

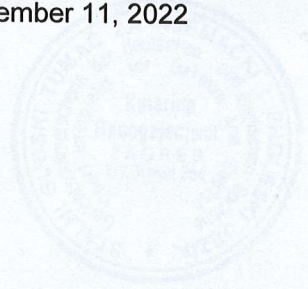
Certified translation from Croatian

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ELABORATION OF LIFELONG LEARNING
COURSES IN THE FIELD OF ECOLOGICAL WATER
MONITORING

**Certified translation
from Croatian into English**

Mostar, August 2021

*Letter-head of the University of Mostar, Faculty of Science and Education,
translator's note*



Certified translation from Croatian

/FPMOZ, translator's note/



ELABORATION OF LIFELONG LEARNING COURSES IN THE FIELD OF ECOLOGICAL WATER MONITORING

Mostar; August 2021

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Certified translation from Croatian

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Lifelong learning courses in the field of ecological water monitoring and environmental protection.

DESCRIPTION

Courses for lifelong learning (LLL-lifelong learning) in the field of ecological water are developed as part of the ERASMUS + project entitled "Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs" abbreviated as ECOBIAS. The goal of this project is to develop and improve knowledge and skills in higher education institutions of partner countries in the field of environmental monitoring, as well as to improve technical resources.

11 institutions participate in the realization of the project, namely four institutions from the program countries:

- University of Novi Sad (Serbia, project coordinator),
- University of Niš (Serbia),
- University of Zagreb (Croatia),
- University of Duisburg-Essen (Germany)

And seven institutions from partner countries:

- University of Mostar, Faculty of Science and Education (Bosnia and Herzegovina),
- University of Donja Gorica (Montenegro),
- International University in Travnik (Bosnia and Herzegovina),
- University of Tuzla (Bosnia and Herzegovina),
- University of Sarajevo (Bosnia and Herzegovina),
- University of Banja Luka (Bosnia and Herzegovina) |
- University of East Sarajevo (Bosnia and Herzegovina)

The specific goals of the project are:

- Development and implementation of an advanced master's curriculum in Ecological Monitoring and Aquatic Bioassessment (EMAB) at institutions of higher education

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NAME

Lifelong learning courses in the field of ecological water monitoring and environmental protection.



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(HEI's) in the countries of the Western Balkans, in accordance with the Bologna and national standards for accreditation;

- Development and implementation of lifelong learning (LLL) courses for the environmental monitoring sector in accordance with the EU Water Framework Directive (WFD) in Western Balkans HEI's
- Equipping seven laboratories for Ecological Monitoring and Biological Assessment of Water Quality (EMAB) in Western Balkans HEI's;
- Development regional academic ECOBIAS network in order to organize and promote regional cooperation in EMAB



Students/participants at HEI's in partner countries (PC) will have a greater chance of getting a job after obtaining a diploma, or after obtaining a certificate within the LLL program, because there is an obvious need for experts in this field in PCs. After equipping the laboratory and acquiring/sharing knowledge, skills and competences in this area, teaching and technical staff in the field of environmental monitoring in PCs will expand opportunities for cooperation with other HEI's and stakeholders in the Western Balkans region. This cooperation will result in the preparation of project proposals for other EU grants and encourage further research in this area.

PROGRAM CONTENT

As part of the project, seven LLL-courses in the field of ecological water monitoring and biological assessment (emab) were developed.

Name of course	ECTS
Aquatic and semiaquatic macrophytes	6
Aquatic macroinvertebrates in bioassessment	6
Phycology	6
GIS and remote sensing in ecomonitoring	6
Ichthyology	6
SERCON- System for evaluating rivers for conservation	6
Field practice in aquatic ecomonitoring	6



Participants choose one or more offered courses from the LLL program.



EVALUATION OF LABOR MARKET NEEDS

A comparative analysis of existing data on water resources in Western Balkans countries indicates a lack of reliable data, which hinders the assessment of the current and future state of water resources. Also, this analysis indicates the high sensitivity and vulnerability of water resources in the region of the Western Balkans, as well as the lack of coordinated water management. Therefore, this attractive ecological and scientific problem represents a pressing issue in the field of environmental protection, and the equipment of modern laboratories is of exceptional importance in order to realize effective ecological monitoring and biological assessment of freshwater ecosystems.

For the purposes of starting this program, a labor market analysis was carried out, which included a total of 13 institutions that deal with ecological monitoring and biological assessment of water, with the aim of estimating the number of necessary new jobs. The institutions included in this research expressed the need for staff trained to perform the following activities:

- monitoring of aquatic macrophytes,
- monitoring of macroscopic invertebrates (macrozoobenthos),
- microbiological monitoring of aquatic ecosystems,
- monitoring and assessment of fish populations,
- monitoring of coastal habitats,
- monitoring of macroalgae and cryptogamous flora,
- GIS and remote sensing,
- ecological engineering and water protection technologies,
- data processing,
- administrative tasks related to national and EU legislation and policy in the field of water quality and conservation of freshwater ecosystems,
- writing project proposals,
- molecular methods for routine monitoring of aquatic ecosystems.

The results of the research showed unequivocally that there is a great need for training, but also for retraining, and there is a great need to create jobs in the field of environmental monitoring.



/FPMOZ, translator's note/

The results of the research and the analysis of the results are available at the link https://www.ecobiaserasmus.com/wp-content/uploads/2020/06/ECOBIA_TASK-1_REPORT.pdf

The results are quite expected, bearing in mind the fact that the EU Water Framework Directive requires the use of different multimetric water quality assessment systems. This is precisely why the EU financed many projects whose main goal was to develop a framework for the future European water quality assessment system based on algae, benthic macroinvertebrates, aquatic macrophytes and fish, which had an output in multimetric indices (AQEM. 2002; Fame Consortium, 2004 .; 2009; Schmutz & Sendzimir, 2018).

The Water Framework Directive (WFD) is linked to a number of other EU directives. This includes directives related to the protection of biological diversity, directives related to specific uses of water and directives related to the regulation of activities undertaken in the environment, etc.

The development of the system of ecological assessment and classification is not a simple matter, but one of the most important and technically demanding parts of the implementation of the Water Framework Directive, which is why great attention is paid to capacity building in the field of higher education and the implementation of joint projects in this area in the Western Balkans. . Additional skills and knowledge are necessary for successful ecological monitoring and bioassessment, which mainly relate to data processing skills and administrative tasks related to EU and national legislation and policy on water quality and conservation of freshwater ecosystems.

According to the Water Framework Directive (WFD), not only highly industrialized, but also developing countries are obliged to protect and restore all their water ecosystems so that their water bodies (lakes, rivers and groundwater bodies, transitional and coastal waters) are in good environmental condition by 2027 at the latest.

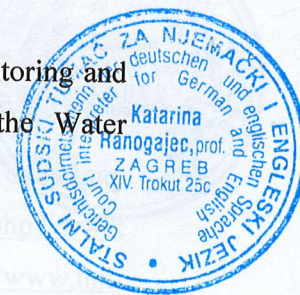
This program directs and accelerates capacity-building processes for successful monitoring of the state of freshwater ecosystems and biological assessment, especially in developing countries where existing capacities are technically and humanly limited. All institutions working in the field of monitoring and bioassessment of freshwater should ensure an optimal number of employees who have adequate knowledge, skills and competences in order to enable the availability of scientific data analysis to the general public. Biomonitoring of freshwater ecosystems must be based on scientific data and understanding of freshwater ecosystems and their main components, hydrological and ecological processes.

6 */Letter-head of the University of Mostar, Faculty of Science and Education, translator's note/*



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The availability of all necessary profiles in the field of freshwater biomonitoring and ecological engineering will enable effective monitoring in accordance with the Water Framework Directive in the future



INTERNATIONAL COMPARABILITY

Within the framework of the Erasmus + ECOBIAS project itself, apart from the Faculty of Sciences and Education of the University of Mostar, the accreditation of master studies and LLL courses in the field of water biomonitoring at higher education institutions in Bosnia and Herzegovina is planned, namely:

- o LLL courses – Faculty of Science, University of Banja Luka
- o Master studies - International University in Travnik, University of Tuzla, University of Sarajevo, University of East Sarajevo.

Individual modules related to water management and the ecology of aquatic ecosystems exist at numerous universities in the region, namely:

- o University of Tuzla, Study of Applied Biology http://pmf.untz.ba/wp-content/uploads/2017/04/Primijenjena_biologija.pdf;
- o University of Bihać, study program Environmental Protection https://btf.unbi.ba/?page_id=1122;
- o University of Banja Luka, study program Ecology and Environmental Protection <https://pmf.unibl.org/wp-content/uploads/2019/05/2-ciklus-ekologija-zivotinja.pdf>.

In addition to the mentioned modules in the countries of the region, in the countries of the European Union there are numerous programs in Ecology and Ecological Monitoring, and Water Biomonitoring. For example, in Germany there are more than 35 master's programs in the field of ecology and environmental monitoring.

An overview of the programs are available at the link:

<https://www.ecobiaserasmus.com/wp-content/uploads/2020/04/ECOBIAS-REPORT-CURRICULA.pdf>.

⁷ *Letter-head of the University of Mostar, Faculty of Science and Education, translator's note/*



FPMOZ, translator's note/

Some of the universities where the mentioned programs are conducted are:

- o The University of Duisburg-Essen has master's programs: Environmental Toxicology (EnviTox) <https://www.uni-due.de/studienangebote/studiengang.php?id=40>;
Transnational ecosystem-based Water Management <https://www.uni-due.de/studienangebote/studiengang.php?id=103>;
- o University of Stuttgart offers a master's program: Water Resources Engineering and Management (WAREM) <https://www.warem.uni-stuttgart.de/> etc.

OBJECTIVES OF LIFELONG LEARNING (LLL) COURSES

The general objectives of the program are:

- o Training participants for independent work in the field of ecological monitoring and biological assessment of water quality,
- o Acquaintance of participants with basic terms, principles and concepts in the field of biomonitoring,
- o Acquaintance of participants with ecological principles in the analysis of the relationship between habitats and the organisms that inhabit them.

The specific goals of the program are:

- o improving the knowledge, skills and competencies of participants in the field of water resources management according to the standards of the Water Framework Directive,
- o providing participants with the opportunity to familiarize themselves with standards in the field of water resources management,
- o providing opportunities for participants to develop fundamental skills important for laboratory work in the field of environmental protection,
- o providing participants with the opportunity to develop basic skills in understanding problems in the field of environmental protection, and applying tools for analysis and evaluation of the state of the ecosystem.

PROJECT MANAGER

Dragan Škobić, PhD, assoc. professor

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translator's note/





BRIEF BIOGRAPHY OF THE PROJECT MANAGER

Name and surname:	Dragan Škobić
Subject(s) taught:	General botany, Plant physiology, Basics of Nature and Environmental Protection, General Ecology Basics of Ecology and the Environment, Conservation Biology
Institution:	Faculty of Science and Education, University of Mostar
E-mail:	dragan.skobic@fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Associate Professor
Date of last election to the position:	October 2020.

Short biography

Short biography:

Dragan Škobić was born in 21st of October 1971, Mostar. He graduated primary and secondary school in Mostar. In 1995, he get started the Faculty of Education of the University of Mostar, majoring in biology and chemistry, where he successfully defended his graduation thesis on the topic "Analysis of crystals and particles of virus isolate from grapevine (*Vitis vinifera* L.)" under the guidance of Ph.D. Mladena Krajačić and earned the title of professor of biology and chemistry. In 2002, he enrolled in postgraduate studies at the Department of Biology, Faculty of Science, University of Zagreb, majoring in ecology, where he successfully passed all exams with an average grade of 5.0 and defended his paper entitled "Effect of zinc and aluminum sulfate on the growth of water lentil (*Lemna minor* L.)" under the guidance of prof. Ph.D.Sc. Branka Pevalek-Kozlina. In 2012, he successfully defended his doctoral dissertation entitled "The role of plant secondary metabolites in the biotic relationships between plants and animals" under the guidance of prof. Ph.D. Joze Rogošić at the Faculty of Sciences and Education of the University of Mostar.

Since 2001, he has been employed as a junior. assistant at the Faculty of Pedagogy, biology and chemistry department, and since 2006 at the Faculty of Sciences and Education, biology study group. Participated in practical classes from the courses Plant Physiology and General Botany. He is the co-author of several scientific papers, in English, in journals cited by "Current Contents" and has participated in several scientific meetings and presentations in English.

He was involved in the organization of classes as a secretary at the biology department from 2003 to 2006, and participated and worked in the creation and organization of a new course as a secretary at the Environmental Science department from 2006 to 2012. From 2013 to 2017, he led the Environmental Science department as head, and after that he is the head of the biology study group until today.

Articles and other things that qualify the teacher for teaching:

CC ARTICLES

1. Rogosic, J., Estell, R.E., Skobic, D., Maric, S, and Martinovic, A. (2006). Role of



species diversity and secondary compounds complementarity on diet selection of Mediterranean shrubs by goats. Journal of Chemical Ecology 32, 1279-1287, Impact factor 3,151

2. Rogosic, J., Estell, R.E., Skobic, D., and Stanic, S. (2007) Influence of secondary compound complementarity and species diversity on consumption of Mediterranean shrubs by sheep. Appl. Anim. Behav. Sci. 107, 58-65, Impact factor 1,795.
3. Rogosic, J., Moe, S.R., Skobic, D., Knezovic, Z. Rozic, I., Zivkovic, M., Pavlicevic, J. (2009) Effect of supplementation with barley and activated charcoal on intake of biochemically diverse Mediterranean shrubs, Small Ruminant Research 81, 79-84, Impact factor 1,083.
4. Radić, S., Babić, M., Škobić, D., Roje, V., Pevalek-Kozlina, B. (2010) Ecotoxicological effects of aluminum and zinc on growth and antioxidants in Lemna minor L. Ecotox Environ Safe 73, 336-342, Impact factor 3,130.
5. Rogosic, J., Saric, T., Herceg, N., Zjalic, S., Stanic, S., Skobic, D. (2011) Effect of supplementation with barley and calcium hydroxide on intake of Mediterranean shrubs in goats. Ital J Anim Sci 10, 117-123, Impact factor 0,841.
6. Filipović, A., Poljak, M. and Škobić, D. (2013) Response of Chlorophyll a, SPAD Values and Chlorophyll Fluorescence Parameters in Leaves of Apricot Affected Some Abiotic Factors. J Food Sci Eng 3, 19-24, Impact factor 0,571.
7. Stanić-Koštroman, S., Previšić, A., Planinić, A., Kučinić, M., Škobić, D., Dedić, A. And Durbešić, P. (2015) Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and Mediterranean climates. Int Rev Hydrobiol 100, 79-95, Impact factor 1,459.
8. Saric, T., Rogosic, J., Zupan, I., Beck, R., Bosnic, S. Sikic, Z., Skobic, D., Tkalcic, S. (2015) Anthelmintic effect of three tannin-rich Mediterranean shrubs in naturally infected sheep. Small Ruminant Res 123, 179-182, Impact factor 1,083.
9. Rogosic, J., Ralph, M., Musa, A., Skobic, D., Krvavica, M., Arapovic, M. (2018) Goat preference for phylogenetical diverse compared to similar Mediterranean shrubs. J Mediterr Ecol 16, 5-13
10. Talić, S., Škobić, D., Dedić, A., Nazlić, N., Ujević, I., Ivanković, A., Pavela-Vrančić, M. (2020) The occurrence of lipophilic toxins in shellfish from the Middle Adriatic Sea. Toxicon 186. 19-25

PAPERS WITH INTERNATIONAL REVIEW

1. Skobic, D., Rogosic, J., Stanic-Kostroman, S. and Knezovic, L. (2012) Effects of fennel (Foeniculum vulgare Mill.) on consumption of two Mediterranean Juniperus species by goats. In: Casaus, I., Rogosic, J., Rosati, A., Štoković, I., Gabina, D. (ed.): Animal farming and environmental interactions in the Mediterranean region, 63-66. Wageningen Academic Publishers, Netherlands.
2. Stanić-Koštroman, S., Kučinić, M., Kolobara, A., Škobić, D., Knezović, L. and Durbešić, P. (2012) Light-trapped caddisflies (Insecta:trichoptera) as indicators of the ecological integrity of the Lištica river, Bosnia and Herzegovina. Entomol Croat 16, 21-36
3. Stanić-Koštroman, S., Škobić, D., Dedić, A. (2015) Biološki monitoring na primjeru rijeke Lištice. Suvremena pitanja 19, 94-103.
4. Hafner, D., Dedić, A., Sučić, Ž., Lasić, A., Stanić-Koštroman, S., Škobić, D., Planinić, A. (2015) The composition of lithophytic diatoms in creek Badnje, Masna Luka, Blidinje. International Scientific Symposium Blidinje 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina, 71-87.



5. Hafner, D., Dedić, A., Azinović, A., Lasić, A., Stanić-Koštroman, S., Škobić, D., Knezović, L. (2015) Epiphytic diatoms on Chara sp. In Badnje creek (Mansa Luka), Blidinje, 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina 141-153
6. Stanić-Koštroman, S., Škobić, D., Dedić, A., Šljivić, A., Herceg, N. (2016) Kakvoća vode rijeke Radobolje, Bosna i Hercegovina. Zbornik radova II. međunarodni i VI. hrvatski znanstveno-stručni skup Voda za sve, 18. ožujka 2016. Osijek, Hrvatska, 254-269.
7. Martinović Bevanda, A., Ivanković, A., Talić, S., Batinić, K., Škobić, D., Brkljača, M., Martinović, I., Prusina, T. (2018) Chemometric Classification of White Hercegovinum Wine Žilavka Based on Physical and Chemical Properties. Knjiga radova Znanstveno-stručni skup "130 godina organiziranog vinogradarstva i vinarstva u BiH" 21-22. Rujna, Mostar, BiH
8. Dedić, A., Galić, T., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2018) A biological water quality assessment based on phytobenthos and macroinvertebrates at three stations on the Neretva river. Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ works of the Faculty of Forestry University of Sarajevo 48, No. 2, 41-53.
9. Dedić, A., Stanić-Koštroman, S., Đolo, S., Lasić, A. & Škobić, D. (2019) Preliminary study of trophic relation between diatoms and endemic species *Drusus ramie* Marinković-Gospodnetić (1970) (Insecta: Trichoptera) at the Lištica spring, Bosnia and Herzegovina. In Proceeding ISEM8 October, 2-5
10. Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., Stanić-Koštroman, S. (2019) Kvaliteta vode i ekološki status rijeke Rame. *Suvremena pitanja* 27. 155-168.
11. Dedić, A., Antunović, A., Kamberović, J., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2019) Using diatoms in biological assessment of the water quality on the example of small karstic river in Bosnia and Herzegovina. *Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ Works of the Faculty of Forestry University of Sarajevo*, No. 1, 52-68
12. Dedić, A., Gerhardt, A., Kelly, M.G., Stanić-Koštroman, S., Šiljeg, M., Kalamujić Stroil, B., Kamberović, J., Mateljak, Z., Pešić, V., Vučković, I., Snigirova, A., Bogatova, Y., Barinova, S., Radulović, S., Cvijanović, D., Lasić, A., Škobić, D., Sudar, A., Mrđan, D., Herceg, N. (2020) Innovative methods and approaches for WFD: ideas to fill knowledge gaps in science and policy. *Water Solutions* 3, 30-42.

PARTICIPATION IN CONGRESSES:

1. Škobić, D., Rogosic, J (2004) Effect of biological diversity and interaction of tannins and saponins in herbivore diet. (eds.): The Summaries for International Symposium «Sustainable Utilization of Indigenous Plant and Animal Genetic Resources in the Mediterranean Region» 14th-16th October 2004, Mostar, Bosnia and Herzegovina, 32
2. Stanić-Koštroman, S., Škobić, D. & Durbešić, P. (2007) Composition and trophic structure of macrozoobenthos communities in Radobolja river. In: Bogut, I. (ed.): Proceedings of the International scientific expert symposium-Fish breeding in hydro power reservoirs (hydro accumulations)- management possibility and environmental protection. 24th-26th October 2007, Neum, 353-368
3. Stanić-Koštroman, S., Durbešić, P., Škobić, D. and Knezović, L. (2010) Human activities impact on water quality of the Lištica river, Bosnia and Herzegovina. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 38
4. Knezović, L., Franjević, D., Kalafatić, M., Rajević, N., Škobić, D. (2010) Molecular phylogenetic analyses of the mitochondrial gene sequences of cytochrome oxidase I (COI). The Second International Scientific Symposium "MOLECULAR GENETICS



RESEARCH TODAY AND ITS APPLICATION POSSIBILITIES", October 22, 2010
Tuzla, Bosnia and Herzegovina.

5. Škobić, D., Rogošić, J., Stanić-Koštroman, S. and Knezović, L. (2010) Effect of fennel (*Foeniculum vulgare* Mill.) on consumption of the Mediterranean *Juniperus* species by goats. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 48
6. Saric, T., Rogosic, J., Beck, R., Zupan, I., Zjalic, S., Musa, A. And Skobic, D.(2012) Mediterranean shrub *Pistacia lentiscus* L. As a potential tool in the control of nematodes in sheep. Book of Abstracts of the 63rd Annual Meeting of the European Federation of Animal Science / - Wageningen: Wageningen Academic Publishers, 2012, 109-109
7. Hafner, D., Dedić, A., Azinović, T., Lasić, A., Stanić-Koštroman, S., Škobić, D., Knezović, L. (2015) Epifitske dijatomeje na vrsti *Chara* sp. potoka Badnje (Masna Luka), Blidinje. Međunarodni znanstveni simpozij "Blidinje 2015.," October 9-10 2015. Mostar, Bosna i Hercegovina, 141.
8. Škobić, D., Šljivić, A. (2015) Usporedba fizikalno-kemijskih svojstava krških Rijeka i utjecaj onečišćenja. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem "Zaštita voda u kršu" October 15-16, 2015 Mostar, Bosna i Hercegovina, 65
9. Stanić-Koštroman, S, Herceg, N., Dedić, A., Škobić, D., Lasić, A., Buljubašić, A. (2019) Integralna procjena ekološkog statusa rijeke Lištice. 8th Internatioanal Conference "Water for All", March, 21.-22. 2019. Osijek, Croatia.
10. Gerhard, A., Stanić-Koštroman, S., Dedić, A., Lasić, A., Škobić, D. (2019) Inovativni integralni alati za praćenje onečišćenja u vodenim ekosustavima. Drugi BiH kongres o vodama. November 7-8, 2019. Sarajevo, Bosna i Hercegovina.

