



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Didaktika srednješolske matematike
Course title:	Didactics of Secondary School Mathematics

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.	7.
Five-year master's degree program Subject Teacher	/		

Vrsta predmeta / Course type

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
45		30			75	5

Nosilec predmeta / Lecturer:

Jeziki /	Predavanja / Lectures:	<input type="text" value="slovensko / slovene"/>
Languages:	Vaje / Tutorial:	<input type="text" value="slovensko / slovene"/>

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

Prerequisites:

Vsebina:

Content (Syllabus outline):

<ul style="list-style-type: none"> - Učni načrti za matematiko v srednjih šolah. - Izbrane vsebine srednješolske matematike. Učne priprave. - Motivacija pri pouku matematike v srednjih šolah. - Učna gradiva v srednjih šolah (učbeniki, priročniki, didaktični materiali, knjige, internet in e-učna gradiva ...). - Kombinirano e-izobraževanje pri pouku matematike v srednji šoli. - Individualizacija pri pouku matematike v srednji šoli. - Učenci z učnimi težavami v srednji šoli. - Medpredmetne povezave in delo v timu v srednjih šolah, vodenje krožka in mentorstvo pri raziskovalnih nalogah. - Preverjanje in ocenjevanje znanja v srednjih šolah: oblike, sestava preizkusov, vrednotenje. Splošna in poklicna matura v Sloveniji in primeri zaključnih izpitov v tujini. - Šolska zakonodaja, vodenje pedagoške dokumentacije v srednji šoli, doba pripravništva. - Pedagoško delo v razredu v srednji šoli: komunikacija, odnosi, vzgoja, razredništvo, reševanje konfliktov. - Nasilje v šoli. - Umeščenost in vizija pedagoškega poklica v družbi. 	<ul style="list-style-type: none"> - Mathematics curricula in secondary schools. - Selected contents of secondary school mathematics Unit planning. - Mathematical motivations in secondary schools. - Educational resources in secondary schools (textbooks, handbooks, books, didactic materials, internet and e-learning materials ...). - Blended e-learning at mathematics instruction in secondary school. - Individualisation in mathematics instruction in secondary schools. - Children with learning difficulties in secondary school. - School subjects connection and teamwork, mathematics club, research themes and tutor's role in secondary school. - Assessment in secondary schools: forms, exam composition, and grading. Leaving examinations (finishing secondary schools) in Slovenia and other countries. - School legislation and pedagogical documentation in secondary schools, teaching probation. - Pedagogical class management in secondary school: communication, relations, education, class teacher work, conflict solving. - Violence in school. - Meaning and the vision of teaching profession in our society.
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Temeljna literatura in viri / Readings:

<p>B. Marentič Požarnik, <i>Psihologija učenja in pouka, prenovljena izdaja</i>, DZS, 2018.</p> <p>A. S. Posamentier [et al.], <i>Teaching Secondary Mathematics: Techniques and Enrichment Units. 8th Edition</i>, Pearson Prentice Hall, 2009.</p> <p>F. Strmčnik [et al.], <i>Didaktika, visokošolski učbenik</i>, Visokošolsko središče Novo Mesto, 2003.</p> <p>Učni načrti za srednje šole.</p> <p>Učbeniki, priročniki in druga učna gradiva za srednje šole.</p>
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Reviji *Matematika v šoli* in *Presek*. Pedagoška strokovna in znanstvena periodika.

Spletni portal E-um: www.e-um.si.

Cilji in kompetence:

Študente usposobiti za uporabo temeljnih spoznanj didaktike matematike, ki jih potrebujejo za uspešno poučevanje matematike v srednji šoli.

Objectives and competences:

To qualify and train students for application of fundamental findings in didactics of mathematics needed for efficient teaching of mathematics at secondary school.

Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben:

- povezovati in pri pouku uporabljati temeljna in sodobna načela didaktike matematike,
- izkazovati suveren in kritičen odnos do šolske matematike,
- uporabljati logično zaporedje, ki modelira pouk matematike v srednji šoli,
- osmišljeno in učinkovito uporabljati tehnologije pri pouku,
- reflektirati in samoevalvirati učinkovitost lastnega poučevanja matematike.

Prenosljive/ključne spretnosti in drugi atributi:

- *Spretnosti komuniciranja*: ustna in pisna matematična komunikacija, ki sledi splošnim jezikovnim normam.
- *Uporaba informacijske tehnologije*: uporaba programskih orodij in aplikacij pri pouku matematike
- *Reševanje problemov*: sposobnost reševanja izobraževalno matematičnih problemov.
- *Računska pismenost*: reševanje šolskih matematičnih problemov.
- *Delo v skupini*: priprava in izvedba timskega pouka

Intended learning outcomes:

Knowledge and Understanding:

On completion of this course the student will be able to:

- connect and apply fundamental and contemporary mathematical education principles in school settings,
- demonstrate sovereign and critical attitude towards school mathematics,
- apply logical sequence of teaching in secondary school mathematical classrooms,
- use technology in classrooms in meaningful and efficient way,
- reflect and self-evaluate himself as a teacher of mathematics.

Transferable/Key Skills and other attributes:

- *Communication skills*: oral and written mathematical communication that comply with general language norms.
- *Use of information technology*: use of software tools and applications in mathematics.
- *Problem solving*: ability to solve educational problems in school mathematics.
- *Numeracy*: solving school mathematical problems.
- *Team work*: designing and carrying out a collaborative lessons.

Metode poučevanja in učenja:

- Predavanje,
- razgovor in diskusija,
- demonstracija,
- metoda pisnih in grafičnih del,
- reševanje problemov in preiskovanje,

Learning and teaching methods:

- Lecture,
- conversation and discussion,
- demonstration,
- method of written and graphic products,
- problem solving and investigation,

<ul style="list-style-type: none"> • delo z viri. <p>Poučevanje in učenje potekata z didaktično uporabo informacijsko-komunikacijske tehnologije.</p>	<ul style="list-style-type: none"> • work with resources. <p>Teaching and learning are done through the didactic use of ICT</p>
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Delež (v %) / Weight (in %)		Assessment:
<p>Načini ocenjevanja:</p> <p>Način (pisni izpit, ustno izpraševanje, naloge, projekt):</p> <p><u>Sprotno ocenjevanje:</u></p> <ul style="list-style-type: none"> - pisni test, - mikronastop pred kolegi študenti, - portfolij. <p>Vsaka izmed naštetih obveznosti mora biti opravljena s pozitivno oceno.</p>	<p>50 %</p> <p>10 %</p> <p>40 %</p>	<p>Type (examination, oral, coursework, project):</p> <p><u>Ongoing assessment:</u></p> <ul style="list-style-type: none"> - written test, - one pedagogical appearance in front of the colleagues, - portfolio. <p>Each of the listed obligations must have positive grade.</p>

Reference nosilca / Lecturer's references:

<p>GAJSER, David, MOHAR, Bojan. Minimal normal graph covers. <i>Combinatorica</i>, ISSN 0209-9683, Dec. 2018, vol. 38, iss. 6, str. 1415-1436.</p> <p>GAJSER, David. Verifying whether one-tape Turing machines run in linear time. <i>Journal of computer and system sciences</i>, ISSN 0022-0000, Feb. 2020, vol. 107, str. 93-107.</p> <p>GAJSER, David. MaRS 2019. <i>Obzornik za matematiko in fiziko</i>, ISSN 0473-7466, 2019, letn. 66, št. 2, str. 64-66.</p>
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