



Univerza v Mariboru

Fakulteta za naravoslovje
in matematiko

UČNI NAČRT PREDMETA / COURSE SYLLABUS

Predmet:	Osnove šolske ergonomije
Course title:	Fundamentals of School Ergonomics

Študijski program in stopnja Study programme and level	Študijska smer Study field	Letnik Academic year	Semester Semester
Izobraževalna tehnika		2	4.
Educational Design		2	4.

Vrsta predmeta / Course type

izbirni / elective

Univerzitetna koda predmeta / University course code:

Predavanja Lectures	Seminar Seminar	Vaje Tutorial	Klinične vaje work	Druge oblike študija	Samost. delo Individ. work	ECTS
15	15				60	3

Nosilec predmeta / Lecturer:

Red. prof. dr. Samo Fošnarič

Jeziki /

Languages:

Predavanja /

Lectures:

Vaje / Tutorial:

slovenski / Slovene

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

Ni posebnih pogojev.

Prerequisites:

No special conditions

Vsebina:

Content (Syllabus outline):

- Ergonomsko – ekološke obremenitve pri pouku
- Antropometrija šolskih otrok,
- Učenčevo toplotno delovno okolje,
- Termoregulacija,
- Univerzalni toplotni indeksi, Zaščita pred toplotnimi obremenitvami,
- Učenčevo svetlobno delovno okolje
- Otroci, delo v šoli in hrup,
- Vpliv hrupa na nekatere človeške dejavnike,
- Nekateri bioenergetski dejavniki učenčevega organizma,
- Dimenzijsko načrtovanje delovnih mest pri praktičnem pouku,
- Ergonomski testi in ocenjevalne metode (OWAS, RULA,...)

Seminar:

Seminar aplikativno dopolnjuje vsebino predavanj z reševanjem praktičnih problemov.

- Ergonomics-ecological pressures at lessons,
- Anthropometrics of school children,
- Children thermal environment,
- Thermoregulation,
- Universal thermal index, Protection from thermal pressures.
- Children lighting environment,
- Children, school work and noise,
- Influence of noise on some human factors,
- Bioenergetics factors of human body,
- Dimensional planning of working places at practical work in school,
- Ergonomics tests, methods and analysis of working places. (OWAS, RULA,...)

Seminar:

Seminar work supplements the lectures with the solutions of the practical problems.

Temeljni literatura in viri / Readings:

Temeljna literatura:

1. Fošnarič, S. (2001). Učenci in šolsko delovno okolje: nekateri uporabni vidiki ergonomije v vzgoji in izobraževanju (Let. 4, str. 158). Pedagoška fakulteta.
2. Ergonomics for children: designing products and places for toddler to teens (str. XV, 961, 12 pril.). (2008). Taylor & Francis.

Dodatna literatura:

1. Sušnik, J. (1992). Ergonomska fiziologija (str. 352). Didakta.
2. Balantič, Z., Polajnar, A., & Jevšnik, S. (2017). Ergonomija v teoriji in praksi. Akademija strojništva 2017: inženirstvo - za kakovostnejše življenje, 6(3/4), 76.

Cilji in kompetence:

Študentje bodo:

- znali pojasniti preprostejše raziskovalne rezultate na področju ergonomije v šoli;
- ponazorili in interpretirali določene kvantitativne ter kvalitativne

Objectives and competences:

Students will:

- be able to explain simple research results in the field of ergonomics in schools;
- illustrate and interpret specific quantitative and qualitative research data in the subject area;

raziskovalne podatke iz področja predmeta, • uporabili pridobljena znanja v novih situacijah raziskovanja znotraj ergonomije; • analizirali, klasificirali in primerjali študijske vire in druge elemente iz pridobljenih baz podatkov na edukacijskem področju s poudarkom na ergonomiji. Študentje bodo pridobili: • kompetence usmerjene v razvoj sposobnosti uporabe raziskovalnih virov; • kompetence usmerjene v razvoj sposobnosti reševanja problemov pri vrednotenju praktičnega dela učencev iz vidika uporabe ergonomskih testov. • kompetence usmerjene v razvoj sposobnosti reševanja ergonomskih problemov v šoli z namenom razvijanja IKT in računske pismenosti.	• apply the knowledge acquired in new research situations within ergonomics; • analyse, classify and compare study sources and other elements from the acquired databases in the field of education with a focus on ergonomics. Students will gain: • competences aimed at developing the ability to use research resources; • competences aimed at developing problem-solving skills in the evaluation of students' practical work in terms of the use of ergonomic tests. • competences aimed at developing the ability to solve ergonomic problems in school with a view to developing ICT and numeracy skills.
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Predvideni študijski rezultati:

Znanje in razumevanje:

Po zaključku tega predmeta bo študent sposoben:

- izkazati znanje in razumevanje izbranih rezultatov, ki jih ponujajo mednarodne raziskave in so namenjeni izboljšanju učnih praks;
- pokazati sposobnost kritičnega vrednotenja znanstvenih virov (periodike in monografij);
- izkazati znanje in razumevanje ergonomije kot znanstvene discipline;
- pokazati sposobnost kritičnega vrednotenja metod pasivnega ergonomskega raziskovanja;
- pokazati sposobnost samostojnega načrtovanja in organizacije različnih raziskovalnih strategij pouka s poudarkom na ergonomiji;

Intended learning outcomes:

Knowledge and understanding:

Upon completion of this course, the student will be able to:

- Demonstrate knowledge and understanding of selected international research findings aimed at improving teaching practices;
- demonstrate the ability to critically evaluate scholarly sources (periodicals and monographs);
- demonstrate knowledge and understanding of ergonomics as a scientific discipline;
- demonstrate the ability to critically evaluate passive ergonomics research methods;
- Demonstrate the ability to independently plan and organise

• izkazati razumevanje uporabe informacijsko komunikacijske tehnologije, vključno s socialnimi omrežji; • izkazati znanje in razumevanje dejavnikov procesnega in učno ciljnega pristopa poučevanja relacije: »Učenje – ergonomija«; • identificirati in rešiti probleme povezane z uporabo raziskovalnih ergonomskih prijemov na pedagoškem področju in jih smiselno uporabiti tudi na drugih področjih.	different research strategies for teaching, with a focus on ergonomics; • demonstrate an understanding of the use of information and communication technology, including social networks; • Demonstrate knowledge and understanding of the factors of the process and learning-goal approach to teaching the 'Learning - Ergonomics' relationship; • Identify and solve problems related to the application of ergonomics research approaches in the pedagogical field and apply them in a meaningful way in other fields.
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Metode poučevanja in učenja:

• visokošolsko predavanje, • metoda razgovora, • metoda raziskovanja, • metoda primera, • metoda reševanja problemov, • kooperativno učenje, individualno učenje, • e-učenje.

Learning and teaching methods:

• higher education lesson, • method of conversation, • method of research, • case study, • problem solving; • cooperative learning, individual learning. • e-learning.
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Delež (v %) /

Načini ocenjevanja:

Weight (in %)

Assessment:

Seminarska naloga	40%	Seminar paper
Sprotne naloge	20%	Coursework
Pisni izpit	40%	Written exam

Opombe:

Sprotne naloge obsegajo od 3 do 5 nalog na semester.

Comments:

Coursework consists of 3 to 5 tasks per semester.

Reference nosilca / Lecturer's references:

Dolenc, K., & Fošnarič, S. (2024). Understanding and responding to generational differences in digital skills in the educational environment. In R. Celec (Ed.), *Education and society in transition: Addressing the challenges of youth and technology* (pp. 25–54). Dr. Kovač.

Dolenc, K., & Fošnarič, S. (2023). Supporting the development of technical creativity among elementary education students during the COVID-19 pandemic. In A. Lipovec & J. Usenik (Eds.), *Perspectives on teacher education and development* (pp. 487–509). University of Maribor, University Press. <https://press.um.si/index.php/ump/catalog/book/770>.
<https://doi.org/10.18690/um.pef.1.2023.26>

Fošnarič, S., Rizman Herga, N., & Kandrič, I. (2022). Objective and subjective perception of the school environment soundscape. V *Studies of environmental issues through the prism of integration into the wider environment* (str. 35–50). Verlag Dr. Kovač.