PROJECTS:

Participant in projects:

- «Uvođenje održivog sustava gospodarenja planinskim pašnjacima u cilju proizvodnje autohtonih sireva» (2003-2004),
- «Istraživanje ekosustava rijeka Lištice i Radobolje, utjecaji onečišćenja i mjere zaštite» (2005-2007),
- «Potencijalni mehanizmi za bolje korištenje krmnih potencijala primorskih pašnjačko-šumskih sastojina» (2007-2009),
- «Revizija ribolovne osnove za ribolovno područje Središnja Bosna» (2013-2014), «Istraživanje biocenoza i ekološkog statusa Dinarskih tekućica» (2014-2015),
- «Istraživanje ekološkog statusa u svrhu zaštite voda i bioraznolikosti rijeka Lištice i Radobolje» (2015-do 2016.).
- Voditelj istraživačke sektorske studije „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) u sklopu projekta „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“
- «Analiza fitotoksina u školjkašima Srednjeg Jadrana (Neumski zaljev) »(2017-2018)
- «Primjena mjerila zelene javne nabavke u svrhu smanjenja nastanka otpada i promocija» (2020)
- «Afirmiranje usluga ekosustava u svrhu unapređenja održivog turizma Ramskog jezera» (2020)
- «Biološki monitoring površinskih voda na vodnom području Jadranskog mora» (2018-2021)





- Coordinator and project manager:
- Coordinator of the ERASMUS+ project in the field of strengthening the capacity of higher education institutions under the title „Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs.“ (2020-2023)
 - Head of research sector study „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) within the project „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“
- Associate or leader of professional studies:
- „Prirodne znamenitosti Hercegovačko-neretvanske županije“ –head of the study; Udruga „Centar za ekologiju, okoliš i turizam“ (2019)
 - „Opis postojećeg stanja biljnog i životinjskog svijeta pri izradi SUO za regionalnu sanitarnu deponiju Karanovac“ –participant; ECOPLAN (2015).

LIST OF INSTRUCTORS FOR LIFELONG LEARNING COURSES

Name of course	Instructor(s)
Aquatic and semiaquatic macrophytes	Anđelka Lasić, PhD Anita Dedić, PhD
Aquatic macroinvertebrates in bioassessment	Svjetlana Stanić-Koštroman, PhD Dragan Škobić, PhD
Phycology	Anita Dedić, PhD Anđelka Lasić, PhD
GIS and remote sensing in ecomonitoring	Dragan Škobić, PhD, Adriana Planinić, PhD Anita Dedić, PhD
Ichthyology	Ivana Markotić, PhD Svjetlana Stanić-Koštroman, PhD
SERCON- System for evaluating rivers for conservation	Svjetlana Stanić Koštroman, PhD, Dragan Škobić, PhD, Anđelka Lasić, PhD, Anita Dedić, PhD Ivana Markotić, PhD
Field practice in aquatic ecomonitoring	Anita Dedić, PhD, Anđelka Lasić, PhD, Ivana Markotić, PhD





BIOGRAPHY OF INSTRUCTORS OF LIFELONG LEARNING PROFESSIONAL COURSES

Name and surname	Svjetlana Stanić-Koštroman
Subject(s) taught:	Basics of Biology, General Biology, General Zoology, Invertebrates, Applied Entomology, Terrestrial Water Ecology, Biodiversity and Nature Protection in B&H, Environment and Human Health
Institution:	University of Mostar, Faculty of Science and Education
E-mail:	svjetlana.stanic.kostroman@fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Full time teacher
Date of last election to the position:	November, 2020.
Short biography:	<p>Born in Sarajevo on August 21, 1978. She graduated primary and secondary medical school in Kiseljak, after which she passed all levels of higher education in the field of natural sciences. Faculty of Pedagogy, major: Biology-Chemistry, graduated in 2002 in Mostar, and received her doctorate from the Postgraduate Doctoral Study in the field of natural sciences, field of biology at the Faculty of Science and Mathematics of the University of Zagreb, defending her doctoral thesis on March 9, 2009. years.</p> <p>As an author or co-author, she has published over 50 scientific and professional papers, and is the author of three university textbooks. As a manager or associate, she participated in 25 scientific and professional projects in the country and abroad. The scientific and professional description is primarily based on the ecology of waters on land. As a lecturer, he participates in the teaching of undergraduate and graduate studies at the home Faculty of Natural Sciences, Mathematics and Educational Sciences of the University of Mostar, as well as at other organizational units of the University. He is the mentor of several graduation and final theses, as well as two doctoral theses.</p>
Articles and other things that qualify the teacher for teaching:	<p>□ Published university textbooks:</p> <p>Stanić-Koštroman, S., Škobić, D., Bevanda, L. (2019): Opća biologija. Sveučilište u Mostaru</p> <p>Herceg, N., Stanić-Koštroman, S., Šiljeg, M. (2018): Čovjek i okoliš. Sveučilište Sjever, Hrvatska akademija za znanost i umjetnost Bosne i Hercegovine, Synopsis. Koprivnica-Mostar-Zagreb</p> <p>Durbešić, P., Stanić-Koštroman, S., Šerić Jelaska, L. & Bruvo Mađarić, B. (2015): Entomologija – znanost o kukcima, osnovne spoznaje i primjena. Sveučilište u Mostaru. Mostar.</p>



- Published works in the last five years:
- Stanić-Koštroman, S., Kamberović, J., Dmitrović, D., Dedić, A., Škobić, D., Lasić, A., Gligora Udovič, M., Herceg, N. (2021): Ecological characteristics and specifics of spring habitats in Bosnia and Herzegovina. In: Pešić, V., Milošević, Dj. & Miliša, M. (Eds.), *Small Water Bodies of the Western Balkans*. Springer Water (u tisku).
- Vučković, I., Kučinić, M., Čukušić, A., Vuković, M., Čuk, R., Stanić-Koštroman, S., Cerjanec, D., Plantak, M. (2021): Biodiversity, DNA barcoding data and ecological traits of caddisflies (Insecta, Trichoptera) in the catchment area of the Mediterranean karst River Cetina (Croatia). *Ecologica Montenegrina*, 44: 69-95.
- Herceg, N., Vego, J., Stanić-Koštroman, S. (2021): An approach to the development of the Urban Design "Karaotok", Hutovo Blato Nature Park. e-Zbonik: Electronic collection of papers of the Faculty of Civil Engineering, 21: 65-74.
- Dedić, A., Hafner, D., Antunović, A., Kamberović, J., Stanić-Koštroman, S., Kelly, M.G. (2021): Biodiversity and seasonal distribution of benthic diatom assemblages as an indicator of water quality of small karstic river Bunica, Bosnia and Herzegovina. *Acta Botanica Croatica*. *Acta Botanica Croatica*, 8(2).
- Dedić, A., Gerhardt, A., Kelly, M.G., Stanić-Koštroman, S., Šiljeg, M., Kalamujić stroil, B., Kamberović, J., Mateljak, Z., PEŠIĆ, V., Vučković, I., Singirova, A., Bogatova, Y., Barinova, S., Radulović, S., Cvijanović, D., Lasić, A., Škobić, D., Sudar, A., Mrđen, D., Herceg, N. (2020): Innovative methods and approaches for WFD: ideas to fill knowledge gap sin science and policy. *Water Solutions*, 3:30-42.
- Valladolid, M., Kučinić, M., Arauzo, M., Cerjanec, D., Čuk, R., Dorda, B.A., Lodovici, O., Stanić-Koštroman, S., Vučković, I., Rey, I. (2020): The *Rhyacophila fasciata* Group in Croatia and Bosnia & Herzegovina: *Rhyacophila f. fasciata* Hagen, 1859 and the description of two new subspecies, *Rhyacophila fasciata delici* Kucinic & Valladolid (ssp. nov.) from Croatia, and *Rhyacophila fasciata viteceki* Valladolid & Kucinic (ssp. nov.) from Bosnia and Herzegovina (Trichoptera: Rhyacophilidae) *Zootaxa*, 4885:51-75.
- Kučinić, M., Čukušić, A., Žalac, S., Deliđ, A., Cerjanec, D., Podnar, M., Čuk, R., Vučković, I., Previšić, A., Vuković, M., Stanić-Koštroman, S., Bukvić, V., Šalinović, A., Plantak, M. (2020): Springs: DNA barcoding of caddisflies (Insecta, Trichoptera) in Croatia with notes on taxonomy and conservation biology. *Natura Croatica*, 29(1): 73-98.
- Herceg, N., Stanić-Koštroman, S., Buljubašić, A., Dedić, A., Čordaš, D. (2019): Water Policy in the European Union. *Suvremena pitanja*. 14(28): 97-113.
- Dedić, A., Antunović, A., Kamberović, J., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2019): Using diatoms in biological assessment of the water quality on the example of small karstic river in Bosnia and Herzegovina. *Works of the Faculty of Forestry*. 1: 52-68.
- Stanić-Koštroman, S., Herceg, N., Dedić, A., Čordaš, D. (2019): Water protection in the EU: Water Framework Directive – The past, present and future. The 2nd B&H Water Conference, Sarajevo.
- Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., Stanić-Koštroman, S. (2019): Water quality and ecological status of the Rama River. *Suvremena pitanja*. 14(27): 155-168.
- Glamuzina, B., Stanić-Koštroman, S., Matić-Skoko, S., Glamuzina, L., Muhamedagić, S., Rozić, I., Weiss, S., Pavličević, J. (2018): Recent status and life history traits of endangered soft-mouth trout, *Salmo obtusirostris* in the River Neretva catchment (Bosnia and Herzegovina) as a consequence of river alteration. *Applied Ichthyology*, 34(5): 1160-1168.
- Lakić, T., Herceg, N., Stanić-Koštroman, S. (2016): Pollution Management through Environmental Permit - 10 years experience in the Federation of B&H / Upravljanje onečišćenjima okolišnom dozvolom – 10 godina iskustva u Federaciji BiH. *Proceedings*



- of the 27th DAAAM International Symposium, B. Katalinic (Ed.), Published by DAAAM International, ISBN 978-3-902734-08-2, ISSN 1726-9679, Vienna, Austria.
- Herceg, N., Stanić-Koštroman, S., Šljivić, A., Čordaš, D. (2016): EU politika upravljanja vodama – Stanje i perspektive u Bosni i Hercegovini / Water Policy in the European Union – State and Perspectives in Bosnia and Herzegovina. Zbornik radova "Prvog BiH Kongresa o vodama", Sarajevo.
- Stanić-Koštroman, S., Škobić, D., Šljivić, A., Herceg, N. (2016): Kakvoća vode rijeke Radobolje, Bosna i Hercegovina. II. međunarodni i VI. domaći znanstveno-stručni skup "Voda za sve", Osijek.
- Lukić, T., Stanić-Koštroman, S., Herceg, N. (2016): Stanje biološke raznolikosti rijeke Save kroz usporednu analizu utvrđenih vrsta Natura 2000 Republike Hrvatske i Bosne i Hercegovine. II. međunarodni i VI. domaći znanstveno-stručni skup "Voda za sve", Osijek.
- Stanić-Koštroman, S., Previšić, A., Planinić, A., Kučinić, M., Škobić, D., Dedić, A., Durbešić, P. (2015): Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and Mediterranean climates. *International Review of Hydrobiology*. 100(2): 79-95. DOI: 10.1002/iroh.201301631.
- Kučinić, M., Previšić, A., Graf, W., Mihoci, I., Šoufek, M., Stanić-Koštroman, S., Lelo, S., Vitecek, S., Waringer, J. (2015): Larval description of *Drusus bosnicus* Klapalek 1899 (Trichoptera: Limnephilidae), with distributional, molecular and ecological features. *Zootaxa*. 3957(1): 85-97.
- Stanić-Koštroman, S., Škobić, D., Dedić, A. (2015): Biološki monitoring na primjeru rijeke Lištice. *Suvremena pitanja*. 10(19): 94-103.
- Stanić-Koštroman, S., Kučinić, M., Herceg, N., Čordaš, D., Durbešić, P. (2015): Tulari (Insecta, Trichoptera) kao indikatori klimatskih promjena i ekološkog statusa krških vodenih ekosustava. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem: "Zaštita voda u kršu", Mostar.
- Lukić, T., Stanić-Koštroman, S., Herceg, N. (2015): Stanje staništa, flore i faune s osvrtom na vrste u području predloženim kao Natura 2000 u slivu Jadranskog mora Bosne i Hercegovine. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem: "Zaštita voda u kršu", Mostar
- Lukić, T., Herceg, N., Marković, D., Stanić-Koštroman, S., Šljivić, A. (2015): Održivost i položaj Parka prirode Blidinje u nacrtu Natura 2000 područja za Bosnu i Hercegovinu. Međunarodni znanstveni simpozij Blidinje Zbornik radova,
- Lukić, T., Herceg, N., Numić, S., Stanić-Koštroman, S. (2015): Procjena utjecaja na okoliš izgradnje autoputa na Koridoru Vc kroz Bosnu i Hercegovinu s osvrtom na LOT 3 / Dionica Sjever jug (Tarčin) – Mostar sjever/. Druga regionalna konferencija o procjeni utjecaja na okoliš, Novi Vinodolski, Hrvatska.
- Hafner, D., Dedić, A., Sučić, Ž., Lasić, A., Stanić-Koštroman, S., Škobić, D., Planinić, A. (2015): Litofiti potoka Badnje, Masna Luka, Blidinje. Međunarodni znanstveni simpozij Blidinje Bosna i Hercegovina. Zbornik radova.
- Hafner, D., Dedić, A., Azinović, T., Lasić, A., Stanić-Koštroman, S., Škobić, D., Knezović, L. (2015): Epifitske dijatomeje na vrsti *Chara* sp. potoka Badnje (Masna Luka), Blidinje. Međunarodni znanstveni simpozij Blidinje, Zbornik radova.



□□List of projects in the last five years:

- Explore Cross-border Aquatic Biodiversity (EXChA~~ge~~). Interreg IPA Croatia-Bosnia and Herzegovina-Montenegro, 2019HR-BA-ME419. University of Dubrovnik, (2020-2022).
- Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs (ECOBIAS). ERASMUS + program, University of Mostar, (2019-2021).
- Biological monitoring of surface waters in the Adriatic Sea watershed of Federation of Bosnia and Herzegovina. The Adriatic Sea River Basin Agency, Mostar, (2016-2021).
- ILD~~P~~, Integrated Development strategy of the Herzegovina-Neretva Canton (2021-2027), Consultant for Sustainable Environmental Development for HNC
- ILD~~P~~ III, Rural Development Strategy of the Herzegovina-Neretva Canton (2020-2027), Consultant for the Rural Environment and Infrastructure
- SMIRES – Science and Management of Intermittent Rivers & Ephemeral streams. CA15113, MC for Bosnia & Herzegovina, (2017-2020).
- PESCAR – Pesticide Control and Reduction”. Interreg IPA Croatia-Bosnia and Herzegovina-Montenegro, 2017HR-BA-ME277. Ministry of Agriculture, Forestry and Water Management of the Herzegovina-Neretva Canton, (2017-2019).
- Consulting Services for environmental investigations in the Project area of Pump – Storage Hydro Power Plant Vrlo. Sector study team leader: “Characteristics of aquatic ecosystems on land”. KfW – Project No. 9169, (2016-2018).
- Green public procurement measures as a tool for waste reduction and promote sustainable development. Ministry of Trade, Tourism and Environmental Protection of the Herzegovina-Neretva Canton, (2020, Leader of the project).
- Affirmation of the ecosystem services for promoting sustainable tourism of the Rama Lake. Ministry of Trade, Tourism and Environmental Protection of the Herzegovina-Neretva Canton, (2020).
- Water resources conservation in the Herzegovina-Neretva Canton for environment protection, Government of the Herzegovina-Neretva Canton, (2019, Leader of the project).
- Endangerment and protection of the Radobolja River ecosystem. Government of the Herzegovina-Neretva Canton, (2018, Leader of the project).
- Pilot project to raise awareness of the importance of environmental protection, biodiversity conservation and sustainable development. Ministry of Trade, Tourism and Environmental Protection of the Herzegovina-Neretva Canton, (2018, Leader of the project).
- Promoting natural values and ecotourism in the Herzegovina-Neretva Canton. Ministry of Trade, Tourism and Environmental Protection of the Herzegovina-Neretva Canton, (2017, Leader of the project).
- The investigation of the ecological state of the Lištica and Radobolja rivers ecosystems”. Fond for Environment Protection of Federation of Bosnia and Herzegovina, (2015, Leader of the project).
- The explorations of biocenoses and ecological integrity of the Dinaric streams and rivers. Federal Ministry of Education and Science, (2015, Leader of the project).



Name and surname:	Anita Dedić
Subject(s) taught:	<input type="checkbox"/> Algae and fungi <input type="checkbox"/> Practicum in algae and fungi <input type="checkbox"/> Ecology of Protists <input type="checkbox"/> Practicum in protist ecology <input type="checkbox"/> Hydrobiology <input type="checkbox"/> Environment and human health
Institution:	University of Mostar, Faculty of Science and Education
E-mail:	anita.dedic@fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Assistant professor
Date of last election to the position:	April, 2016.



Professional education:

2011- 2015. Faculty of Science and Mathematics, University of Zagreb. Postgraduate doctoral study in biology. Doctor of Science.

2003 - 2008. Faculty of Natural Sciences, Mathematics and Educational Sciences, University of Mostar. Professor of biology and chemistry.

Scientific and teaching professions (last professions):

2016 Assistant Professor (University of Mostar)

2011. Junior assistant (University of Mostar)

Teaching activity:

Supervisor of over 20 graduation and final theses.

Additional teaching activities:

2018 Freshwater Algal Training Course. Durham University, Durham, United Kingdom.

2017. EOQ Environmental Systems Manager - OSKAR d.o.o. Zagreb, Republic of Croatia

Invited lectures:

Algae in Bosnia and Herzegovina. Durham University, United Kingdom. July 2018

Biomonitoring. Danube Water Net Workshop. Energy Institute Hrvoje Požar, Zagreb, Croatia. March, 2019

Articles and other things that qualify the teacher for teaching:

Articles published in the last five years:

- Vári, Á., Podschun, S.A., Erős, T., Hein, T., Pataki, B., Ioja, I., Mihai C., Gerhardt, A.

Letter-head of the University of Mostar, Faculty of Science and Education
 translator's note/



Gruber, T., Dedić, A., Gavrilović, B., Baldi A. Freshwater systems and ecosystem services: Challenges and chances for cross-fertilization of disciplines. *Ambio* (2021) <https://doi.org/10.1007/s13280-021-01556-4>

- Hájek, M., Jiménez-Alfaro, B., Hájek, O., Brancaloni, L., Cantonati, M., Carbognani, M., Dedić, A., Dítě, D., Gerdol, R., Hájková, P., Horsáková, V., Jansen, F., Kamberović, J., Kapfer, J., Kolari, T. H. M., Lamentowicz, M., Lazarević, P., Mašić, E., Moeslund, J. E., Pérez-Haase, A., Peterka, T., Petraglia, A., Pladevall-Izard, E., Plesková, Z., Segadelli, S., Semeniuk, Y., Singh, P., Šimová, A., Šmerdová, E., Tahvanainen, T., Tomaselli, M., Vystavna, Y., Bița-Nicolae, C., and Horsák, M.: A European map of groundwater pH and calcium, *Earth Syst. Sci. Data*, 13, 1089–1105, <https://doi.org/10.5194/essd-13-1089-2021>, 2021.
- Talić, S., Škobić, D., Dedić, A., Nazlić, N., Ujević, I., Ivanković, A., & Pavela- Vrančić, M. (2019). The occurrence of lipophilic toxins in shellfish from the Middle Adriatic Sea. *Toxicon*, 186, 19-25
- Stanić-Koštroman S., Previšić A., Kolobara A., Kučinić M., Škobić D., Dedić A., Durbešić P. (2015): Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna River basins (Bosnia Herzegovina) under temperate and Mediterranean climates. *International Review of Hydrobiology*, 2015.
- Dedić, A., Hafner, D., Antunović, A., Kamberović, J., Stanić-Koštroman, S., & Kelly, M. G. (2021). Biodiversity and seasonal distribution of benthic diatom assemblages as an indicator of water quality of small karstic river in Bosnia and Herzegovina. *Acta Botanica Croatica*, 80(2), 0-0.
- Dedić, A., Gerhardt, A., Kelly, M. G., Stanić-Koštroman, S., Šiljeg, M., Stroil, B. K., Kamberović, J. (2020). Innovative methods and approaches for WFD: ideas to fill knowledge gaps in science and policy. *Water Solution*. Germany.
- Dedić, A., Galić, T., Stanić-Koštroman, S., Škobić, D., Lasić, A., & Hafner, D. (2018). A biological water quality assessment based on phytobenthos and macroinvertebrates at three stations on the river Neretva. *Radovi Šumarskog Fakulteta Univerziteta u Sarajevu*, 48(2), 41-53.
- Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., & Stanić-Koštroman, S. (2018). Kvaliteta vode i ekološki status rijeke Rame. *Suvremena pitanja*, 155.
- Dedić, A., Stanić-Koštroman, S., Đolo, S., Lasić, A., & Škobić, D. (2019, October). Preliminary study of trophic relation between diatoms and endemic species *Drusus ramae* Marinković-Gospodnetić (1970)(Insecta: Trichoptera) at the Lištica spring, Bosnia and Herzegovina. In *The Proceedings* (p. 77).
- Dedić A., Plenković-Moraj A., Kralj Borojević K., Hafner D. (2015): The first report on periphytic diatoms on artificial and natural substrate in karstic spring Bunica, Bosnia and Herzegovina. *Acta botanica Croatica*, 2015.
- Stanić-Koštroman S., Škobić D., Dedić A., Šljivić A., Herceg N. (2016): Water Quality of the Radobolja River, Bosnia and Herzegovina. 2nd International and 6th Croatian Scientific and Professional Conference: Water for All, Book of Abstracts. Proceedings of the Faculty of Food and Technology, Osijek, Croatia. 254 – 270.
- Hafner D., Dedić A., Sučić T., Lasić A., Stanić-Koštroman S., Škobić D., Planinić A. (2015): The composition of litophytic diatoms in creek Badnje, Masna Luka, Blidinje. *International Scientific Symposium Blidinje 2015. Book of Abstracts, Proceedings of the University of Mostar, Bosnia and Herzegovina*, 71 – 87.



