dreyfus, T., Artigue, M., Potari, D., Prediger, S., & Ruthven, K. (Eds.). (2018). *Developing Research in Mathematics Education: Twenty Years of Communication, Cooperation and Collaboration in Europe*. Routledge.
- Kaiser, G., & Presmeg, N. (2019). *Compendium for early career researchers in mathematics education* (p. 532). Springer Nature.
- Trouche, L., Gueudet, G., & Pepin, B. (Eds.). (2019). *The 'resource' approach to Mathematics Education*. Springer Nature.

**Cilji in kompetence:**

- Razviti poglobljeno razumevanje teoretskih in metodoloških konceptov s področja didaktike matematike.
- Razviti sposobnost samostojnega ustvarjanja novega znanja s področja didaktike matematike.
- Razviti sposobnost za samostojno reševanje najzahtevnejših problemov iz didaktike matematike.
- Razviti sposobnost izboljševanja znanih in odkrivanja novih rezultatov s področja didaktike matematike.
- Zmožnost razvijanja kritične refleksije na področju didaktike matematike.
- Razviti zmožnost vodenja najzahtevnejših znanstvenoraziskovalnih projektov s širšega področja didaktike matematike..

**Objectives and competences:**

- To achieve a profound understanding of theoretical and methodological concepts of didactics of mathematics.
- To develop the ability to independently develop new knowledge in the field of didactics of mathematics.
- To develop the ability for solving the most challenging problems in didactics of mathematics.
- To develop the ability to improve known results as well as obtain new results in didactics of mathematics.
- Ability to develop critical reflection in didactics of mathematics.
- To develop the ability to lead the most challenging scientific research projects in the wider field of didactics of mathematics.

**Predvideni študijski rezultati:**

Znanje in razumevanje:  
poglobljeno razumevanje in uporaba raziskovalnih pojmov z izbranega področja področij didaktike matematike; primerjanje in kritična evalvacija najzahtevnejših pojmov didaktike matematike.

Prenosljive/ključne spretnosti in drugi atributi:  
spretnosti reševanja raziskovalnih problemov; spretnosti komuniciranja.

**Intended learning outcomes:**

Knowledge and understanding:  
profound understanding and use of research concepts in didactics of mathematics, comparing and critical evaluation of complex concepts of didactics of mathematics.

Transferable/Key Skills and other attributes:  
research problem-solving skills; communication skills.

**Metode poučevanja in učenja:**

predavanja;  
priprava seminarja;  
konzultacije;  
samostojni študij.

**Learning and teaching methods:**

lectures;  
seminar work;  
consultations;  
self-study.

Načini ocenjevanja:	Delež (v %) / Weight (in %)	Assessment:
Način (pisni izpit, ustno izpraševanje, naloge, projekt) seminarsko predavanje; pisni izdelek; ustni izpit.	<b>20 %</b> <b>30 %</b> <b>50 %</b>	Type (examination, oral, coursework, project): seminar talk; written work; oral examination.

**Reference nosilca / Lecturer's references:**

- LIPOVEC, Alenka, PODGORŠEK MESAREC, Manja. Prospective primary teachers' shift in locus of control and pedagogy focus. *Journal of mathematics teacher education*. 2021, vol. 24, iss. 4, str. 361–373. ISSN 1573-1820. <https://link.springer.com/article/10.1007/s10857-020-09463-3>, DOI: [10.1007/s10857-020-09463-3](https://doi.org/10.1007/s10857-020-09463-3). [COBISS.SI-ID [15387651](#)], kategorija: 1A1 (Z, A'', A', A1/2); uvrstitev: [Scopus \(d\)](#)
- ANTOLIN DREŠAR, Darja, LIPOVEC, Alenka. Mathematical experiences and parental involvement of parents who are and who are not mathematicians. *Irish educational studies*, ISSN 0332-3315, 2017, vol. 36, no. 3, str. 357-374, doi: [10.1080/03323315.2017.1333445](https://doi.org/10.1080/03323315.2017.1333445). [COBISS.SI-ID [23140872](#)], kategorija: 1A3; uvrstitev: [Scopus \(d\)](#)
- PODGORŠEK MESAREC, Manja, LIPOVEC, Alenka. Self-assessment ability of pre-service teachers. *The new educational review*, ISSN 1732-6729, 2017, vol. 48, no. 2, str. 213-223. [http://www.educationalrev.us.edu.pl/dok/volumes/tner\\_2\\_2017.pdf](http://www.educationalrev.us.edu.pl/dok/volumes/tner_2_2017.pdf). [COBISS.SI-ID [23324680](#)] kategorija: 1A3; uvrstitev: [Scopus \(d\)](#)