Blidinje, 2015. Book of Abstracts, Proceedings of the University of Mostar, Bosnia and Herzegovina 141 – 153.

- Stanić Koštroman S., Škobić D., Dedić A. (2015): Biological monitoring on the example of Lištica River. Contemporary issues 19/2015, 94 - 103
- Dedić A., Hafner D., Jasprica N., Šakić D., Grizelj Z. (2014): Algal composition of two karstic springs in western Herzegovina (Bosnia and Herzegovina). Journal of the National Museum of Bosnia and Herzegovina 34: 41 - 50.
- Kamberović J., Barudanović S., Mašić E., Dedić A. (2014): Marshland vegetation of the order Phragmitetalia on shores of mine pit lakes in north-eastern Bosnia and Herzegovina. BIOLOGICA NYSSANA: 5(1): 1-10.

Participation in scientific and professional conferences in the country and abroad:

- Stanić-Koštroman S., Herceg N., Dedić A., Škobić D., Lasić A., Buljubašić A. (2019) Integral assessment of ecological status of the Lištica river . 8 th International Conference WATER FOR ALL 2019 Faculty of Civil Engineering and Architecture Osijek, Croatia 21-22 March 2019.
- Hafner D., Arapović B., Dedić A. (2016): Diatoms of Rivers Neretva, Cetina and Trebišnjica, Bosnia and Herzegovina. Proceedings of the 5th Croatian Botanical Symposium, Primošten, Croatia.
- Dedić A., Plenković-Moraj A., Kralj Borojević K., Hafner D. (2014): Periphytic diatoms on artificial and natural substrate in karstic spring Bunica, Bosnia and Herzegovina: The first approach. Proceedings of the 8th Central European Diatom Meeting, Zagreb, Croatia.
- Dedić A., Hafner D., Jasprica N., Kamberović J. (2013): Algae on macrophytes in the oligotrophic wetland Hutovo blato, Bosnia and Herzegovina. Proceedings of the 4th Croatian Botanical Symposium with international participation, Split, Croatia.
- Kamberović J., Barudanović S., Dedić A. (2013): Marsh vegetation of the order Phragmitetalia on shores of mine pit lakes in Tuzla Canton, Bosnia and Herzegovina. Proceedings of the 4th Croatian Botanical Symposium with international participation, Split, Croatia.
- Hafner D., Antunović A., Dedić A. (2015): The composition and structure of periphyton diatoms in Bunica river. 2nd Scientific and Expert conference with international participation “Karst Waters Management and Protection”, Faculty of Science and Education at the University of Mostar.
- Šakić D., Dedić A., Hafner D., Grizelj Z. (2015): Algal composition in karstic springs Studenčica river, Bosnia and Herzegovina. 2nd Scientific and Expert conference with international participation - “Karst Waters Management and Protection” Faculty of Science and Education at the University of Mostar.
- Stanić Koštroman S., Škobić D., Dedić A. (2014): Biomonitoring on the example of Lištica river. 1st Scientific and Expert conference with international participation - “Karst Waters Management and Protection“, Faculty of Science and Education, University of Mostar, Bosnia and Herzegovina.

Participation in projects:



- Biological monitoring of surface water of the area of Neretva and Cetina river basins in Federation BIH in 2019. University of Mostar, Bosnia and Herzegovina. Project in progress.
- Biological monitoring of surface water of the area of Neretva and Cetina river basins in Federation BIH in 2016, 2017, 2018. Faculty of Agriculture of the University in Mostar, Bosnia and Herzegovina.
- The Environmental Impact Study of the Pumped Storage Hydro Power Plant Vrilo. 2016. Elektroprivreda HZ HB d.d. Electricity Company in Bosnia and Herzegovina.
- Investigation of the ecological status for the water and biodiversity protection purposes of the Lištica and Radobolja rivers. Faculty of Science and Education, University of Mostar. 2016.
- Investigation of the biocenosa and ecological status of dinars watercourses. Faculty of Science and Education, Mostar. 2015.
- Pilot Project for the Improvement of Education on Environment Protection and Raising Awareness on CO2 Reduction and Energy Efficiency Increasing. Faculty of Science and Education University of Mostar. 2014.
- Revision of fishing-economical basis for fishing area of Central Bosnia Canton in 2013. Faculty of Agriculture of the University in Mostar, Bosnia and Herzegovina.

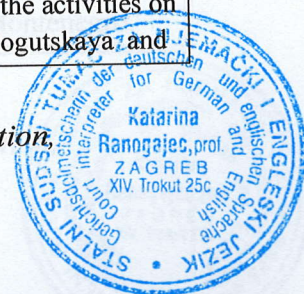


Name and surname	Ivana Markotić
Subject(s) taught:	Chordates Practicum in Chordates Field lessons in chordata Vertebrate Basics of histological techniques Practicum in animal histology and embryology Practicum in animal physiology
Institution:	University of Mostar, Faculty of Science and Education
E-mail:	ivana.markotic@fpmoz.sum.ba
Website:	https://www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Assistant professor
Date of last election to the position:	February 26, 2020

Ivana Markotić, assistant professor, was born on October 15, 1979 in Ljubuški, Bosnia and Herzegovina. She completed her elementary school education at the Tino Ujević Elementary School in Vitina, and the general high school in Ljubuški in 1998. In 2004, she graduated in biology and chemistry at the University of Mostar, Faculty of Education, and obtained the title of professor of biology and chemistry. In the same year, she received a Commendation and Certificate of Appreciation from her home faculty for her success in her studies. From the academic year 2005/2006, is employed at the University of Mostar at the Faculty of Natural, Mathematical and Educational Sciences, first as a researcher in the courses Histology and Embryology of Animals and Animal Physiology, and then as an assistant professor in the field of natural sciences, field of biology, branch of zoology. Conducts and participates in conducting undergraduate and graduate classes at the Study of Biology. She received her doctorate in 2013 at the University of Zagreb, Faculty of Science, defending her doctoral thesis entitled "Biological and ecological characteristics of the cyprinid, Phoxinellus pseudalepidotus Bogutskaya i Zupančić, 2003 (Teleostei: Cyprinidae) in the area of Mostarski blat, Bosnia and Herzegovina" and obtained the academic degree of doctor sciences from the scientific field of natural sciences, the field of biology. Her field of research is the biology and ecology of freshwater fish. He speaks English.

Articles and other things that qualify the teacher for teaching:

Ivana Markotić published one chapter in a book, several scientific papers in international journals, cited in reference databases, and participated in conferences in the country and abroad. The published papers study the problems of ichthyofauna from the left side of the Neretva River, as well as some biological features of the fish *Lepidotrigla dieuzeidei* Blanc and Hureau, 1973, and *Uranoscopus scaber* Linnaeus, 1758 from the South Adriatic. Of particular note are the activities on the study of the endemic Prikanac fish species, *Phoxinellus pseudalepidotus* Bogutskaya and



Zupančič, 2003, distributed in the area of Mostarski Blat, which represent the first contribution to the knowledge of the biology and ecology of this species. Also, the obtained research results represent a basis for taking more effective measures to protect the species, as well as guidelines for continuing research on the species and locality. Asst. Ph.D. Ivana Markotić is employed at the Faculty of Science and Education of the University of Mostar for the purpose of teaching and other forms of teaching, at the Study of Biology with Combinations, on the courses Chordates, Practicum in Chordates, Field teaching from chordates, Vertebrates, Basics of histological techniques, Practicum in animal histology and embryology and Practicum in animal physiology. She was the mentor of 3 graduation, 27 final and 29 seminar theses. She was a member of the Commission for dozens of final and graduate theses for undergraduate and graduate studies in biology and environmental science. In the academic year 2019/2020 was a member of the Committee for the recognition of exams for the Study of Biology of the FPMOZ. She participated in the workshop "Responsible research and innovation: a workshop for teachers and staff" organized by the University of Split on March 16, 2018 as part of the OBZORA 2020 Higher Education Institutions & Responsible Research and Innovation project. Venue: University of Mostar. Workshop leader: prof. Ph.D. Ana Marušić. She participated in the workshop "ABC teaching design workshop" at the Faculty of Philosophy of the University of Mostar. Workshop leader: Sandra Kučina Softić, B.Sc. ing., assistant director for education and user support, University Computing Center, University of Zagreb. She participated in English language education (Advanced level, level B1-B2) during April, May and June 2018, organized by the University of Mostar for its employees, as part of staff training and development and quality management. Asst. Ph.D. Ivana Markotić is a member of the project team of the Faculty of Natural Sciences, Mathematics and Educational Sciences of the University of Mostar on the Erasmus+ project "Development of master curriculum in ecological monitoring and aquatic bioassessment for WEB HEIs". Likewise, since the academic year 2013/2014, as an associate, she has been participating in the Open Days of the Study of Biology at the Faculty of Science and Education of the University of Mostar.

Parts of the biography:

Markotić, I., Mihaljević, Z., Čaleta, M. & Glamuzina, B. (2019) Feeding Ecology of the Endemic Phoxinellus pseudalepidotus (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). European International Journal of Science and Technology, 8(8), 5-14.

Ivana Markotić, Marko Čaleta, Branko Glamuzina (2018) Length-Weight Relationship and Condition Factor of Endemic Fish Phoxinellus pseudalepidotus (Cyprinidae) from

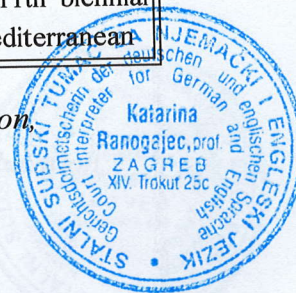
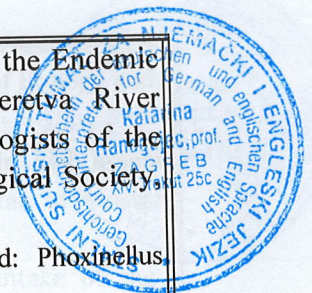
Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). European International Journal of Science and Technology, 7(9), 44-53.

Ivana Markotić, Marko Čaleta, Branko Glamuzina (2017) Age Structure of the Endemic Fish Phoxinellus pseudalepidotus (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). European International Journal of Science and Technology, 6(5), 50-56.

Ivana Markotić, Marko Čaleta, Branko Glamuzina (2017) Length-Weight Relationship and Condition Factor of Endemic Fish Phoxinellus pseudalepidotus (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). In, Book of Abstracts and Programme, 7th International Symposium of Ecologists of Montenegro – ISEM7, Vladimir Pešić and Sead Hadžiablahović (eds.), Institute for Biodiversity and Ecology, Podgorica, 93-93. 4-7 October 2017. Sutomore, Montenegro.



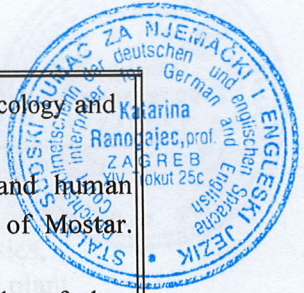
- Ivana Markotić, Marko Čaleta, Branko Glamuzina (2016) Age Structure of the Endemic Fish *Phoxinellus pseudalepidotus* (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). In, Abstract Book, V Congress of Ecologists of the Republic of Macedonia with International Participation, Macedonian Ecological Society, Skopje, 37-37. Ohrid, Macedonia 19th – 22nd October 2016.
- Mihinjač, T., Markotić, I., Čaleta, M. (2014) Threatened fishes of the world: *Phoxinellus pseudalepidotus*. Croatian Journal of Fisheries, 72, 178-180.
- Markotić, I., Bartulović, V., Dobrosravić, T., Sulić Šprem, J., Glamuzina B. (2013) Dužinski sastav populacije prikanca (*Phoxinellus pseudalepidotus* Bogutskaya i Zupančić, 2003) na području Mostarskog blata (Bosna i Hercegovina). U, Zbornik radova 48. hrvatskog i 8. međunarodnog simpozija agronoma, Marić S. i Lončarić Z. (ur.), Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, 647-651. 17. - 22. veljače 2013. Dubrovnik, Hrvatska.
- Markotić, I., Mihaljević, Z., Bartulović, V., Dobrosravić, T., Sulić Šprem, J., Glamuzina, B. (2013) Sezonska ishrana prikanca (*Phoxinellus pseudalepidotus* Bogutskaya i Zupančić, 2003) na području Mostarskog blata (Bosna i Hercegovina). U, Zbornik radova 48. hrvatskog i 8. međunarodnog simpozija agronoma, Marić S. i Lončarić Z. (ur.), Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, 652-656. 17. - 22. veljače 2013. Dubrovnik, Hrvatska.
- Dobrosravić, T., Sulić Šprem, J., Markotić, I., Bartulović, V., Kožul, V., Glamuzina, B. (2013) Dužinsko-maseni odnos kokotića (*Lepidotrigla dieuzeidei* Blanc & Hureau, 1973) u južnom Jadranu. U, Zbornik radova 48. hrvatskog i 8. međunarodnog simpozija agronoma, Marić S. i Lončarić Z. (ur.), Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, 624-628. 17. – 22. veljače 2013. Dubrovnik, Hrvatska.
- Sulić Šprem, J., Dobrosravić, T., Markotić, I., Kožul, V., Bartulović, V., Glamuzina, B. (2013) Dužinsko-maseni odnos bežmeka (*Uranoscopus scaber* Linnaeus, 1758) u južnom Jadranu. U, Zbornik radova 48. hrvatskog i 8. međunarodnog simpozija agronoma, Marić S. i Lončarić Z. (ur.), Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, 642-646. 17. 22. veljače 2013. Dubrovnik, Hrvatska.
- Markotić, I., Čaleta, M., Mrakovčić, M., Glamuzina, B. (2013) The weight structure of *Phoxinellus pseudalepidotus* (Cyprinidae) from the Mostarsko blato (Neretva River basin, Bosnia and Herzegovina). In, Book of proceedings [Elektronski izvor] / Fourth International Scientific Symposium „Agrosym 2013“ Dušan Kovačević (ed.), 988-993. 10.7251/AGSY1303988M. Jahorina, October 3-6, 2013.
- Markotić, I. (2013) Biological and ecological characteristics of Mostar minnow, *Phoxinellus pseudalepidotus* Bogutskaya & Zupančić, 2003 (Teleostei: Cyprinidae) from Mostarsko blato, Bosnia and Herzegovina. Doctoral thesis. Department of Biology, Faculty of Science, University of Zagreb, 112 pp.
- Markotić, I., Bartulović, V., Glamuzina, B. (2012) Sex ratio of *Phoxinellus pseudalepidotus* Bogutskaya & Zupančić 2003 (Teleostei: Cyprinidae), from Mostarsko Blato area. In, Animal farming and Environmental interactions in the Mediterranean region, Casasús I., Rogošić J., Rosati A., Štoković I., Gabiřna D. (eds.), EAAP publication No. 131, Wageningen Academic Publishers, Wageningen, 201-204.
- Markotić, I., Bartulović, V., Glamuzina, B. (2010) Sex ratio of *Phoxinellus pseudalepidotus* Bogutskaya and Zupančić 2003, from Mostarsko blato area. In, Book of Abstract, 11th biennial Mediterranean Symposium on „Animal Farming and Environment Interactions in Mediterranean



Regions“, Rogošić J., Rosati A., Gabiña D. (eds.), University of Zadar, Department of Ecology and Agronomy, 65-65. October 27-29, 2010, Zadar, Croatia.

Markotić, I. (2005) Course „ Environment and Humans Populations: Lyfe Style and human adaptatons in the Circum Mediterranean Area“. International University Centar of Mostar. Mostar, Bosnia and Herzegovina.

Markotić, I., Rogošić, J. (2004) The Effect of Polyethylene Glicol on Forage Intake of the Mediterranean Shrubs by Sheep and Goats. In, Book of Abstracts, 1st International Symposium „Sustainable Utilization of the Indigenous Plant and Animal Genetic Resources in the Mediterranean Region“, Jakov Pehar (ed.), University of Mostar, Faculty of Agronomy, Faculty of Teaching Science and Institute of Agronomy, 40-40. Mostar, Bosnia and Herzegovina, 14-16 October 2004.



Email:	mdjelka.bastoj@fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic Degree:	PhD
Title:	Assistant professor
Date of last election to the position:	May, 2018
Short biography:	

She was born on October 22, 1980 in Kiseljak (Bosnia and Herzegovina), where she graduated elementary and then secondary medical school. She studied biology and chemistry at the Faculty of Pedagogy of the University of Mostar (today the Faculty of Science and Education). She graduated in 2004, defending her thesis entitled "Urban flora in Mostar" (supervised by Prof. Nenad Jasprica, Ph.D.), and earned the title of professor of biology and chemistry.

He enrolled in postgraduate doctoral studies in 2006 (academic 2005/2006) at the Faculty of Science of the University of Zagreb, field of natural sciences, field of biology, major in ecology. She defended her doctoral dissertation entitled: Ecological characteristics of plant communities in the karst rivers Trobižat and Lisica (Bosnia and Herzegovina) on December 27, 2011 (mentor Prof. Nenad Jasprica, Ph.D.).

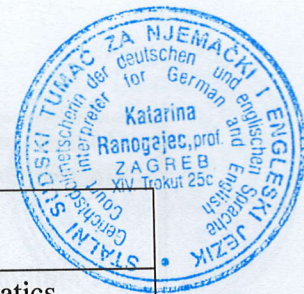
Since 2005, she has been employed at the Faculty of Science and Education of the University of Mostar as a junior assistant, and in 2012 she was appointed to the position of assistant professor.

The field of scientific interest is the systematics and ecology of plants. She is the author of several scientific papers and participated in the work of several domestic and international scientific meetings and workshops.

Articles published in the last five years:

Articles in international peer-reviewed journals:





Name and surname	Andelka Lasić
Subject(s) taught:	Plant Systematics, Practicum in Plant Systematics, Biogeography, , Plant ecology, Geobotany and plant ecology, Vegetation ecology, Biodiversity and nature protection in B&H., Flora and vegetation of inland waters, Field teaching in Plant systematics, Field teaching in Geobotany and plant ecology, Field teaching in ecology.
Institution:	University of Mostar, Faculty of Science and Education
E-mail:	andjelka.lasic@ fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Assistant professor
Date of last election to the position:	May, 2018.
Short biography:	<p>She was born on October 22, 1980 in Kiseljak (Bosnia and Herzegovina), where she graduated elementary and then secondary medical school. She studied biology and chemistry at the Faculty of Pedagogy of the University of Mostar (today the Faculty of Science and Education). She graduated in 2004, defending her thesis entitled "Urban flora in Mostar" (supervised by Prof. Nenad Jasprica, Ph.D.), and earned the title of professor of biology and chemistry.</p> <p>He enrolled in postgraduate doctoral studies in 2006 (academic 2005/2006) at the Faculty of Science of the University of Zagreb, field of natural sciences, field of biology, major in ecology. She defended her doctoral dissertation entitled: Ecological characteristics of plant communities in the karst rivers Trebižat and Lištica (Bosnia and Herzegovina) on September 27, 2011 (mentor Prof. Nenad Jasprica, Ph.D.).</p> <p>Since 2005, she has been employed at the Faculty of Science and Education of the University of Mostar as a junior assistant, and in 2012 she was appointed to the position of assistant professor at</p> <p>The field of scientific interest is the systematics and ecology of plants. She is the author of several scientific papers and participated in the work of several domestic and international scientific meetings and workshops.</p>
Articles published in the last five years:	
Articles in international peer-reviewed journals:	



Jasprica, N., Milović, M., Dolina, K., & Lasić, A., 2017. Analyses of the flora of railway stations in the Mediterranean and sub-Mediterranean areas of Croatia and Bosnia and Herzegovina. *Natura Croatica: Periodicum Musei Historiae Naturalis Croatici*, 26(2), 271-303.

Jasprica, N., Lasić, A., Hafner, D., & Bratoš Cetinić, A., 2017. Myriophyllum heterophyllum Michx.(Haloragaceae) u Hrvatskoj. *Natura Croatica: Periodicum Musei Historiae Naturalis Croatici*, 26(1), 99-103.

Lasić, A. and Jasprica, N., 2016. Vegetation diversity of the two Dinaric karstic rivers in Bosnia and Herzegovina. *Biologia*, 71(7), pp.777-792.

Lasić, A., Jasprica, N., Morović, M., Kapetanović, T., Carić, M., Drešković, N., Glavić, N., Mitić, B., 2014. Ecological characteristics of plant species and associations along two Dinaric karstic rivers (Bosnia and Herzegovina, The Balkans). *Biologia, Bratislava* 69/1, 40-52.

Čališ, J., Lasić, A., 2015. Floristički sastav mezofilne livade košanice na području Rame. *Znanstveni glasnik Sveučilišta u Mostaru*.

Lasić, A., Jasprica, N., 2015. Vaskularna flora u krškim rijekama Trebižatu I Lištici (Bosna i Hercegovina). *Zbornik radova 2. Znanstveno-stručne konferencije s međunarodnim sudjelovanjem "Zaštita voda u kršu"*. Fakultet prirodoslovno-matematičkih i odgojnih znanosti, Sveučilište u Mostaru. 108-118.

Hafner, D.; Dedić, A.; Sučić, Ž.; Lasić, A.; Stanić-Koštroman, S.; Škobić, D.; Planinić, A., (2015) Litofiti potoka Badnje, Masna luka, *Zbornik radova simpozija BLIDINJE 2015*. 71-87

Hafner, D.; Dedić, A.; Azinović, T.; Lasić, A.; Stanić-Koštroman, S., Škobić, D.; Knezović, L., 2015. Epifitske dijatomeje na vrsti Chara sp. Potoka Badnje (Masna luka), *Zbornik radova simpozija BLIDINJE 2015*. 141-153

Participation in congresses:

Stanić-Koštroman, S, Herceg, N., Dedić, A., Škobić, D., Lasić, A., Buljubašić, A., 2019. Integralna procjena ekološkog statusa rijeke Lištice. *Book of Abstracts of the 8th International conference Water for all*, Habuda-Stanić, M. (ed.), Josip Juraj Strossmayer, University of Osijek, 21. – 22. 3. 2019., 45-46.

Ruščić, M., Perak, M., Lasić, A., 2018. Flora of island Drvenik mali. *Book of abstract of the 13th Croatian Biological Congress with International Participation*, Kružić, R., Caput Mihalić, K., Gottstein, S., Pavoković, D., Kućinić, M. (ed), Croatian Biological Society, 19. – 23. 09. 2018., 261 – 262.

Jasprica, N., Lasić, A., Hafner, D., & Cetinić, A. B., 2017. January. Myriophyllum heterophyllum Michx.(Haloragaceae) in Croatian submersed macrophyte communities. *In 2nd Symposium on Freshwater Biology. Book of Abstracts of the Second Symposium on Freshwater Biology.* / Gračan, R., Matonić, R., Kepčija, R., Miliša, M., Ostojić, A. (ur.). – Zagreb: Croatian Association of Freshwater Ecologist, Zagreb, 2017. 42-42.

Lasić, A., Jasprica, N., 2015. Plant associations of the Potametea pectinati Klika in Klika & Novák 1941 class of two karstic rivers in Bosnia and Herzegovina. *Book of Abstract of the 36th Meeting of the Eastern Alpine and Dinaric Society for Vegetation Ecology*, Škvorc, Ž., Franjić, J., Krstonošić, D. (ur.), Osijek, Hrvatska, 17.-20. 6. 2015. 40-40.

Jasprica, N., Milović, M., Lasić, A., Dolina, K., 2014. Flora and vegetation of the railway areas in Croatia and Bosnia and Herzegovina. *Book of Abstracts of the First Croatian Symposium on Invasive Species with International Participation*, Jelaska, S. (ed.), Croatian Ecological Society, Zagreb, Croatia, 24.11.2014., 57-58.

Lasić, A., Jasprica, N., 2014. Non-native plants in the Populetalia albae Braun-



Blanquet ex Tchou 1948 communities along the Neretva River in Bosnia and Herzegovina and Croatia. Book of Abstracts of the First Croatian Symposium on Invasive Species with International Participation, Jelaska, S. (ed.), Croatian Ecological Society, Zagreb, Croatia, 24.11.2014., 33- 34.

Other things that qualify the teacher for teaching

Participation in projects:

1. Living Neretva project (phase II and III) 2008/2009, WWF MedPO (World Wildlife Fund)
2. Biological monitoring of surface waters in the catchment area of the river Neretva and Cetina in the Federation of BiH 2010, Agency for Water Area of the Adriatic Sea in the Federation BiH
3. The pilot project for the improvement of environmental education and awareness on reducing CO₂ emissions and increasing energy efficiency 2014/2015. Environmental Protection Fund HNŽ
4. Investigations of ecological status for the purposes of water protection and biodiversity of ecosystems for rivers Lištica and Radobolja 2015 – 2017, Environmental Protection Fund FBiH
5. Consulting Services for Environmental Investigations in the Project area of Pump- Storage Hydro Power Plant Vrilo 2016 -2019, EP HZHB
6. Biological monitoring of surface waters in the catchment area of the river Neretva and Cetina in the Federation of BiH 2018, Agency for Water Area of the Adriatic Sea in the Federation BiH





Name and surname	Adriana Planinić
Subject(s) taught:	Animal ecology and zoogeography, Practicum in animal ecology and zoogeography, Biogeography, Ecology of urban ecosystems, Creating an entomological collection
Institution:	University of Mostar, Faculty of Science and Education
E-mail:	adriana.planinic@fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Assistant professor
Date of last election to the position:	July, 2018.

Born in Mostar in 1986, where she completed primary, secondary and college education. In 2010, the Faculty of Sciences and Education, where she obtained her master's degree in Biology and Geography, became her place of permanent employment. With great love, he performs laboratory and field exercises from the fields of General Zoology and Invertebrates. Her education continues with enrollment in a doctoral study in biology at the Faculty of Science of the University of Zagreb, where she obtained the title of Doctor of Science in 2017 with the topic "Faunistic and ecological characterization of the community of planktonic crustaceans (Copepoda and Cladocera) in spring and lake habitats of the lower reaches of the Neretva River". Through his work at the University of Mostar, he is particularly dedicated to the quality of teaching and work on himself in order to effectively transfer knowledge to students. Using the ERASMUS + and CEEPUS networks, she achieved three teaching mobilities at European universities in Slovakia, the Czech Republic and Poland. At the University of Vienna, she completed her professional training as a postdoctoral fellow within the syllabus Biology of branchiopods (Cladocerans) of Europe in the academic year 2020/2021. year. She is a member of the World Society for Urban Ecology (SURE).

She is married and the mother of two girls.

Articles and other things that qualify the teacher for teaching:

Projects:

ECOBIAS- Development of Master curricula in ecological monitoring and aquatic bioassessment for WEB-HEI-s. Erasmus + Joint Projects-EU grant 2019-2022.

Biological monitoring of surface waters in the Adriatic Sea water area in the FBiH. Agency for the Adriatic Sea Water Area, FBiH 2016-2019.

Lifelong learning for sustainable agriculture in the Alpe-Danube-Adriatic region. Teacher training at UHOH- University of Hohenheim. 2015.

Faunistic and ecological characterization of microcrustacean communities (Copepoda and Cladocera) of the River Neretva basin. Federal Ministry of Education. 2012.

International cooperation:

ERASMUS + Teaching Mobility. Faculty of natural Sciences, department of Biology, Matej Bel University, Slovakia. October 2019.

CEEPUS CIII-CZ-0111-14-1920-GEOREGNET- Department of Social Geography and Regional development, Charles university, Prague. November 2019.



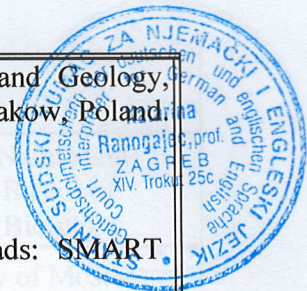
CEEPUS CIII-CZ-0111-14-1920-GEOREGNET- Faculty of Geography and Geology, Institute of Geography and Spatial management, Jagiellonian University, Krakow, Poland, January 2020.

Congresses:

- ECOSMART 2019. International Conference Environment at CrossRoads: SMART, approaches for sustainable future. Bucharest 5-8.9.2019.
- First Croatian Congress on Light Pollution 2019. Rab, Croatia.
- Second Scientific and Expert Conference with international participation Karst Water management and Protection. 2014. Mostar, BiH
- 12. Croatian Biology Congress in Šibenik. 2012. Croatia.

Radovi:

- Planinić, A., Marušić, O., Bevanda, L. 2019. Artificial light and animal ecology. First Croatian Congress on Light pollution. Rab. Croatia.
- Stanić-Koštroman, S., Previšić, A., Planinić, A. et al. 2015. Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and Mediterranean climate. International Review of Hydrobiology. 100(2):79-95
- Knezović, L., Miliša, M., Kalafatić, M., Rajević, N., Planinić, A. 2015. A key to the freshwater triclads (Platyhelminthes, Tricladida) of Herzegovina watercourse. Periodicum biologorum. 117(3) 425:433



... enrolled in postgraduate studies at the Department of Biology, Faculty of Science and Education, University of Mostar, Mostar, Bosnia and Herzegovina, where he successfully passed all exams with an average grade of 5.0 and defended his paper entitled "Effect of zinc and aluminum ions on the growth of water lily (Nymphaea alba L.)" under the guidance of prof. Ph.D. Sc. Jozo Rogosic-Kozina. In 2012, he successfully defended his doctoral dissertation entitled "The role of plant secondary metabolites in the biotic relationships between plants and animals" under the guidance of prof. Ph.D. Jozo Rogosic at the Faculty of Science and Education of the University of Mostar.

SCIENTIFIC ARTICLES

- Rogosic, J., Estell, R.E., Skabic, D., Maric, S. and Martinovic, A. (2006). Role of species diversity and secondary compounds complementarity on diet selection of Mediterranean shrubs by goats. Journal of Chemical Ecology 32: 1279-1287. Impact Factor 3,151
- Rogosic, J., Estell, R.E., Skabic, D., and Maric, S. (2007) Influence



Name and surname	Dragan Škobić
Subject(s) taught:	General botany, Plant physiology, Basics of Nature and Environmental Protection, General Ecology Basics of Ecology and the Environment, Conservation Biology
Institution:	Faculty of Science and Education, University of Mostar
E-mail:	dragan.skobic@fpmoz.sum.ba
Website:	www.fpmoz.sum.ba
Academic degree:	PhD
Title:	Associate Professor
Date of last election to the position:	October 2020.

Short biography:

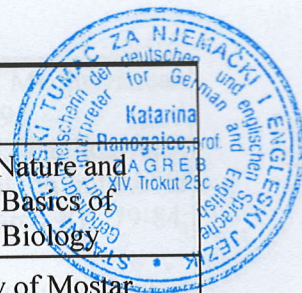
Short biography:
 Dragan Škobić was born in 21st of October 1971, Mostar. He graduated primary and secondary school in Mostar. In 1995, he get started the Faculty of Education of the University of Mostar, majoring in biology and chemistry, where he successfully defended his graduation thesis on the topic "Analysis of crystals and particles of virus isolate from grapevine (*Vitis vinifera* L.)" under the guidance of Ph.D. Mladena Krajačić and earned the title of professor of biology and chemistry. In 2002, he enrolled in postgraduate studies at the Department of Biology, Faculty of Science, University of Zagreb, majoring in ecology, where he successfully passed all exams with an average grade of 5.0 and defended his paper entitled "Effect of zinc and aluminum sulfate on the growth of water lentil (*Lemna minor* L.)" under the guidance of prof. Ph.D.Sc. Branka Pevalek-Kozlina. In 2012, he successfully defended his doctoral dissertation entitled "The role of plant secondary metabolites in the biotic relationships between plants and animals" under the guidance of prof. Ph.D. Joze Rogošić at the Faculty of Sciences and Education of the University of Mostar.

Since 2001, he has been employed as a junior. assistant at the Faculty of Pedagogy, biology and chemistry department, and since 2006 at the Faculty of Sciences and Education, biology study group. Participated in practical classes from the courses Plant Physiology and General Botany. He is the co-author of several scientific papers, in English, in journals cited by "Current Contents" and has participated in several scientific meetings and presentations in English. He was involved in the organization of classes as a secretary at the biology department from 2003 to 2006, and participated and worked in the creation and organization of a new course as a secretary at the Environmental Science department from 2006 to 2012. From 2013 to 2017, he led the Environmental Science department as head, and after that he is the head of the biology study group until today.

Articles and other things that qualify the teacher for teaching:

CC ARTICLES

1. Rogosic, J., Estell, R.E., Skobic, D., Maric, S, and Martinovic, A. (2006). Role of species diversity and secondary compounds complementarity on diet selection of Mediterranean shrubs by goats. *Journal of Chemical Ecology* 32, 1279-1287, Impact factor 3,151
2. Rogosic, J., Estell, R.E., Skobic, D., and Stanic, S. (2007)Influence of secondary



- compound complementarity and species diversity on consumption of Mediterranean shrubs by sheep. *Appl. Anim. Behav. Sci.* 107, 58-65, Impact factor 1,795.
3. Rogosic, J., Moe, S.R., Skobic, D., Knezovic, Z. Rozic, I., Zivkovic, M., Pavlicevic, J. (2009) Effect of supplementation with barley and activated charcoal on intake of biochemically diverse Mediterranean shrubs, *Small Ruminant Research* 81, 79-84, Impact factor 1,083.
 4. Radić, S., Babić, M., Škobić, D., Roje, V., Pevalek-Kozlina, B. (2010) Ecotoxicological effects of aluminum and zinc on growth and antioxidants in *Lemna minor* L. *Ecotox Environ Safe* 73, 336-342, Impact factor 3,130.
 5. Rogosic, J., Saric, T., Herceg, N., Zjalic, S., Stanic, S., Skobic, D. (2011) Effect of supplementation with barley and calcium hydroxide on intake of Mediterranean shrubs in goats. *Ital J Anim Sci* 10, 117-123, Impact factor 0,841.
 6. Filipović, A., Poljak, M. and Škobić, D. (2013) Response of Chlorophyll a, SPAD Values and Chlorophyll Fluorescence Parameters in Leaves of Apricot Affected Some Abiotic Factors. *J Food Sci Eng* 3, 19-24, Impact factor 0,571.
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PAPERS WITH INTERNATIONAL REVIEW

1. Skobic, D., Rogosic, J., Stanic-Kostroman, S. and Knezovic, L. (2012) Effects of fennel (*Foeniculum vulgare* Mill.) on consumption of two Mediterranean *Juniperus* species by goats. In: Casarus, I., Rogosic, J., Rosati, A., Štoković, I., Gabina, D. (ed.): *Animal farming and environmental interactions in the Mediterranean region*, 63-66. Wageningen Academic Publishers, Netherlands.
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3. Stanić-Koštroman, S., Škobić, D., Dedić, A. (2015) Biološki monitoring na primjeru rijeke Lištice. *Suvremena pitanja* 19, 94-103.
4. Hafner, D., Dedić, A., Sučić, Ž., Lasić, A., Stanić-Koštroman, S., Škobić, D., Planinić, A. (2015) The composition of lithophytic diatoms in creek Badnje, Masna Luka, Blidinje. *International Scientific Symposium Blidinje 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina*, 71-87.
5. Hafner, D., Dedić, A., Azinović, A., Lasić, A., Stanić-Koštroman, S., Škobić, D., Knezović, L. (2015) Epiphytic diatoms on *Chara* sp. In *Badnje creek (Mansa Luka), Blidinje, 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina* 141-153



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8. Dedić, A., Galić, T., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2018) A biological water quality assessment based on phytobenthos and macroinvertebrates at three stations on the Neretva river. Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ works of the Faculty of Forestry University of Sarajevo 48, No. 2, 41-53.
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10. Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., Stanić-Koštroman, S. (2019) Kvaliteta vode i ekološki status rijeke Rame. *Suvremena pitanja* 27. 155-168.
11. Dedić, A., Antunović, A., Kamberović, J., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2019) Using diatoms in biological assessment of the water quality on the example of small karstic river in Bosnia and Herzegovina. *Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ Works of the Faculty of Forestry University of Sarajevo*, No. 1, 52-68
12. Dedić, A., Gerhardt, A., Kelly, M.G., Stanić-Koštroman, S., Šiljeg, M., Kalamujić Stroil, B., Kamberović, J., Mateljak, Z., Pešić, V., Vučković, I., Snigirova, A., Bogatova, Y., Barinova, S., Radulović, S., Cvijanović, D., Lasić, A., Škobić, D., Sudar, A., Mrđan, D., Herceg, N. (2020) Innovative methods and approaches for WFD: ideas to fill knowledge gaps in science and polica. *Water Solutions* 3, 30-42.

PARTICIPATION IN CONGRESSES:

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2. Stanić-Koštroman, S., Škobić, D. & Durbešić, P. (2007) Composition and trophic structure of macrozoobenthos communities in Radobolja river. In: Bogut, I. (ed.): Proceedings of the International scientific expert symposium-Fish breeding in hydro power reservoirs (hydro accumulations)- management possibility and environmental protection. 24th-26th Octobre 2007, Neum, 353-368
3. Stanić-Koštroman, S., Durbešić, P., Škobić, D. and Knezović, L. (2010) Human activities impact on water quality of the Lištica river, Bosnia and Herzegovina. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 38
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5. Škobić, D., Rogošić, J., Stanić-Koštroman, S. and Knezović, L. (2010) Effect of fennel (*Foeniculum vulgare* Mill.) on consumption of the Mediterranean Juniperus



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6. Saric, T., Rogosic, J., Beck, R., Zupan, I., Zjalic, S., Musa, A. And Skobic, D. (2012) Mediterranean shrub Pistacia lentiscus L. As a potential tool in the control of nematodes in sheep. Book of Abstracts of the 63rd Annual Meeting of the European Federation of Animal Science / - Wageningen: Wageningen Academic Publishers, 2012, 109-109
7. Hafner, D., Dedić, A., Azinović, T., Lasić, A., Stanić-Koštroman, S., Škobić, D., Knezović, L. (2015) Epifitske dijatomeje na vrsti Chara sp. potoka Badnje (Masna Luka), Blidinje. Međunarodni znanstveni simpozij "Blidinje 2015.," Listopad 9.-10. 2015. Mostar, Bosna i Hercegovina, 141.
8. Škobić, D., Šljivić, A. (2015) Usporedba fizikalno-kemijskih svojstava krških Rijeka i utjecaj onečišćenja. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem "Zaštita voda u kršu" Listopad, 15.-16. 2015 Mostar, Bosna i Hercegovina, 65
9. Stanić-Koštroman, S, Herceg, N., Dedić, A., Škobić, D., Lasić, A., Buljubašić, A. (2019) Integralna procjena ekološkog statusa rijeke Lištice. 8th Internatioanal Conference "Water for All", March, 21.-22. 2019. Osijek, Croatia.
10. Gerhard, A., Stanić-Koštroman, S., Dedić, A., Lasić, A., Škobić, D. (2019) Inovativni integralni alati za praćenje onečišćenja u vodenim ekosustavima. Drugi BiH kongres o vodama. Studeni, 7.-8. 2019. Sarajevo, Bosna i Hercegovina.

Participant in projects:

- «Uvođenje održivog sustava gospodarenja planinskim pašnjacima u cilju proizvodnje autohtonih sireva» (2003-2004),
- «Istraživanje ekosustava rijeka Lištice i Radobolje, utjecaji onečišćenja i mjere zaštite» (2005-2007),
- «Potencijalni mehanizmi za bolje korištenje krmnih potencijala primorskih pašnjačko-šumskih sastojina» (2007-2009),
- «Revizija ribolovne osnove za ribolovno područje Središnja Bosna» (2013-2014), «Istraživanje biocenoza i ekološkog statusa Dinarskih tekućica» (2014-2015),
- «Istraživanje ekološkog statusa u svrhu zaštite voda i bioraznolikosti rijeka Lištice i Radobolje» (2015-do 2016.).
- Voditelj istraživačke sektorske studije „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) u sklopu projekta „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“
- «Analiza fitotoksina u školjkašima Srednjeg Jadrana (Neumski zaljev) »(2017-2018)
- «Primjena mjerila zelene javne nabavke u svrhu smanjenja nastanka otpada i promocija» (2020)
- «Afirmiranje usluga ekosustava u svrhu unapređenja održivog turizma Ramskog jezera» (2020)
- «Biološki monitoring površinskih voda na vodnom području Jadranskog mora» (2018-2021)

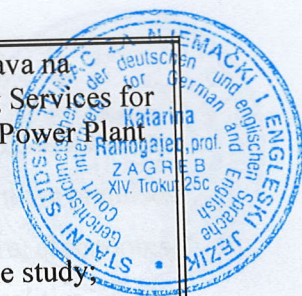
Coordinator and project manager:

- Coordinator of the ERASMUS+ project in the field of strengthening the capacity of higher education institutions under the title „Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs.“(2020-2023)

- Head of research sector study „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) within the project „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“

Associate or leader of professional studies:

- „Prirodne znamenitosti Hercegovačko-neretvanske županije“ –head of the study; Udruga „Centar za ekologiju, okoliš i turizam“ (2019)
- „Opis postojećeg stanja biljnog i životinjskog svijeta pri izradi SUO za regionalnu sanitarnu deponiju Karanovac“ –participant; ECOPLAN (2015).



All activities will be implemented in accordance with the Work Plan presented in information lists for each individual course. Study materials and field protocols are prepared by the program countries and translated into our language by experts from partner countries. Written textbooks were reviewed by independent experts. Learning materials will be published online so that they are also accessible and course participants and teachers from other institutions of higher education from the Western Balkans countries.

SPACE AND MATERIAL REQUIREMENTS FOR COURSES

As part of the realization of the ECOBIAS project, work is being done to equip the laboratory, which includes equipment for ecological monitoring of water, whereby the existing equipment is supplemented and new equipment is acquired, with the aim of performing a sophisticated analysis of biological water monitoring. Also within the framework of the ECOBIAS project, the equipment needed for field research is part of courses in the field of ecological monitoring will be supplemented.

REGISTRATION CONDITIONS

The program can be followed by participants with at least completed basic studies in the fields of biology, ecology, technology, agriculture and related sciences.

ENROLLMENT COSTS

Since the program is planned to be realized within the framework of the Erasmus+ project ECOBIAS, the costs of enrollment and attending the course are not foreseen.

NUMBER OF EXPECTED PARTICIPANTS

The number of participants per course is not limited.

CURRICULUM PROGRAMS



METHODS OF CONDUCTING LESSONS AND OTHER COURSE ACTIVITIES

Realization of III-courses in the field of ecological water monitoring includes lectures, laboratory classes and field classes. Lectures and laboratory classes will be held in the premises of the Faculty of Science and Education of the University of Mostar (amphitheatre, classrooms, laboratories), while field teaching to be realized in the field (selected localities in the surroundings of rivers Neretva, Buna, Jasenica and the like, as well as, in the Hutovo Blato Nature Park).

All activities will be implemented in accordance with the Work Plan presented in information lists for each individual course. Study materials and field protocols are prepared by the program countries and translated into our language by experts from partner countries. Written textbooks were reviewed by independent experts. Learning materials will be published online so that they are also accessible and course participants and teachers from other institutions of higher education from the Western Balkans countries.

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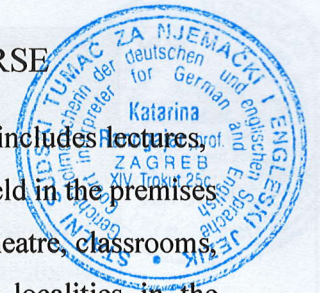
ENROLLMENT COSTS

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NUMBER OF EXPECTED PARTICIPANTS

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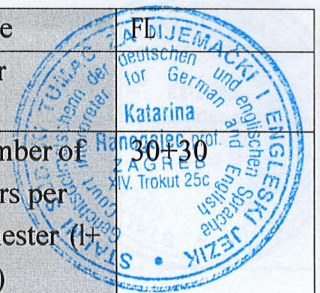
CURRICULUM PROGRAMS



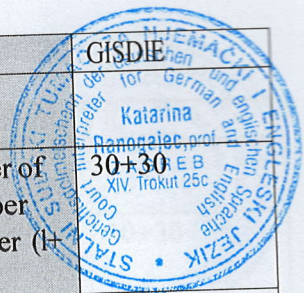
Name of the course	Aquatic and semiaquatic macrophytes		Code	ASM
Study program	LLL		Year	
Cycle			Number of hours per semester (l+e+s)	30+30+0
ECTS:	6			
Course leader/teacher:	Anđelka Lasić, PhD Anita Dedić, PhD			
E-mail and phone number:	andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457 anita.dedic@fpmoz.sum.ba; + 387 36 445 457			
Field practice	20	Written exam	20	
Independent research work	20	Oral exam	40	
Course aims:	The aim of this course is to provide general knowledge on the investigation of aquatic macrophytes in lakes and rivers for the purpose of assessing the ecological status, using these organisms as elements of biological quality in accordance with both: EU standard methods (European Committee for Standardization, Water quality: EN 15460, EN14184: 2016) as well as the basic scientific approach.			
Learning outcomes (general and specific competencies):	<p>After completing the course, participants will be trained to:</p> <ul style="list-style-type: none"> • To independently carry out planning and research procedures, • To collect and identify macrophytes as well as vegetation structure, • To properly use relevant literature, especially determination keys and databases, • And to process quantitative metrics, characteristics and ecological indices of macrophytes 			
Literature:	<ul style="list-style-type: none"> <input type="checkbox"/> EN 14184: 2014 Water Quality – Guidance for the surveying of aquatic macrophytes in running waters, Comite Europeen de Normalisation <input type="checkbox"/> Jeppesen, E., Søndergaard, M., Søndergaard, M., Christofferson, K. (Eds.) (2012). The structuring role of submerged macrophytes in lakes. Springer Science & Business Media. <input type="checkbox"/> Teaching material published as part of the ECOBIAS project 			



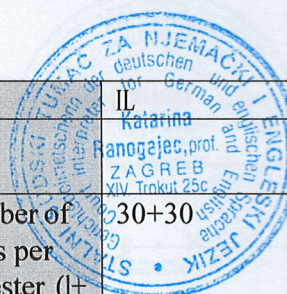
Name of the course	Phycology		Code	
Study program Cycle	LLL		Year	
ECTS:	6		Number of hours per semester (1+e+s)	30+30
Course leader/teacher:	Anita Dedić, PhD Anđelka Lasić, PhD			
E-mail and phone number:	anita.dedic@fpmoz.sum.ba; +387 36 445 457 andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457			
Field practice	20	Written exam	20	
Independent research work	20	Oral exam	40	
Course aims:	The course is designed to clarify the importance of microalgae and cyanobacteria in natural ecosystems, and to prepare participants to solve various problems related to water quality and environmental protection. Emphasis is also placed on understanding the importance of algae and cyanobacteria in terms of their biochemical, physiological and genetic potential, as well as biotechnological applications.			
Learning outcomes (general and specific competencies):	Course participants will demonstrate an understanding of the specific cellular organization and growth patterns of microalgae and cyanobacteria; explain the main pathways in the physiology and genetics of microalgae and cyanobacteria; describe the role of microalgae and cyanobacteria in different ecosystems; explain the role of microalgae and cyanobacteria in different biotechnological processes, prepare culture collections.			
Literature:	<input type="checkbox"/> Svirčev Z. (2005): Microalgae and Cyanobacteria in Biotechnology. Faculty of Sciences, University of N. Sad. <input type="checkbox"/> Blaženčić J. (1988): Systematics of Algae. Naučna knjiga, Belgrade. <input type="checkbox"/> Teaching material published as part of the ECOBIAS project			



Name of the course	GIS and remote sensing in ecomonitoring		Code	GISDIE
Study program	LLL		Year	
Cycle			Number of hours per semester (l+e+s)	30+30
ECTS:	6			
Course leader/teacher:	Dragan Škobić, PhD Adriana Planinić, PhD Anita Dedić, PhD			
E-mail and phone number:	dragan.skobic@fpmoz.sum.ba; +387 36 445 468 adriana.planinic@fpmoz.sum.ba; +387 36 445 467 anita.dedic@fpmoz.sum.ba; +387 36 445 457			
Field practice	20	Written exam	20	
Independent research work	20	Oral exam	40	
Course aims:	The course is designed to provide knowledge about geographic information system (GIS) and remote sensing technologies and their application in environmental monitoring, data collection and decision-making.			
Learning outcomes (general and specific competencies):	Students will be trained to conduct field research using basic and advanced GIS and remote sensing technologies (GPS and UAVs) and process data on georeferencing systems, spatial data models and databases, spatial data analysis and modeling; spatial data research and statistics; map the dissemination and exchange of data and the creation of a basic scenario of forecasting environmental impact studies using open access tools and resources.			
Literature:	<ul style="list-style-type: none"> <input type="checkbox"/> Radulović S, Cvijanović D. 2016. Osnove ekologije. Udžbenik. Prirodno-matematički-fakultet, Univerzitet u Novom Sadu. Novi Sad. <input type="checkbox"/> Radulović, S., Teodorović, I. 2011. Ekologija i monitoring kopnenih voda. Metodološki priručnik. Prirodno-matematički fakultet. Novi Sad <input type="checkbox"/> Horning, N. 2010. Remote Sensing for Ecology and Conservation: A Handbook of Techniques. Oxford University Press <input type="checkbox"/> Teaching material published as part of the ECOBIAS project 			



Name of the course	Ichthyology	Code	IL
Study program Cycle	LLL	Year	Katarina Ranogajec, prof. ZAGREB XIV. Trakut 25c
ECTS:	6	Number of hours per semester (1+ e+s)	30+30
Course leader/teacher:	Ivana Markotić, PhD Svjetlana Stanić-Koštroman, PhD		
E-mail and phone number:	ivana.markotic@fpmoz.sum.ba +387 (0) 36 445 481 svjetlana.stanic.kostroman@fpmoz.sum.ba; +387 36 445 468		
Field practice	20	Written exam	20
Independent research work	20	Oral exam	40
Course aims:	This course addresses all aspects of fish ecology from their basic physiology through food web interactions, competition, reproductive strategies and the importance of size to ecological interactions. The importance of fish as biological indicators will be highlighted. Different multimetric approaches used in bioassessment will be presented.		
Learning outcomes (general and specific competencies):	Participants will be able to relate fish to habitat categories, river types and eco-regions, as well as apply knowledge of fish ecology, physiology and zoogeography to understand the functioning of an aquatic ecosystem. The participants of the course will master the application of various indices based on the ichthyofond in the assessment of the ecological status of inland waters.		
Literature:	<input type="checkbox"/> Matthews W.J. (2012) Patterns in Freshwater Fish Ecology. Chapman & Hall, New York. <input type="checkbox"/> Wootton, R.J., (2012) Fish ecology: tertiary level biology. Blackie, London. 212 pp. <input type="checkbox"/> Teaching material published as part of the ECOBIAS project		

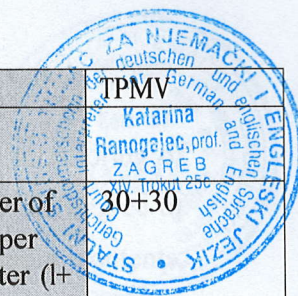




Name of the course	SERCON method for conservation assessment of rivers		Code	SMKPR
Study program Cycle	LLL		Year	
ECTS:	6	Number of hours per semester (l+e+s)	30+30	
Course leader/teacher:	Svjetlana Stanić Koštroman, PhD, Dragan Škobić, PhD, Anđelka Lasić, PhD, Anita Dedić, PhD Ivana Markotić, PhD			
E-mail and phone number:	svjetlana.stanic.kostroman@fpmoz.sum.ba; +387 36 445 468 dragan.skobic@fpmoz.sum.ba; +387 36 445 468 andjelka.lasic@fpmoz.sum.ba; +387 36 445 457 anita.dedic@fpmoz.sum.ba; +387 36445-457 ivana.markotic@fpmoz.sum.ba; +387 36 445 481			
Field practice	20	Written exam	20	
Independent research work	20	Oral exam	40	
Course aims:	The main goal of the course is to enable participants to acquire knowledge and skills related to the ecological and conservation assessment of rivers according to the SERCON methodology.			
Learning outcomes (general and specific competencies):	After completing the course, participants will be able to: <ul style="list-style-type: none"> <input type="checkbox"/> collect and evaluate data for the application of the SERCON methodology; <input type="checkbox"/> analyze data in accordance with conservation criteria; <input type="checkbox"/> apply SERCON software tools for the assessment of river habitats; <input type="checkbox"/> interpret the information received and propose conservation measures. 			
Literature:	<ul style="list-style-type: none"> <input type="checkbox"/> Boon PJ, Holmes NTH, Maitland PS and Fozzard L. (2004): Sercon Version 2 System For Evaluating Rivers For Conservation, User's Guide and Technical Guide, 2004, SNH UK <input type="checkbox"/> Ovuka M, Racković M, Radulović S, Cvijanović D, Živković M, Novković M and Boon P. SERCON Software (System for Evaluating Rivers for Conservation), Version 3.1 (2012-2015): PMF UNS script and available from: http://sercon.pmf.uns.ac.rs/SerconWeb/ <input type="checkbox"/> Teaching material published as part of the ECOBIAS project 			

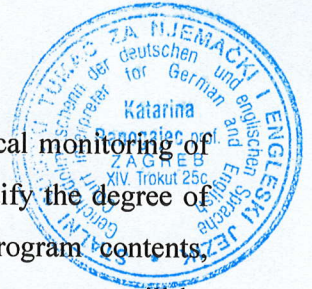


Name of the course	Field practice in aquatic ecomonitoring		Code	TPMV
Study program	LLL		Year	Katarina
Cycle				Ranogajec, prof.
ECTS:	6		Number of hours per semester (l+e+s)	30+30
Course leader/teacher:	Dr.sc. Anita Dedić, doc., Dr.sc. Anđelka Lasić, doc., Dr.sc. Ivana Markotić, doc.			
E-mail and phone number:	anita.dedic@fpmoz.sum.ba; +387 (0)36445-457 andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457 ivana.markotic@fpmoz.sum.ba + 387 (0) 36 445 481			
Field practice	20	Written exam	20	
Independent research work	20	Oral exam	40	
Course aims:	The aim of this course is to develop the skills of analyzing different states of aquatic ecosystems.			
Learning outcomes (general and specific competencies):	After completing the course, participants will be able to: <ul style="list-style-type: none"> <input type="checkbox"/> analyze the basic typologies of terrestrial waters, physical-chemical, biological and hydromorphological parameters of the ecological status of terrestrial waters. <input type="checkbox"/> They collect field data for physico-chemical, hydromorphological and zoological parameters of terrestrial water quality <input type="checkbox"/> Interpret and classify data read in the field. 			
Literature:	<ul style="list-style-type: none"> <input type="checkbox"/> Green ,W.R.Robertson, D.M., and Wilde F.D. (2015): Lakes and reservoirs—Guidelines for study design and sampling: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A10, 65 p. <input type="checkbox"/> Hauer, F. R., Lamberti, G. A.(2007): Methods in stream ecology, Elsevier. 2007. <input type="checkbox"/> Teaching material published as part of the ECOBIAS project <input type="checkbox"/> Milošević, Đ., Stojković-Piperac, M. (2018): Bioindikacije i biomonitoring - praktikum i radna sveska. Prirodno-matematički fakultet, Univerzitet u Nišu. Srbija, Niš <input type="checkbox"/> Đug, S. et. al. (2020): Biomonitoring akvatičnih ekosistema. Univerzitet u Sarajevu. Sarajevo. 			



METHODS OF MONITORING TEACHING QUALITY

After the end of each lifelong learning course in the field of ecological monitoring of water, it is planned to conduct a survey of the participants in order to identify the degree of satisfaction of the participants with the program of a certain course, program contents, literature, lecturers, the way of organizing field classes, etc. The results of the survey will be analyzed by the management. of the project team and serve as a basis for continuous improvement of the quality of the program itself.



STUDENT OBLIGATIONS

Participants have the obligation to regularly follow the lectures, laboratory and field classes that are realized within the course, as well as to actively participate in the implementation of all activities that are planned in the course program.

TYPE AND CONTENT OF THE DOCUMENT OBTAINED UPON COMPLETION OF THE COURSE

After successful completion of the program, participants receive a certificate of successful completion of the lifelong learning course from the program they passed.

End of translation from Croatian

I, Katarina Ranogajec, authorized court interpreter for English and German language, as appointed by the President of the County Court in Zagreb, decree nr. 4 Su-501/2020-4, of 23 October 2020, do hereby certify that the above translation is a faithful and complete translation of the original document written in Croatian language.

Zagreb, November 11, 2022

Signature:



Katarina Ranogajec



ELABORAT TEČAJEVA CJELOŽIVOTNOG UČENJA IZ OBLASTI EKOLOŠKOG MONITORINGA VODA

Mostar; kolovoz 2021. godine

NAZIV

Tečajevi cjeloživotnog učenja iz oblasti ekološkog monitoringa voda.

OPIS

Tečajevi za cjeloživotno učenje (eng. *LLL-lifelong learning*) iz oblasti ekološkog monitoringa voda razvijaju se u sklopu ERASMUS + projekta pod nazivom „Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs“ skraćenog naziva ECOBIAS. Cilj ovog Projekta jeste razvijanje i unaprijeđivanje znanja, vještina u institucijama visokog obrazovanja partnerskih zemalja iz oblasti ekološkog monitoringa kao i unaprjeđenje tehničkih resursa.

U realizaciji projekta sudjeluje 11 institucija, i to četiri institucije iz programskih zemalja:

- Univerzitet u Novom Sadu (Srbija, koordinator projekta),
- Univerzitet u Nišu (Srbija),
- Sveučilište u Zagrebu (Hrvatska),
- University of Duisburg-Essen (Njemačka)

I sedam institucija iz partnerskih zemalja:

- **Sveučilište u Mostaru, Fakultet prirodoslovno-matematičkih i odgojnih znanosti (Bosna i Hercegovina),**
- Univerzitet Donja Gorica (Crna Gora),
- Internacionalni univerzitet u Travniku (Bosna i Hercegovina),
- Univerzitet u Tuzli (Bosna i Hercegovina),
- Univerzitet u Sarajevu (Bosna i Hercegovina),
- Univerzitet u Banjoj Luci (Bosna i Hercegovina) i
- Univerzitet u Istočnom Sarajevu (Bosna i Hercegovina).

Specifični ciljevi projekta su:

- ❖ Razvoj i implementacija naprednog master kurikuluma u Ekološkom monitoringu i biološka procjena kvaliteta voda (EMAB) na institucijama visokog obrazovanja u

zemljama Zapadnog Balkana, a u skladu sa bolonjskim i nacionalnim standardima za akreditaciju;

- ❖ Razvoj i implementacija tečajeva cjeloživotnog učenja za sektor monitoringa životne sredine u skladu sa EU Okvirnom Direktivom o vodama (OVD) na institucijama visokog obrazovanja u zemljama Zapadnog Balkana;
- ❖ Opremanje sedam laboratorija za Ekološki monitoring i biološku procjenu kvaliteta voda (EMAB) u institucijama visokog obrazovanja u zemljama Zapadnog Balkana;
- ❖ Razvoj regionalne akademske ECOBIAS mreže radi organizacije i promocije regionalne saradnje u oblasti Ekološkog monitoringa i biološke procjene akvatičnih ekosistema.

Studenti /polaznici na institucijama visokog obrazovanja u partnerskim zemljama će imati veće šanse za dobijanje posla nakon stjecanja diplome, ili nakon dobijanja sertifikata u okviru programa cjeloživotnog učenja, jer postoji očigledna potreba za stručnjacima u ovoj oblasti u partnerskim zemljama. Nakon opremanja laboratorija i stjecanja/dijeljenja znanja, vještina i kompetencija u ovoj oblasti, nastavno i tehničko osoblje u oblasti ekološkog monitoringa u partnerskim zemljama će proširiti mogućnosti za saradnju sa drugim institucijama visokog obrazovanja i zainteresovanim stranama u regionu Zapadnog Balkana. Ova suradnja će rezultirati pripremom prijedloga projekata za druge EU grantove i podstaći dalja istraživanja u ovoj oblasti.

SADRŽAJ PROGRAMA

U okviru projekta razvijeno je sedam LLL-tečajeva iz područja ekološkog monitoringa voda i biološke procjene.

Naziv tečaja	ECTS
Akvatične i semiakvatične makrofite	6
Akvatične makroinvertebrate u monitoringu voda	6
Fikologija	6
GIS i daljinska mjerenja u ekomonitoringu	6
Ihtiologija	6
SERCON metoda za konzervacijsku procjenu rijeka	6
Terenska praksa u monitoringu voda	6

Polaznici biraju jedan ili više ponuđenih tečajeva iz programa cjeloživotnog učenja.

OCJENA POTREBA TRŽIŠTA RADA

Komparativna analiza postojećih podataka o vodenim resursima u zemljama Zapadnog Balkana ukazuje na nedostatak pouzdanih podataka što ometa procjenu postojećeg i budućeg stanja vodenih resursa. Takođe, ova analiza ukazuje i na visoku senzitivnost i ranjivost vodenih resursa u regionu zapadnog Balkana, kao i na nedostatak koordiniranog upravljanja vodama. Prema tome, ova atraktivna ekološka i naučna problematika predstavlja goruće pitanje u oblasti zaštite životne sredine, a opremanje savremenih laboratorija je od izuzetnog značaja kako bi se realizirao učinkovit ekološki monitoring i biološka procjena slatkovodnih ekosistema.

Za potrebe pokretanja ovog programa izvršena je analiza tržišta rada kojom je obuhvaćeno ukupno 13 institucija koje se bave ekološkim monitoringom i biološkom procjenom voda, u cilju procjene broja potrebnih novih radnih mjesta. Institucije koje su obuhvaćene ovim istraživanjem iskazale su potrebu za kadrovima koji su osposobljeni za obavljanje sljedećih aktivnosti:

- monitoring akvatičnih makrofita,
- monitoring makroinvertebrata,
- mikrobiološki monitoring akvatičnih ekosistema,
- monitoring i procjena ribljih populacija,
- monitoring priobalnih staništa,
- monitoring makroalgi i kriptogamne flore,
- GIS i daljinska istraživanja,
- ekološki inženjering i tehnologije zaštite voda,
- obrada podataka,
- administrativni poslovi povezani sa nacionalnom i EU legislativom i politikom u oblasti kvaliteta voda i konzervacije slatkovodnih ekosistema,
- pisanje prijedloga projekata,
- molekularne metode za rutinski monitoring akvatičnih ekosistema.

Rezultati istraživanja su nedvosmisleno pokazali da postoji velika potreba za usavršavanjem, ali i prekvalifikacijom te se stvara velika potreba za otvaranjem radnih mjesta iz područja ekološkog monitoringa.

Rezultati istraživanja i analiza rezultata dostupni su na linku:

https://www.ecobiaserasmus.com/wp-content/uploads/2020/06/ECOBIAAS_TASK-1_4-REPORT.pdf

Rezultati su sasvim očekivani, imajući na umu činjenicu da *Okvirna direktiva o vodama EU* zahtijeva korištenje različitih multimeričkih sistema procjene kvaliteta vode. Upravo zato je EU finansirala mnoge projekte kojima je glavni cilj bio razvijanje okvira za budući europski sistem procjene kvaliteta voda koji se temelji na algama, bentoskim makroinvertebratima, vodenim makrofitima i ribama koji su imali izlaz u multimetrijskim indeksima (AQEM. 2002; Fame Consortium, 2004 .; 2009; Schmutz & Sendzimir, 2018).

Okvirna direktiva o vodama (OVD) povezana je s nizom drugih direktiva EU-a. To uključuje direktive koje se odnose na zaštitu biološke raznolikosti, direktive koje se odnose na specifične namjene voda i direktive koje se tiču regulacije aktivnosti preduzetih u životnoj sredini itd.

Razvoj sistema ekološke ocjene i klasifikacije nije jednostavno pitanje, već je jedan od najvažnijih i tehnički najzahtjevnijih djelova sprovođenja Okvirne direktive o vodama, pa se upravo zbog toga velika pažnja poklanja izgradnji kapaciteta u području visokog obrazovanja i realizaciji zajedničkih projekata iz ove oblasti na području Zapadnog Balkana. Dodatne vještine i znanja neophodne su za uspješno ekološko praćenje i bioprocjenu, što se uglavnom odnosi na vještine obrade podataka i administrativne poslove povezane s EU i nacionalnim zakonodavstvom i politikom kvaliteta vode i očuvanju slatkovodnih ekosistema.

Prema Okvirnoj direktivi o vodama (ODV), ne samo visoko industrijalizirane, već i zemlje u razvoju dužne su zaštititi i obnoviti sve svoje vodene ekosisteme kako bi njihova vodna tijela (jezera, rijeke i tijela podzemnih voda, prijelazne i obalne vode) da bude u dobrom ekološkom stanju najkasnije do 2027. godine.

Ovaj program usmjerava i ubrzava procese izgradnje kapaciteta za uspješno praćenje stanja slatkovodnih ekosistema i biološke procjene, posebno u zemljama u razvoju gdje su postojeći kapaciteti tehnički i ljudski graničeni. Sve institucije koje rade na području praćenja i bioprocjene slatkovodnih voda treba da osiguraju optimalan broj zaposlenih koji imaju odgovarajuća znanja, vještine i kompetencije kako bi se omogućila dostupnost analize naučnih podataka široj javnosti. Biomonitoring slatkovodnih ekosistema mora se temeljiti na naučnim podacima i razumijevanju slatkovodnih ekosistema i njihovih glavnih komponenti, hidroloških i ekoloških procesa.

Dostupnost svih potrebnih profila u području slatkovodnog biomonitoringa i ekološkog inženjerstva omogućit će učinkovito praćenje u skladu sa Okvirnom direktivom o vodama u budućnosti

MEĐUNARODNA USPOREDIVOST

U okviru samog Erasmus + projekta ECOBIAS, osim na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru, planirana je akreditacija master studija i LLL tečajeva iz oblasti biomonitoringa voda na visokoobrazovnim institucijama u Bosni i Hercegovini i to:

- LLL tečajevi – Prirodno-matematički fakultet *Univerziteta u Banjoj Luci*
- Master studije- *Internacionalni univerzitet u Travniku, Univerzitet u Tuzli, Univerzitet u Sarajevu, Univerzitet Istočno Sarajevo*

Pojedinačni moduli vezani za upravljanje vodama i ekologiju vodenih ekosistema postoje na brojnim Univerzitetima u regionu i to:

- *Univerzitet u Tuzli*, studij Primjenjene biologije http://pmf.untz.ba/wp-content/uploads/2017/04/Primijenjena_biologija.pdf;
- *Univerzitet u Bihaću*, studijski program Zaštita okoliša https://btf.unbi.ba/?page_id=1122;
- *Univerzitet u Banjoj Luci*, studijski program Ekologija i zaštita okoliša <https://pmf.unibl.org/wp-content/uploads/2019/05/2-ciklus-ekologija-zivotinja.pdf>.

Pored navedenih modula u zemljama regiona, u zemljama Evropske Unije postoje brojni programi iz ekologije i ekološkog monitoringa, te biomonitoringa voda. Tako na primjer, u Njemačkoj postoji više od 35 master programa iz oblasti ekologije i ekološkog monitoringa.

Pregled programa dostupan je na linku:

<https://www.ecobiaserasmus.com/wp-content/uploads/2020/04/ECOBIAS-REPORT-CURRICULA.pdf>.

Neki od univerziteta na kojima se pomenuti programi izvode su:

- *Univerzitet u Duisburgu- Essen* ima master programe: Environmental Toxicology (EnviTox) <https://www.uni-due.de/studienangebote/studiengang.php?id=40>;
Transnational ecosystem-based Water Management <https://www.uni-due.de/studienangebote/studiengang.php?id=103>;
- *University of Stuttgart* nudi master program: Water Resources Engineering and Management (WAREM) <https://www.warem.uni-stuttgart.de/> itd.

CILJEVI TEČAJEVA CJELOŽIVOTNOG UČENJA

Opći ciljevi programa su:

- Osposobljavanje polaznika za samostalan rad u oblasti ekološkog monitoringa i biološke procjene kvaliteta voda,
- Upoznavanje polaznika sa temeljnim terminima, načelima i konceptima iz područja biomonitoringa,
- Upoznavanje polaznika sa ekološkim principima u analizi odnosa između staništa i organizama koji ih nastanjuju.

Specifični ciljevi programa su:

- unapređenje znanja, vještina i kompetencija polaznika iz oblasti upravljanja vodenim resursima prema standardima Okvirne direktive o vodama,
- pružanje mogućnosti polaznicima da se upoznaju sa standardima iz oblasti upravljanja vodenim resursima,
- pružanje mogućnosti polaznicima da razviju temeljne vještine važne za laboratorijski rad iz oblasti zaštite životne sredine,
- pružanje mogućnosti polaznicima da razviju temeljne vještine razumijevanja problema iz oblasti zaštite životne sredine, te primjene alate za analizu i evaluaciju stanja ekosistema.

VODITELJ PROJEKTA

Izv.prof.dr.sc. Dragan Škobić

KRATKA BIOGRAFIJA VODITELJA PROJEKTA

Ime i prezime:	Dragan Škobić
Predmet(i) koje izvodi:	Opća botanika, Fiziologija bilja, Osnove zaštite prirode i okoliša, Opća ekologija, Osnove ekologije i okoliša, Konzervacijska biologija
Ustanova zaposlenja:	Fakultet prirodoslovno-matematičkih i odgojnih znanosti, Sveučilište u Mostaru
E-pošta:	dragan.skobic@fpmoz.sum.ba
Internetska stranica:	www.fpmoz.sum.ba
Akademski stupanj:	Dr.sc.
Zvanje:	Izv.prof.
Datum zadnjeg izbora u zvanje:	Listopad 2020.
Kratki životopis:	
<p>Kratki životopis: Dragan Škobić rođen je 21. listopada 1971. g. u Mostaru. Osnovnu i srednju školu je završio u Mostaru. Godine 1995. upisao je Pedagoški fakultet Sveučilišta u Mostaru, smjer biologija i kemija, gdje je uspješno obranio diplomski rad s temom „Analiza kristala i čestica virusnog izolata iz vinove loze (<i>Vitis vinifera</i> L.)“ pod vodstvom prof. dr. sc. Mladena Krajačića i stekao zvanje profesora biologije i kemije. Godine 2002. upisao je poslijediplomski studij pri Biološkom odsjeku Prirodoslovno-matematičkog fakulteta Sveučilišta u Zagrebu, smjer ekologija, gdje je uspješno položio sve ispite s prosjekom ocjene 5,0 i obranio rad pod nazivom „Učinak cinkovog i aluminijevog sulfata na rast vodene leće (<i>Lemna minor</i> L.)“ pod vodstvom prof. dr.sc. Branke Pevalek-Kozlina. Godine 2012. uspješno je obranio doktorsku disertaciju pod nazivom „Uloga biljnih sekundarnih metabolita u biotskim odnosima između biljaka i životinja“ pod vodstvom prof. dr. sc. Joze Rogošića na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru.</p> <p>Od 2001. g zaposlen je kao ml. asistent na Pedagoškom fakultetu, odjel biologije i kemije, a od 2006. g. na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti, studijska grupa biologija. Sudjelovao u izvođenju praktične nastave iz kolegija Fiziologija bilja i Opća botanika. Koautor je više znanstvenih radova, na engleskom jeziku, u časopisima koje citira "Current Contents" te je sudjelovao na više znanstvenih skupova i izlaganja na engleskom jeziku.</p> <p>Djelovao je u organizaciji nastave kao tajnik na odjelu biologije od 2003. do 2006. godine, te sudjelovao i djelovao u stvaranju i organiziranju novog smjera kao tajnik na Znanosti o okolišu od 2006. do 2012. godine. Od 2013. do 2017. vodio je smjer Znanost o okolišu kao pročelnik, a nakon toga sve do danas je pročelnik studijske grupe biologija.</p>	
Radovi i ostalo što nastavnika kvalificira za izvođenje nastave:	
CC RADOVI	
<ol style="list-style-type: none"> 1. Rogosic, J., Estell, R.E., Škobic, D., Maric, S, and Martinovic, A. (2006). Role of 	

- species diversity and secondary compounds complementarity on diet selection of Mediterranean shrubs by goats. *Journal of Chemical Ecology* 32, 1279-1287, **Impact factor 3,151**
- 2.** Rogosic, J., Estell, R.E., **Skobic, D.**, and Stanic, S. (2007) Influence of secondary compound complementarity and species diversity on consumption of Mediterranean shrubs by sheep. *Appl. Anim. Behav. Sci.* 107, 58-65, **Impact factor 1,795.**
 - 3.** Rogosic, J., Moe, S.R., **Skobic, D.**, Knezovic, Z. Rozic, I., Zivkovic, M., Pavlicevic, J. (2009) Effect of supplementation with barley and activated charcoal on intake of biochemically diverse Mediterranean shrubs, *Small Ruminant Research* 81, 79-84, **Impact factor 1,083.**
 - 4.** Radić, S., Babić, M., **Škobić, D.**, Roje, V., Pevalek-Kozlina, B. (2010) Ecotoxicological effects of aluminum and zinc on growth and antioxidants in Lemna minor L. *Ecotox Environ Safe* 73, 336-342, **Impact factor 3,130.**
 - 5.** Rogosic, J., Saric, T., Herceg, N., Zjalic, S., Stanic, S., **Skobic, D.** (2011) Effect of supplementation with barley and calcium hydroxide on intake of Mediterranean shrubs in goats. *Ital J Anim Sci* 10, 117-123, **Impact factor 0,841.**
 - 6.** Filipović, A., Poljak, M. and **Škobić, D.** (2013) Response of Chlorophyll a, SPAD Values and Chlorophyll Fluorescence Parameters in Leaves of Apricot Affected Some Abiotic Factors. *J Food Sci Eng* 3, 19-24, **Impact factor 0,571.**
 - 7.** Stanić-Koštroman, S., Previšić, A., Planinić, A., Kučinić, M., **Škobić, D.**, Dedić, A. And Durbešić, P. (2015) Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and Mediterranean climates. *Int Rev Hydrobiol* 100, 79-95, **Impact factor 1,459.**
 - 8.** Saric, T., Rogosic, J., Zupan, I., Beck, R., Bosnic, S. Sikic, Z., **Skobic, D.**, Tkalcic, S. (2015) Anthelmintic effect of three tannin-rich Mediterranean shrubs in naturally infected sheep. *Small Ruminant Res* 123, 179-182, **Impact factor 1,083.**
 - 9.** Rogosic, J., Ralph, M., Musa, A., **Skobic, D.**, Krvavica, M., Arapovic, M. (2018) Goat preference for phylogenetical diverse compared to similar Mediterranean shrubs. *J Mediterr Ecol* 16, 5-13
 - 10.** Talić, S., **Škobić, D.**, Dedić, A., Nazlić, N., Ujević, I., Ivanković, A., Pavela-Vrančić, M. (2020) The occurrence of lipophilic toxins in shellfish from the Middle Adriatic Sea. *Toxicon* 186. 19-25

RADOVI S MEĐUNARODNOM RECENZIJOM

- 1.** **Skobic, D.**, Rogosic, J., Stanic-Kostroman, S. and Knezovic, L. (2012) Effects of fennel (*Foeniculum vulgare* Mill.) on consumption of two Mediterranean *Juniperus* species by goats. In: Casarus, I., Rogosic, J., Rosati, A., Štoković, I., Gabina, D. (ed.): *Animal farming and environmental interactions in the Mediterranean region*, 63-66. Wageningen Academic Publishers, Netherlands.
- 2.** Stanić-Koštroman, S., Kučinić, M., Kolobara, A., **Škobić, D.**, Knezović, L. and Durbešić, P. (2012) Light-trapped caddisflies (Insecta:trichoptera) as indicators of the ecological integrity of the Lištica river, Bosnia and Herzegovina. *Entomol Croat* 16, 21-36
- 3.** Stanić-Koštroman, S., **Škobić, D.**, Dedić, A. (2015) Biološki monitoring na primjeru rijeke Lištice. *Suvremena pitanja* 19, 94-103.
- 4.** Hafner, D., Dedić, A., Sučić, Ž., Lasić, A., Stanić-Koštroman, S., **Škobić, D.**, Planinić, A. (2015) The composition of lithophytic diatoms in creek Badnje, Masna Luka, Blidinje. *International Scientific Symposium Blidinje 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina*, 71-87.

5. Hafner, D., Dedić, A., Azinović, A., Lasić, A., Stanić-Koštroman, S., Škobić, D., Knezović, L. (2015) Epiphytic diatoms on Chara sp. In Badnje creek (Mansa Luka), Blidinje, 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina 141-153
6. Stanić-Koštroman, S., Škobić, D., Dedić, A., Šljivić, A., Herceg, N. (2016) Kakvoća vode rijeke Radobolje, Bosna i Hercegovina. Zbornik radova II. međunarodni i VI. hrvatski znanstveno-stručni skup Voda za sv e, 18. Ožujka 2016. Osijek, Hrvatska, 254-269.
7. Martinović Bevanda, A., Ivanković, A., Talić, S., Batinić, K., Škobić, D., Brkljača, M., Martinović, I., prusina, T. (2018) Chemometric Classification of White Hercegovinum Wine Žilavka Based on Physical and Chemical Properties. Knjiga radova Znanstveno-stručni skup "130 godina organiziranog vinogradarstva i vinarstva u BiH" 21-22. Rujna, Mostar, BiH
8. Dedić, A., Galić, T., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2018) A biological water quality assessment based on phytobenthos and macroinvertebrates at three stations on the Neretva river. Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ works of the Faculty of Forestry University of Sarajevo 48, No. 2, 41-53.
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10. Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., Stanić-Koštroman, S. (2019) Kvaliteta vode i ekološki status rijeke Rame. *Suvremena pitanja* 27. 155-168.
11. Dedić, A., Antunović, A., Kamberović, J., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2019) Using diatoms in biological assessment of the water quality on the example of small karstic river in Bosnia and Herzegovina. *Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ Works of the Faculty of Forestry University of Sarajevo*, No. 1, 52-68
12. Dedić, A., Gerhardt, A., Kelly, M.G., Stanić-Koštroman, S., Šiljeg, M., Kalamujić Stroil, B., Kamberović, J., Mateljak, Z., Pešić, V., Vučković, I., Snigirova, A., Bogatova, Y., Barinova, S., Radulović, S., Cvijanović, D., Lasić, A., Škobić, D., Sudar, A., Mrđan, D., Herceg, N. (2020) Innovative methods and approaches for WFD: ideas to fill knowledge gaps in science and polica. *Water Solutions* 3, 30-42.

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- 2.** Stanić-Koštroman, S., Škobić, D. & Durbešić, P. (2007) Composition and trophic structure of macrozoobenthos communities in Radobolja river. In: Bogut, I. (ed.): Proceedings of the International scientific expert symposium-Fish breeding in hydro power reservoirs (hydro accumulations)- management possibility and environmental protection. 24th-26th Octobre 2007, Neum, 353-368
- 3.** Stanić-Koštroman, S., Durbešić, P., Škobić, D. and Knezović, L. (2010) Human activities impact on water quality of the Lištica river, Bosnia and Herzegovina. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 38
- 4.** Knezović, L., Franjević, D., Kalafatić, M., Rajević, N., Škobić, D. (2010) Molecular phylogenetic analyses of the mitochondrial gene sequences of cytochrome oxidase I (COI). The Second International Scientific Symposium "MOLECULAR GENETICS

RESEARCH TODAY AND IT'S APPLICATION POSSIBILITIES", October 22,2010 Tuzla, Bosnia and Herzegovina.

5. **Škobić, D.**, Rogošić, J., Stanić-Koštroman, S. and Knezović, L. (2010) Effect of fennel (*Foeniculum vulgare* Mill.) on consumption of the Mediterranean Juniperus species by goats. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 48
6. Saric, T., Rogosic, J., Beck, R., Zupan, I., Zjalic, S., Musa, A. And **Skobic, D.**(2012) Mediterranean shrub *Pistacia lentiscus* L. As a potential tool in the control of nematodes in sheep. Book of Abstracts of the 63rd Annual Meeting of the European Federation of Animal Science / - Wageningen: Wageningen Academic Publishers, 2012, 109-109
7. Hafner, D., Dedić, A., Azinović, T., Lasić, A., Stanić-Koštroman, S., **Škobić, D.**, Knezović, L. (2015) Epifitske dijatomeje na vrsti *Chara sp.* potoka Badnje (Masna Luka), Blidinje. Međunarodni znanstveni simpozij "Blidinje 2015.," Listopad 9.-10. 2015. Mostar, Bosna i Hercegovina, 141.
8. **Škobić, D.**, Šljivić, A. (2015) Usporedba fizikalno-kemijskih svojstava krških Rijeka i utjecaj onečišćenja. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem "Zaštita voda u kršu" Listopad, 15.-16. 2015 Mostar, Bosna i Hercegovina, 65
9. Stanić-Koštroman, S, Herceg, N., Dedić, A., **Škobić, D.**, Lasić, A., Buljubašić, A. (2019) Integralna procjena ekološkog statusa rijeke Lištice. 8th Internatioanal Conference "Water for All", March, 21.-22. 2019. Osijek, Croatia.
10. Gerhard, A., Stanić-Koštroman, S., Dedić, A., Lasić, A., **Škobić, D.** (2019) Inovativni integralni alati za praćenje onečišćenja u vodenim ekosustavima. Drugi BiH kongres o vodama. Studeni, 7.-8. 2019. Sarajevo, Bosna i Hercegovina.

PROJEKTI:

Suradnik na projektima

- «Uvođenje održivog sustava gospodarenja planinskim pašnjacima u cilju proizvodnje autohtonih sireva» (2003-2004) ,
- «Istraživanje ekosustava rijeka Lištice i Radobolje, utjecaji onečišćenja i mjere zaštite» (2005-2007),
- «Potencijalni mehanizmi za bolje korištenje krmnih potencijala primorskih pašnjačko-šumskih sastojina» (2007-2009),
- «Revizija ribolovne osnove za ribolovno područje Središnja Bosna» (2013-2014), «Istraživanje biocenoza i ekološkog statusa Dinarskih tekućica» (2014-2015),
- «Istraživanje ekološkog statusa u svrhu zaštite voda i bioraznolikosti rijeka Lištice i Radobolje» (2015-do 2016.).
- Voditelj istraživačke sektorske studije „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) u sklopu projekta „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“
- «Analiza fitotoksina u školjkašima Srednjeg Jadrana (Neumski zaljev) »(2017-2018)
- «Primjena mjerila zelene javne nabavke u svrhu smanjenja nastanka otpada i promocija» (2020)
- «Afirmiranje usluga ekosustava u svrhu unapređenja održivog turizma Ramskog jezera» (2020)
- «Biološki monitoring površinskih voda na vodnom području Jadranskog mora» (2018-2021)

Koordinator I voditelj projekta:

- Koordinator ERASMUS+ projekta iz oblasti jačanja kapaciteta visokoškolskih ustanova pod naslovom „Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs.“(2020-2023)
- Voditelj istraživačke sektorske studije „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) u sklopu projekta „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“

Suradnik ili voditelj na stručnim studijama:

- „Prirodne znamenitosti Hercegovačko-neretvanske županije“ –voditelj studije; Udruga „Centar za ekologiju, okoliš i turizam“ (2019)
- „Opis postojećeg stanja biljnog i životinjskog svijeta pri izradi SUO za regionalnu sanitarnu deponiju Karanovac“ –suradnik; ECOPLAN (2015).

LISTA NOSITELJA TEČAJEVA IZ CJELOŽIVOTNOG UČENJA

Naziv tečaja	Nositelj(i)
Akvatične i semiakvatične makrofite	Dr.sc.Andelka Lasić Dr.sc. Anita Dedić, doc.
Akvatične makroinvertebrate u monitoringu voda	Dr.sc. Svjetlana Stanić-Koštroman, red.prof. Dr.sc. Dragan Škobić, izv.prof.
Fikologija	Dr.sc. Anita Dedić, doc. Dr.sc. Andelka Lasić, doc.
GIS i daljinska istraživanja u ekomonitoringu	Dr.sc. Dragan Škobić, izv.prof., Dr.sc. Adriana Planinić, doc. Dr.sc. Anita Dedić, doc.
Ihtiologija	Dr.sc. Ivana Markotić, doc. Dr.sc. Svjetlana Stanić-Koštroman, red.prof.
SERCON metoda za konzervacijsku procjenu rijeka	Dr.sc. Svjetlana Stanić Koštroman, izv.prof., Dr.sc. Dragan Škobić, izv.prof., Dr.sc. Andelka Lasić, doc., Dr.sc. Anita Dedić, doc. Dr.sc. Ivana Markotić,doc.
Terenska praksa u monitoringu voda	Dr.sc. Anita Dedić, doc., Dr.sc. Andelka Lasić, doc., Dr.sc. Ivana Markotić, doc.

BIOGRAFIJA NOSITELJA STRUČNIH TEČAJEVA IZ CJELOŽIVOTNOG UČENJA

Ime i prezime:	Svjetlana Stanić-Koštroman
Predmet(i) koje izvodi:	Osnove biologije, Opća biologija, Opća zoologija, Beskralješnjaci, Primijenjena entomologija, Ekologija voda na kopnu, Bioraznolikost i zaštita prirode u BiH, Okoliš i ljudsko zdravlje
Ustanova zaposlenja:	Sveučilište u Mostaru, Fakultet prirodoslovno-matematičkih i odgojnih znanosti
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Akademski stupanj:	doktor znanosti
Zvanje nositelja predmeta:	redoviti profesor
Datum zadnjeg izbora u zvanje:	24.11.2020.
Kratki životopis:	
<p>Rođena u Sarajevu 21.kolovoza 1978. godine. Osnovnu i srednju medicinski školu završila u Kiseljaku, nakon čega je prošla sve stupnjeve visokoškolskog obrazovanja u području prirodnih znanosti. Pedagoški fakultet, smjer: biologija-kemija završila je 2002. godine u Mostaru, a doktorirala je na Poslijediplomskom doktorskom studiju iz područja prirodnih znanosti, polja biologije na Prirodoslovno-matematičkom fakultetu Sveučilišta u Zagrebu, obranivši doktorski rad 9.03.2009. godine.</p> <p>Kao autor, odnosno koautor objavila je preko 50 znanstvenih i stručnih radova, te je autor je tri sveučilišna udžbenika. U svojstvu voditelja ili suradnika sudjelovala je u 25 znanstvenih i stručnih projekata u zemlji i inozemstvu. Znanstveni i stručni opis primarno se temelji na ekologiji voda na kopnu. Kao predavač sudjeluje u izvođenju nastave na preddiplomskom i diplomskom studiju na matičnom Fakultetu prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru, kao i na ostalim ustrojbenim jedinicama Sveučilišta. Mentor je više diplomskih i završnih radova, kao i dva doktorska rada.</p>	
Radovi i ostalo što nastavnika kvalificira za izvođenje nastave:	
<ul style="list-style-type: none"> • znanstveno i stručno osposobljavanje i usavršavanje; • znanstveni i stručni opus (radovi u posljednjih pet godina prikazani su u nastavku); • objavljeni sveučilišni udžbenici: <ul style="list-style-type: none"> - Stanić-Koštroman, S., Škobić, D., Bevanda, L. (2019): Opća biologija. Sveučilište u Mostaru Herceg, N., Stanić-Koštroman, S., Šiljeg, M. (2018): Čovjek i okoliš. Sveučilište Sjever, Hrvatska akademija za znanost i umjetnost Bosne i Hercegovine, Synopsis. Koprivnica-Mostar-Zagreb - Durbešić, P., Stanić-Koštroman, S., Šerić Jelaska, L. & Bruvo Mađarić, B. (2015): 	

Entomologija – znanost o kukcima, osnovne spoznaje i primjena. Sveučilište u Mostaru. Mostar.

Popis radova objavljenih u posljednjih pet godina:

- Dedić, A., Hafner, D., Antunović, A., Kamberović, J., **Stanić-Koštroman, S.**, Kelly, M.G. (2021): Biodiversity and seasonal distribution of benthic diatom assemblages as an indicator of water quality of small karstic river Bunica, Bosnia and Herzegovina. *Acta Botanica Croatica*. *Acta Botanica Croatica*, 8(2).
- Dedić, A., Gerhardt, A., Kelly, M.G., **Stanić-Koštroman, S.**, Šiljeg, M., Kalamujić stroil, B., Kamberović, J., Mateljak, Z., PEšić, V., Vučković, I., Singirova, A., Bogatova, Y., Barinova, S., Radulović, S., Cvijanović, D., Lasić, A., Škobić, D., Sudar, A., Mrđen, D., Herceg, N. (2020): Innovative methods and approaches for WFD: ideas to fill knowledge gap in science and policy. *Water Solutions*, 3:30-42.
- Valladolid, M., Kučinić, M., Arauzo, M., Cerjanec, D., Čuk, R., Dorda, B.A., Lodovici, O., **Stanić-Koštroman, S.**, Vučković, I., Rey, I. (2020): The *Rhyacophila fasciata* Group in Croatia and Bosnia & Herzegovina: *Rhyacophila f. fasciata* Hagen, 1859 and the description of two new subspecies, *Rhyacophila fasciata delici* Kucinic & Valladolid (ssp. nov.) from Croatia, and *Rhyacophila fasciata viteceki* Valladolid & Kucinic (ssp. nov.) from Bosnia and Herzegovina (Trichoptera: Rhyacophilidae) *Zootaxa*, 4885:51-75.
- Kučinić, M., Ćukušić, A., Žalac, S., Delić, A., Cerjanec, D., Podnar, M., Čuk, R., Vučković, I., Previšić, A., Vuković, M., **Stanić-Koštroman, S.**, Bukvić, V., Šalinović, A., Plantak, M. (2020): Springs: DNA barcoding of caddisflies (Insecta, Trichoptera) in Croatia with notes on taxonomy and conservation biology. *Natura Croatica*, 29(1): 73-98.
- Herceg, N., **Stanić-Koštroman, S.**, Buljubašić, A., Dedić, A., Čordaš, D. (2019): Water Policy in the European Union. *Suvremena pitanja*. 14(28): 97-113.
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- Stanić-Koštroman, S.**, Herceg, N., Dedić, A., Čordaš, D. (2019): Water protection in the EU: Water Framework Directive – The past, present and future. The 2nd B&H Water Conference, Sarajevo.
- Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., **Stanić-Koštroman, S.** (2019): Water quality and ecological status of the Rama River. *Suvremena pitanja*. 14(27): 155-168.
- Glamuzina, B., **Stanić-Koštroman, S.**, Matić-Skoko, S., Glamuzina, L., Muhamedagić, S., Rozić, I., Weiss, S., Pavličević, J. (2018): Recent status and life history traits of endangered soft - mouth trout, *Salmo obtusirostris* in the River Neretva catchment (Bosnia and Herzegovina) as a consequence of river alteration. *Applied Ichthyology*, 34(5): 1160-1168.
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- Kongresa o vodama", Sarajevo.
- Stanić-Koštroman, S., Škobić, D., Šljivić, A., Herceg, N.** (2016): Kakvoća vode rijeke Radobolje, Bosna i Hercegovina. II. međunarodni i VI. domaći znanstveno-stručni skup "Voda za sve", Osijek.
- Lukić, T., **Stanić-Koštroman, S.,** Herceg, N. (2016): Stanje biološke raznolikosti rijeke Save kroz usporednu analizu utvrđenih vrsta Natura 2000 Republike Hrvatske i Bosne i Hercegovine. II. međunarodni i VI. domaći znanstveno-stručni skup "Voda za sve", Osijek.
- Stanić-Koštroman, S.,** Previšić, A., Planinić, A., Kučinić, M., Škobić, D., Dedić, A., Durbešić, P. (2015): Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and mediterranean climates. *International Review of Hydrobiology*. 100(2): 79-95. DOI: 10.1002/iroh.201301631.
- Kučinić, M., Previšić, A., Graf, W., Mihoci, I., Šoufek, M., **Stanić-Koštroman, S.,** Lelo, S., Vitecek, S., Waringer, J. (2015): Larval description of *Drusus bosnicus* Klapalek 1899 (Trichoptera: Limnephilidae), with distributional, molecular and ecological features. *Zootaxa*. 3957(1): 85-97.
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- Stanić-Koštroman, S.,** Kučinić, M., Herceg, N., Čordaš, D., Durbešić, P. (2015): Tulari (Insecta, Trichoptera) kao indikatori klimatskih promjena i ekološkog statusa krških vodenih ekosustava. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem: "Zaštita voda u kršu", Mostar.
- Lukić, T., **Stanić-Koštroman, S.,** Herceg, N. (2015): Stanje staništa, flore i faune s osvrtom na vrste u području predloženim kao Natura 2000 u slivu Jadranskog mora Bosne i Hercegovine. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem: "Zaštita voda u kršu", Mostar
- Lukić, T., Herceg, N., Marković, D., **Stanić-Koštroman, S.,** Šljivić, A. (2015): Održivost i položaj Parka prirode Blidinje u nacrtu Natura 2000 područja za Bosnu i Hercegovinu. Međunarodni znanstveni simpozij Blidinje Zbornik radova,
- Lukić, T., Herceg, N., Numić, S., **Stanić-Koštroman, S.** (2015): Procjena utjecaja na okoliš izgradnje autoputa na Koridoru Vc kroz Bosnu i Hercegovinu s osvrtom na LOT 3 / Dionica Sjever jug (Tarčin) – Mostar sjever/. Druga regionalna konferencija o procjeni utjecaja na okoliš, Novi Vinodolski, Hrvatska.
- Hafner, D., Dedić, A., Sučić, Ž., Lasić, A., **Stanić-Koštroman, S.,** Škobić, D., Planinić, A. (2015): Litofiti potoka Badnje, Masna Luka, Blidinje. Međunarodni znanstveni simpozij Blidinje Bosna i Hercegovina. Zbornik radova.
- Hafner, D., Dedić, A., Azinović, T., Lasić, A., **Stanić-Koštroman, S.,** Škobić, D., Knezović, L. (2015): Epifitske dijatomeje na vrsti *Chara* sp. potoka Badnje (Masna Luka), Blidinje. Međunarodni znanstveni simpozij Blidinje, Zbornik radova.

Ime i prezime:	Anita Dedić
Predmet(i) koje izvodi:	<ul style="list-style-type: none"> • Alge i gljive • Praktikum iz algi i gljiva • Ekologija Protista • Praktikum iz ekologije protista • Hidrobiologija • Okoliš i ljudsko zdravlje
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Internetska stranica:	
Akademski stupanj:	Dr. sc.
Zvanje:	Docent
Datum zadnjeg izbora u zvanje:	Travanj, 2016.
<p><u>Profesionalna naobrazba:</u> 2011- 2015. Prirodoslovno matematički fakultet, Sveučilišta u Zagrebu. Poslijediplomski doktorski studij biologije. Doktorica znanosti. 2003. - 2008. Fakultet prirodoslovno-matematičkih i odgojnih znanosti, Sveučilište u Mostaru. Profesor biologije i kemije.</p> <p><u>Znanstveno-nastavna zvanja (zadnja zvanja):</u> 2016. Docent (Sveučilište u Mostaru) 2011. Mlađi asistent (Sveučilište u Mostaru)</p> <p><u>Nastavna aktivnost:</u> Voditelj preko 20 diplomskih i završnih radova.</p> <p><u>Dodatne nastavne aktivnosti:</u> 2018. Freshwater Algal Training Course. Durham University, Durham, United Kingdom . 2017. EOQ Environmental Systems Manager - OSKAR d.o.o. Zagreb, Republic of Croatia</p> <p><u>Pozivna predavanja:</u> Algae in Bosnia and Herzegovina. Durham University, United Kingdom. srpanj 2018. Biomonitoring. Danube Water Net Workshop. Energetski Institut Hrvoje Požar, Zagreb, Hrvatska. Ožujak, 2019.</p>	
Radovi i ostalo što nastavnika kvalificira za izvođenje nastave:	
Radovi objavljeni u posljednjih pet godina:	

- Vári, Á., Podschun, S.A., Erős, T., Hein, T., Pataki, B., Ioja, I., Mihai C., Gerhardt, A., Gruber, T., **Dedić, A.**, Gavrilović, B., Baldi A. Freshwater systems and ecosystem services: Challenges and chances for cross-fertilization of disciplines. *Ambio* (2021). <https://doi.org/10.1007/s13280-021-01556-4>
- Hájek, M., Jiménez-Alfaro, B., Hájek, O., Brancaloni, L., Cantonati, M., Carbognani, M., **Dedić, A.**, Dítě, D., Gerdol, R., Hájková, P., Horsáková, V., Jansen, F., Kamberović, J., Kapfer, J., Kolari, T. H. M., Lamentowicz, M., Lazarević, P., Mašić, E., Moeslund, J. E., Pérez-Haase, A., Peterka, T., Petraglia, A., Pladevall-Izard, E., Plesková, Z., Segadelli, S., Semeniuk, Y., Singh, P., Šimová, A., Šmerdová, E., Tahvanainen, T., Tomaselli, M., Vystavna, Y., Biță-Nicolae, C., and Horsák, M.: A European map of groundwater pH and calcium, *Earth Syst. Sci. Data*, 13, 1089–1105, <https://doi.org/10.5194/essd-13-1089-2021>, 2021.
- Talić, S., Škobić, D., **Dedić, A.**, Nazlić, N., Ujević, I., Ivanković, A., & Pavela-Vrančić, M. (2019). The occurrence of lipophilic toxins in shellfish from the Middle Adriatic Sea. *Toxicon*, 186, 19-25
- Stanić-Koštroman S., Previšić A., Kolobara A., Kučinić M., Škobić D., **Dedić A.**, Durbešić P. (2015): Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna River basins (Bosnia Herzegovina) under temperate and Mediterranean climates. *International Review of Hydrobiology*, 2015.
- **Dedić, A.**, Hafner, D., Antunović, A., Kamberović, J., Stanić-Koštroman, S., & Kelly, M. G. (2021). Biodiversity and seasonal distribution of benthic diatom assemblages as an indicator of water quality of small karstic river in Bosnia and Herzegovina. *Acta Botanica Croatica*, 80(2), 0-0.
- **Dedić, A.**, Gerhardt, A., Kelly, M. G., Stanić-Koštroman, S., Šiljeg, M., Stroil, B. K., Kamberović, J. (2020). Innovative methods and approaches for WFD: ideas to fill knowledge gaps in science and policy. *Water Solution*. Germany.
- **Dedić, A.**, Galić, T., Stanić-Koštroman, S., Škobić, D., Lasić, A., & Hafner, D. (2018). A biological water quality assessment based on phyto-benthos and macroinvertebrates at three stations on the river Neretva. *Radovi Šumarskog Fakulteta Univerziteta u Sarajevu*, 48(2), 41-53.
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- **Dedić A.**, Plenković-Moraj A., Kralj Borojević K., Hafner D. (2015): The first report on periphytic diatoms on artificial and natural substrate in karstic spring Bunica, Bosnia and Herzegovina. *Acta botanica Croatica*, 2015.
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Sudjelovanje na znanstveno stručnim konferencijama u zemlji i u inozemstvu:

- Stanić-Koštroman S., Herceg N., **Dedić A.**, Škobić D., Lasić A., Buljubašić A. (2019) Integral assessment of ecological status of the Lištica river . 8 th International Conference WATER FOR ALL 2019 Faculty of Civil Engineering and Architecture Osijek, Croatia 21-22 March 2019.
- Hafner D., Arapović B., **Dedić A.** (2016): Diatoms of Rivers Neretva, Cetina and Trebišnjica, Bosnia and Herzegovina. Proceedings of the 5th Croatian Botanical Symposium, Primošten, Croatia.
- **Dedić A.**, Plenković-Moraj A., Kralj Borojević K., Hafner D. (2014): Periphytic diatoms on artificial and natural substrate in karstic spring Bunica, Bosnia and Herzegovina: The first approach. Proceedings of the 8th Central European Diatom Meeting, Zagreb, Croatia.
- **Dedić A.**, Hafner D., Jasprica N., Kamberović J. (2013): Algae on macrophytes in the oligotrophic wetland Hutovo blato, Bosnia and Herzegovina. Proceedings of the 4th Croatian Botanical Symposium with international participation, Split, Croatia.
- Kamberović J., Barudanović S., **Dedić A.** (2013): Marsh vegetation of the order Phragmitetalia on shores of mine pit lakes in Tuzla Canton, Bosnia and Herzegovina. Proceedings of the 4th Croatian Botanical Symposium with international participation, Split, Croatia.
- Hafner D., Antunović A., **Dedić A.** (2015): The composition and structure of periphyton diatoms in Bunica river. 2nd Scientific and Expert conference with international participation “Karst Waters Management and Protection”, Faculty of Science and Education at the University of Mostar.
- Šakić D., **Dedić A.**, Hafner D., Grizelj Z. (2015): Algal composition in karstic springs Studenčica river, Bosnia and Herzegovina. 2nd Scientific and Expert conference with international participation - “Karst Waters Management and Protection” Faculty of Science and Education at the University of Mostar.
- Stanić Koštroman S., Škobić D., **Dedić A.** (2014): Biomonitoring on the example of Lištica river. 1st Scientific and Expert conference with international participation - “Karst Waters Management and Protection“, Faculty of Science and Education, University of Mostar, Bosnia and Herzegovina.

Sudjelovanje u projektima:

- Biological monitoring of surface water of the area of Neretva and Cetina river basins in Federation BIH in 2019. University of Mostar, Bosnia and Herzegovina. Projekat

u tijeku.

- Biological monitoring of surface water of the area of Neretva and Cetina river basins in Federation BIH in 2016, 2017, 2018. Faculty of Agriculture of the University in Mostar, Bosnia and Herzegovina.
- The Environmental Impact Study of the Pumped Storage Hydro Power Plant Vrilo. 2016. Elektroprivreda HZ HB d.d. Electricity Company in Bosnia and Herzegovina.
- Investigation of the ecological status for the water and biodiversity protection purposes of the Lištica and Radobolja rivers. Faculty of Science and Education, University of Mostar. 2016.
- Investigation of the biocenosa and ecological status of dinars watercourses. Faculty of Science and Education, Mostar. 2015.
- Pilot Project for the Improvement of Education on Environment Protection and Raising Awareness on CO2 Reduction and Energy Efficiency Increasing. Faculty of Science and Education University of Mostar. 2014.
- Revision of fishing-economical basis for fishing area of Central Bosnia Canton in 2013. Faculty of Agriculture of the University in Mostar, Bosnia and Herzegovina.

Ime i prezime:	Ivana Markotić
Predmet(i) koje izvodi:	Svitkovci Praktikum iz svitkovaca Terenska nastava iz svitkovaca Vertebrata Osnove histoloških tehnika Praktikum iz histologije i embriologije životinja Praktikum iz animalne fiziologije
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Internetska stranica:	https://www.fpmoz.sum.ba
Akademski stupanj:	Doktorica znanosti
Zvanje:	Docentica
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Doc. dr. sc. Ivana Markotić je rođena 15. listopada 1979. u Ljubuškom u Bosni i Hercegovini. Osnovnoškolsko obrazovanje je završila u Osnovnoj školi Tina Ujevića u Vitini, a opću gimnaziju 1998. u Ljubuškom. Diplomirala je 2004. biologiju i kemiju na Sveučilišta u Mostaru na Pedagoškom fakultetu te stekla zvanje profesorice biologije i kemije. Iste godine je dobila Pohvalu i Zahvalnicu matičnog fakulteta za uspjeh u studiranju. Od akademske 2005./2006. je zaposlena na Sveučilištu u Mostaru na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti, najprije kao znanstvena novakinja na kolegijima Histologija i embriologija životinja i Animalna fiziologija, a potom kao docentica na području prirodnih znanosti, polje biologija, grana zoologija. Izvodi i sudjeluje u izvođenju preddiplomske i diplomske nastave na Studiju biologije. Doktorirala je 2013. na Sveučilištu u Zagrebu na Prirodoslovno-matematičkom fakultetu, obranom doktorskog rada pod naslovom „Biološke i ekološke značajke prikanca, *Phoxinellus pseudalepidotus* Bogutskaya i Zupančić, 2003 (Teleostei: Cyprinidae) na području Mostarskog blata, BiH“ i stekla akademski stupanj doktorica znanosti iz znanstvenog područja prirodnih znanosti, polje biologija. Njezino je područje istraživanja biologija i ekologija slatkovodnih riba. Govori engleski jezik.

Radovi i ostalo što nastavnika kvalificira za izvođenje nastave:

Doc. dr. sc. Ivana Markotić je objavila jedno poglavlje u knjizi, više znanstvenih radova u međunarodnim časopisima, citiranima u referentnim bazama podataka, i sudjelovala na konferencijama u zemlji i inozemstvu. Objavljeni radovi proučavaju problematiku ihtiofaune slijeva rijeke Neretve, kao i neke biološke značajke riba *Lepidotrigla dieuzeidei* Blanc i Hureau, 1973, i *Uranoscopus scaber* Linnaeus, 1758 iz Južnog Jadrana. Posebno se ističu aktivnosti na proučavanju endemske riblje vrste prikanac, *Phoxinellus pseudalepidotus* Bogutskaya i Zupančić, 2003, rasprostranjene na području Mostarskog blata, koje predstavljaju i prvi prilog poznavanju biologije i ekologije ove vrste. Također, dobiveni rezultati istraživanja predstavljaju podlogu za poduzimanje

učinkovitijih mjera zaštite vrste, kao i smjernice za nastavak istraživanja na vrsti i lokalitetu. Doc. dr. sc. Ivana Markotić je uposlena na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru u svrhu izvođenja nastave i drugih oblika nastavnog rada, na Studiju biologije s kombinacijama, na kolegijima Svitkovci, Praktikum iz svitkovaca, Terenska nastava iz svitkovaca, Vertebrata, Osnove histoloških tehnika, Praktikum iz histologije i embriologije životinja i Praktikum iz animalne fiziologije. Bila je voditeljica 3 diplomska, 27 završnih i 29 seminarskih radova. Bila je članica Povjerenstva za obranu više desetaka završnih i diplomskih radova na preddiplomskom i diplomskom studiju biologije i studiju znanosti o okolišu. U akademskoj 2019./2020. je bila članica Povjerenstva za priznavanje ispita na Studiju biologije FPMOZ-a. Sudjelovala je na radionici „Odgovorno istraživanje i inovacije: radionica za nastavnike i osoblje“ koju je organiziralo Sveučilište u Splitu 16. ožujka 2018. u sklopu projekta OBZORA 2020 Higher Education Institutions & Responsible Research and Innovation. Mjesto održavanja: Sveučilište u Mostaru. Voditeljica radionice: prof. dr. sc. Ana Marušić. Sudjelovala je na radionici „ABC radionica dizajna nastave“ na Filozofskom fakultetu Sveučilišta u Mostaru. Voditeljica radionice: Sandra Kučina Softić, dipl. ing., pomoćnica ravnatelja za obrazovanje i podršku korisnicima, Sveučilišni računski centar Sveučilišta u Zagrebu. Sudjelovala je na edukaciji iz engleskog jezika, (Napredni stupanj, razina B1-B2) tijekom travnja, svibnja i lipnja 2018., koju je organiziralo Sveučilište u Mostaru za svoje djelatnike, u sklopu obuke i razvoja kadrova i upravljanja kvalitetom. Doc. dr. sc. Ivana Markotić je članica projektnog tima Ustrojbene jedinice Fakultet prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru na Erasmus+ projektu „Development of master curricula in ecological monitoring and aquatic bioassessment for WEB HEI-s“. Isto tako, od akademske 2013./2014., kao suradnica, sudjeluje na Danima otvorenih vrata Studija biologije Fakulteta prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru.

Dijelovi biografije:

Markotić, I., Mihaljević, Z., Čaleta, M. & Glamuzina, B. (2019) Feeding Ecology of the Endemic *Phoxinellus pseudalepidotus* (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). *European International Journal of Science and Technology*, 8(8), 5-14.

Ivana Markotić, Marko Čaleta, Branko Glamuzina (2018) Length-Weight Relationship and Condition Factor of Endemic Fish *Phoxinellus pseudalepidotus* (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). *European International Journal of Science and Technology*, 7(9), 44-53.

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Ivana Markotić, Marko Čaleta, Branko Glamuzina (2017) Length-Weight Relationship and Condition Factor of Endemic Fish *Phoxinellus pseudalepidotus* (Cyprinidae) from Mostarsko Blato (Neretva River Basin, Bosnia and Herzegovina). In, Book of Abstracts and Programme, 7th International Symposium of Ecologists of Montenegro – ISEM7, Vladimir Pešić and Sead Hadžiablahović (eds.), Institute for Biodiversity and Ecology, Podgorica, 93-93. 4-7 October 2017. Sutomore, Montenegro.

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Mihinjač, T., Markotić, I., Čaleta, M. (2014) Threatened fishes of the world: *Phoxinellus pseudalepidotus*. Croatian Journal of Fisheries, 72, 178-180.

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Dobrosravić, T., Sulić Šprem, J., Markotić, I., Bartulović, V., Kožul, V., Glamuzina, B. (2013) Dužinsko-maseni odnos kokotića (*Lepidotrigla dieuzeidei* Blanc & Hureau, 1973) u južnom Jadranu. U, Zbornik radova 48. hrvatskog i 8. međunarodnog simpozija agronoma, Marić S. i Lončarić Z. (ur.), Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, 624-628. 17. - 22. veljače 2013. Dubrovnik, Hrvatska.

Sulić Šprem, J., Dobrosravić, T., Markotić, I., Kožul, V., Bartulović, V., Glamuzina, B. (2013) Dužinsko-maseni odnos bežmeka (*Uranoscopus scaber* Linnaeus, 1758) u južnom Jadranu. U, Zbornik radova 48. hrvatskog i 8. međunarodnog simpozija agronoma, Marić S. i Lončarić Z. (ur.), Poljoprivredni fakultet Sveučilišta Josipa Jurja Strossmayera u Osijeku, 642-646. 17. 22. veljače 2013. Dubrovnik, Hrvatska.

Markotić, I., Čaleta, M., Mrakovčić, M., Glamuzina, B. (2013) The weight structure of *Phoxinellus pseudalepidotus* (Cyprinidae) from the Mostarsko blato (Neretva River basin, Bosnia and Herzegovina). In, Book of proceedings [Elektronski izvor] / Fourth International Scientific Symposium „Agrosym 2013“ Dušan Kovačević (ed.), 988-993. 10.7251/AGSY1303988M. Jahorina, October 3-6, 2013.

Markotić, I. (2013) Biological and ecological characteristics of Mostar minnow, *Phoxinellus pseudalepidotus* Bogutskaya & Zupančić, 2003 (Teleostei: Cyprinidae) from Mostarsko blato, Bosnia and Herzegovina. Doctoral thesis. Department of Biology, Faculty of Science, University of Zagreb, 112 pp.

Markotić, I., Bartulović, V., Glamuzina, B. (2012) Sex ratio of *Phoxinellus pseudalepidotus* Bogutskaya & Zupančić 2003 (Teleostei: Cyprinidae), from Mostarsko Blato area. In, Animal farming and Environmental interactions in the Mediterranean region, Casasús I., Rogošić J., Rosati A., Štoković I., Gabiña D. (eds.), EAAP publication No. 131, Wageningen Academic Publishers, Wageningen, 201-204.

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Markotić, I. (2005) Course „ Environment and Humans Populations: Lyfe Style and human adaptations in the Circum Mediterranean Area“. International University Centar of Mostar. Mostar, Bosnia and Herzegovina.

Markotić, I., Rogošić, J. (2004) The Effect of Polyethylene Glicol on Forage Intake of the

Mediterranean Shrubs by Sheep and Goats. In, Book of Abstracts, 1st International Symposium „Sustainable Utilization of the Indigenous Plant and Animal Genetic Resources in the Mediterranean Region“, Jakov Pehar (ed.), University of Mostar, Faculty of Agronomy, Faculty of Teaching Science and Institute of Agronomy, 40-40. Mostar, Bosnia and Herzegovina, 14-16 October 2004.

Ime i prezime:	Andelka Lasić
Predmet(i) koje izvodi:	Sistematika biljaka, Praktikum iz Sistematike biljaka, Biogeografija, , Ekologija bilja, Geobotanika i ekologija bilja, Vegetacijska ekologija, Bioraznolikost i zaštita prirode u BiH., Flora i vegetacija kopnenih voda, Terenska nastava iz Sistematike biljaka, Terenska nastava iz Geobotanike i ekologije bilja, Terenska nastava iz ekologije.
Ustanova zaposlenja:	Fakultet prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru
e-mail:	andjelka.lasic@ fpmoz.sum.ba
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Akademski stupanj:	Doktor znanosti
Zvanje nositelja predmeta:	Docent
Datum zadnjeg izbora u zvanje:	Svibanj 2018.

Kratki životopis:

Rođena je 22. listopada 1980. u Kiseljaku (Bosna i Hercegovina), gdje je završila osnovnu, a zatim i Srednju medicinsku školu. Studij biologije i kemije upisala je na Pedagoškom fakultetu Sveučilišta u Mostaru (danas Fakultet prirodoslovno-matematičkih i odgojnih znanosti). Diplomirala je 2004. obranivši rad pod naslovom "Urbana flora u Mostaru" (voditelj prof. dr. sc. Nenad Jasprica) i stekla zvanje profesora biologije i kemije.

Poslijediplomski doktorski studij upisuje 2006. (akademska 2005./2006.) na Prirodoslovno-matematičkom fakultetu Sveučilišta u Zagrebu, područje prirodnih znanosti, polje biologija, smjer ekologija. Doktorsku disertaciju pod naslovom: Ekološke značajke biljnih zajednica u krškim rijekama Trebižatu i Lištici (Bosna i Hercegovina) obranila je 27. rujna 2011. godine (mentor prof. dr. sc. Nenad Jasprica).

Od 2005. zaposlena je na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru kao mlađi asistent, a 2012. Bira se u zvanje docenta na Područje znanstvenog interesa jesu sistematika i ekologija bilja.

Autor je na nekoliko znanstvenih radova i sudjelovala je u radu više domaćih i međunarodnih znanstvenih skupova i radionica.

Popis radova objavljenih u posljednjih pet godina:

Radovi u časopisima s međunarodnom recenzijom:

Jasprica, N., Milović, M., Dolina, K., & Lasić, A., 2017. Analyses of the flora of railway stations in the Mediterranean and sub-Mediterranean areas of Croatia and Bosnia and Herzegovina. *Natura Croatica: Periodicum Musei Historiae Naturalis Croatici*, 26(2), 271-303.

Jasprica, N., Lasić, A., Hafner, D., & Bratoš Cetinić, A., 2017. Myriophyllum heterophyllum Michx.(Haloragaceae) u Hrvatskoj. *Natura Croatica: Periodicum Musei Historiae Naturalis Croatici*, 26(1), 99-103.

Lasić, A. and Jasprica, N., 2016. Vegetation diversity of the two Dinaric karstic rivers in Bosnia and Herzegovina. *Biologia*, 71(7), pp.777-792.

Lasić, A., Jasprica, N., Morović, M., Kapetanović, T., Carić, M., Drešković, N., Glavić, N., Mitić, B., 2014. Ecological characteristics of plant species and associations along two Dinaric karstic rivers (Bosnia and Herzegovina, The Balkans). *Biologia, Bratislava* 69/1, 40-52.

Čališ, J., Lasić, A., 2015. Floristički sastav mezofilne livade košanice na području Rame. *Znanstveni glasnik Sveučilišta u Mostaru*.

Lasić, A., Jasprica, N., 2015. Vaskularna flora u krškim rijekama Trebižatu i Lištici (Bosna i Hercegovina). *Zbornik radova 2. Znanstveno-stručne konferencije s međunarodnim sudjelovanjem "Zaštita voda u kršu"*. Fakultet prirodoslovno-matematičkih i odgojnih znanosti, Sveučilište u Mostaru. 108-118.

Hafner, D.; Dedić, A.; Sučić, Ž.; Lasić, A.; Stanić-Koštroman, S.; Škobić, D.; Planinić, A., (2015) Litofiti potoka Badnje, Masna luka, *Zbornik radova simpozija BLIDINJE 2015*. 71-87

Hafner, D.; Dedić, A.; Azinović, T.; Lasić, A.; Stanić-Koštroman, S., Škobić, D.; Knezović, L., 2015. Epifitske dijatomeje na vrsti Chara sp. Potoka Badnje (Masna luka), *Zbornik radova simpozija BLIDINJE 2015*. 141-153

Kongresna priopćenja:

Stanić-Koštroman, S, Herceg, N., Dedić, A., Škobić, D., Lasić, A., Buljubašić, A., 2019. Integralna procjena ekološkog statusa rijeke Lištice. *Book of Abstracts of the 8th International conference Water for all, Habuda-Stanić, M. (ed.)*, Josip Juraj Strossmayer, University of Osijek, 21. – 22. 3. 2019., 45-46.

Ruščić, M., Perak, M., Lasić, A., 2018. Flora of island Drvenik mali. *Book of abstract of the 13th Croatian Biological Congress with International Participation, Kružić, R., Caput Mihalić, K., Gottstein, S., Pavoković, D., Kučinić, M. (ed)*, Croatian Biological Society, 19. – 23. 09. 2018., 261 – 262.

Jasprica, N., Lasić, A., Hafner, D., & Cetinić, A. B., 2017. January. Myriophyllum heterophyllum Michx.(Haloragaceae) in Croatian submersed macrophyte communities. In *2nd Symposium on Freshwater Biology. Book of Abstracts of the Second Symposium on Freshwater Biology. / Gračan, R., Matoničkin, Kepčija, R., Miliša, M., Ostojić, A. (ur.)*. – Zagreb: Croatian Association of Freshwater Ecologist, Zagreb, 2017. 42-42.

Lasić, A., Jasprica, N., 2015. Plant associations of the Potametea pectinati Klika in Klika & Novák 1941 class of two karstic rivers in Bosnia and Herzegovina. *Book of Abstract of the 36th Meeting of the Eastern Alpine and Dinaric Society for Vegetation Ecology, Škvorc, Ž., Franjić, J., Krstonošić, D. (ur.)*, Osijek, Hrvatska, 17.-20. 6. 2015. 40-40.

Jasprica, N., Milović, M., Lasić, A., Dolina, K., 2014. Flora and vegetation of the railway areas in Croatia and Bosnia and Herzegovina. *Book of Abstracts of the First Croatian Symposium on Invasive Species with International Participation, Jelaska, S. (ed.)*, Croatian Ecological Society, Zagreb, Croatia, 24.11.2014., 57-58.

Lasić, A., Jasprica, N., 2014. Non-native plants in the Populetalia albae Braun-

Blanquet ex Tchou 1948 communities along the Neretva River in Bosnia and Herzegovina and Croatia. *Book of Abstracts of the First Croatian Symposium on Invasive Species with International Participation*, Jelaska, S. (ed.), Croatian Ecological Society, Zagreb, Croatia, 24.11.2014., 33- 34.

Ostalo što nastavnika kvalificira za izvođenje nastave

Sudjelovanje na projektima:

1. Living Neretva project (phase II and III) 2008/2009, WWF MedPO (World Wildlife Fund)
2. Biological monitoring of surface waters in the catchment area of the river Neretva and Cetina in the Federation of BiH 2010, Agency for Water Area of the Adriatic Sea in the Federation BiH
3. The pilot project for the improvement of environmental education and awareness on reducing CO₂ emissions and increasing energy efficiency 2014/2015. Environmental Protection Fund HNŽ
4. Investigations of ecological status for the purposes of water protection and biodiversity of ecosystems for rivers Lištica and Radobolja 2015 – 2017, Environmental Protection Fund FBiH
5. Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo 2016 -2019, EP HZHB
6. Biological monitoring of surface waters in the catchment area of the river Neretva and Cetina in the Federation of BiH 2018, Agency for Water Area of the Adriatic Sea in the Federation BiH

Ime i prezime:	Adriana Planinić
Predmet(i) koje izvodi:	Ekologija životinja/i zoogeografija, Praktikum iz ekologije životinja/i zoogeografije, Biogeografija, Ekologija urbanih ekosustava, Izrada entomološke zbirke
Ustanova zaposlenja:	Sveučilište u Mostaru, Fakultet prirodoslovno-matematičkih i odgojnih znanosti
E-pošta:	adriana.planinic@fpmoz.sum.ba
Internetska stranica:	www.sum.ba, www.fpmoz.sum.ba
Akademski stupanj:	Dr. sc.
Zvanje:	Docent
Datum zadnjeg izbora u zvanje:	1.7.2018.

Rođena u Mostaru 1986. godine gdje završava osnovno, srednje i fakultetsko obrazovanje. Fakultet prirodoslovno-matematičkih i odgojnih znanosti na kojem je stekla stupanj magistre Biologije i geografije joj postaje mjesto stalnog zaposlenja 2010. godine. S velikom ljubavlju izvodi laboratorijske i terenske vježbe iz koleija Opća zoologija i Beskralješnjaci. Obrazovanje nastavlja upisom doktorskog studija biologije na PMF-u Sveučilišta u Zagrebu gdje s temom „Faunistička i ekološka karakterizacija zajednice planktonskih rakova (Copepoda i Cladocera) u izvorskim i jezerskim staništima donjeg toka rijeke Neretve“ stječe titulu doktorice znanosti 2017. godine. Kroz svoj rad na Sveučilištu u Mostaru se posebno posvećuje kvaliteti nastave i radu na sebi u cilju učinkovitog prijenosa znanja studentima. Koristeći ERASMUS + i CEEPUS mreže ostvarila je tri predavačke mobilnosti na Europskim sveučilištima u Slovačkoj, Češkoj i Poljskoj. Na Sveučilištu u Beču je završila stručno usavršavanje u statusu postdoktoranta u okviru silabusa Biology of branshiopods (Cladocerans) of Europe u akademskoj 2020/2021. godini. Članica je svjetskog društva za urbanu ekologiju (SURE). Udata je i majka je dvije djevojčice.

Radovi i ostalo što nastavnika kvalificira za izvođenje nastave:

Projekti:

ECOBIAS- Development of Master curricula in ecological monitoring and aquatic bioassessment for WEB-HEI-s. Erasmus + Joint Projects-EU grant 2019-2022.

Biological monitoring of surface waters in the Adriatic Sea water area in the FBiH. Agency for the Adriatic Sea Water Area, FBiH 2016-2019.

Lifelong learning for sustainable agriculture in the Alpe-Danube-Adriatic region. Teacher training at UHOH- University of Hohenheim. 2015.

Faunistic and ecological characterization of microcrustacean communities (Copepoda and Cladocera) of the River Neretva basin. Federal Ministry of Education. 2012.

Međunarodna suradnja:

ERASMUS + Teaching Mobility. Faculty of natural Sciences, department of Biology, Matej Bel University, Slovakia. October 2019.

CEEPUS CIII-CZ-0111-14-1920-GEOREGNET- Department of Social Geography and

Regional development, Charles university, Prague. November 2019.
CEEPUS CIII-CZ-0111-14-1920-GEOREGNET- Faculty of Geography and Geology,
Institute of Geography and Spatial management, Jagiellonian University, Krakow, Poland.
January 2020.

Kongresi:

ECOSMART 2019. International Conference Environment at CrossRoads: SMART approaches for sustainable future. Bucharest 5-8.9.2019.

First croatian Congress on Light Pollution 2019. Rab, Croatia.

Second Scientific and Expert Conference with international participation Karst Water management and Protection. 2014. Mostar, BiH

12. Croatian Biology Congress in Šibenik. 2012. Croatia.

Radovi:

Planinić, A., Marušić, O., Bevanda, L. 2019. Artificial light and animal ecology. First Croatian Congress on Light pollution. Rab. Croatia.

Stanić-Koštroman, S., Previšić, A., **Planinić, A.** et al. 2015. Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and mediterranean climate. International Review of Hydrobiology. 100(2):79-95

Knezović, L., Miliša, M., Kalafatić, M., Rajević, N., **Planinić, A.** 2015. A key to the freshwater triclads (Platyhelminthes, Tricladida) of Herzegovina watercourse. Periodicum biologorum. 117(3) 425:433

Ime i prezime:	Dragan Škobić
Predmet(i) koje izvodi:	Opća botanika, Fiziologija bilja, Osnove zaštite prirode i okoliša, Opća ekologija, Osnove ekologije i okoliša, Konzervacijska biologija
Ustanova zaposlenja:	Fakultet prirodoslovno-matematičkih i odgojnih znanosti, Sveučilište u Mostaru
E-pošta:	dragan.skobic@fpmoz.sum.ba
Internetska stranica:	www.fpmoz.sum.ba
Akademski stupanj:	Dr.sc.
Zvanje:	Izv.prof.
Datum zadnjeg izbora u zvanje:	Listopad 2020.

Kratki životopis:

Kratki životopis:

Dragan Škobić rođen je 21. listopada 1971. g. u Mostaru. Osnovnu i srednju školu je završio u Mostaru. Godine 1995. upisao je Pedagoški fakultet Sveučilišta u Mostaru, smjer biologija i kemija, gdje je uspješno obranio diplomski rad s temom „Analiza kristala i čestica virusnog izolata iz vinove loze (*Vitis vinifera* L.)“ pod vodstvom prof. dr. sc. Mladena Krajačića i stekao zvanje profesora biologije i kemije. Godine 2002. upisao je poslijediplomski studij pri Biološkom odsjeku Prirodoslovno-matematičkog fakulteta Sveučilišta u Zagrebu, smjer ekologija, gdje je uspješno položio sve ispite s prosjekom ocjene 5,0 i obranio rad pod nazivom „Učinak cinkovog i aluminijevog sulfata na rast vodene leće (*Lemna minor* L.)“ pod vodstvom prof. dr.sc. Branke Pevalek-Kozlina. Godine 2012. uspješno je obranio doktorsku disertaciju pod nazivom „Uloga biljnih sekundarnih metabolita u biotskim odnosima između biljaka i životinja“ pod vodstvom prof. dr. sc. Joze Rogošića na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru.

Od 2001. g zaposlen je kao ml. asistent na Pedagoškom fakultetu, odjel biologije i kemije, a od 2006. g. na Fakultetu prirodoslovno-matematičkih i odgojnih znanosti, studijska grupa biologija. Sudjelovao u izvođenju praktične nastave iz kolegija Fiziologija bilja i Opća botanika. Koautor je više znanstvenih radova, na engleskom jeziku, u časopisima koje citira "Current Contents" te je sudjelovao na više znanstvenih skupova i izlaganja na engleskom jeziku.

Djelovao je u organizaciji nastave kao tajnik na odjelu biologije od 2003. do 2006. godine, te sudjelovao i djelovao u stvaranju i organiziranju novog smjera kao tajnik na Znanosti o okolišu od 2006. do 2012. godine. Od 2013. do 2017. vodio je smjer Znanost o okolišu kao pročelnik, a nakon toga sve do danas je pročelnik studijske grupe biologija.

Radovi i ostalo što nastavnika kvalificira za izvođenje nastave:

CC RADOVI

- 11.** Rogosic, J., Estell, R.E., **Škobic, D.**, Maric, S, and Martinovic, A. (2006). Role of species diversity and secondary compounds complementarity on diet selection of Mediterranean shrubs by goats. *Journal of Chemical Ecology* 32, 1279-1287, **Impact factor 3,151**

- 12.** Rogosic, J., Estell, R.E., **Skobic, D.**, and Stanic, S. (2007) Influence of secondary compound complementarity and species diversity on consumption of Mediterranean shrubs by sheep. *Appl. Anim. Behav. Sci.* 107, 58-65, **Impact factor 1,795.**
- 13.** Rogosic, J., Moe, S.R., **Skobic, D.**, Knezovic, Z. Rozic, I., Zivkovic, M., Pavlicevic, J. (2009) Effect of supplementation with barley and activated charcoal on intake of biochemically diverse Mediterranean shrubs, *Small Ruminant Research* 81, 79-84, **Impact factor 1,083.**
- 14.** Radić, S., Babić, M., **Škobić, D.**, Roje, V., Pevalek-Kozlina, B. (2010) Ecotoxicological effects of aluminum and zinc on growth and antioxidants in Lemna minor L. *Ecotox Environ Safe* 73, 336-342, **Impact factor 3,130.**
- 15.** Rogosic, J., Saric, T., Herceg, N., Zjalic, S., Stanic, S., **Skobic, D.** (2011) Effect of supplementation with barley and calcium hydroxide on intake of Mediterranean shrubs in goats. *Ital J Anim Sci* 10, 117-123, **Impact factor 0,841.**
- 16.** Filipović, A., Poljak, M. and **Škobić, D.** (2013) Response of Chlorophyll a, SPAD Values and Chlorophyll Fluorescence Parameters in Leaves of Apricot Affected Some Abiotic Factors. *J Food Sci Eng* 3, 19-24, **Impact factor 0,571.**
- 17.** Stanić-Koštroman, S., Previšić, A., Planinić, A., Kučinić, M., **Škobić, D.**, Dedić, A. And Durbešić, P. (2015) Environmental determinants of contrasting caddisfly (Insecta, Trichoptera) biodiversity in the Neretva and Bosna river basins (Bosnia and Herzegovina) under temperate and Mediterranean climates. *Int Rev Hydrobiol* 100, 79-95, **Impact factor 1,459.**
- 18.** Saric, T., Rogosic, J., Zupan, I., Beck, R., Bosnic, S. Sikic, Z., **Skobic, D.**, Tkalcic, S. (2015) Anthelmintic effect of three tannin-rich Mediterranean shrubs in naturally infected sheep. *Small Ruminant Res* 123, 179-182, **Impact factor 1,083.**
- 19.** Rogosic, J., Ralph, M., Musa, A., **Skobic, D.**, Krvavica, M., Arapovic, M. (2018) Goat preference for phylogenetical diverse compared to similar Mediterranean shrubs. *J Mediterr Ecol* 16, 5-13
- 20.** Talić, S., **Škobić, D.**, Dedić, A., Nazlić, N., Ujević, I., Ivanković, A., Pavela-Vrančić, M. (2020) The occurrence of lipophilic toxins in shellfish from the Middle Adriatic Sea. *Toxicon* 186. 19-25

RADOVI S MEĐUNARODNOM RECENZIJOM

- 13. Skobic, D.**, Rogosic, J., Stanic-Kostroman, S. and Knezovic, L. (2012) Effects of fennel (*Foeniculum vulgare* Mill.) on consumption of two Mediterranean *Juniperus* species by goats. In: Casaus, I., Rogosic, J., Rosati, A., Štoković, I., Gabina, D. (ed.): *Animal farming and environmental interactions in the Mediterranean region*, 63-66. Wageningen Academic Publishers, Netherlands.
14. Stanić-Koštroman, S., Kučinić, M., Kolobara, A., **Škobić, D.**, Knezović, L. and Durbešić, P. (2012) Light-trapped caddisflies (Insecta:trichoptera) as indicators of the ecological integrity of the Lištica river, Bosnia and Herzegovina. *Entomol Croat* 16, 21-36
15. Stanić-Koštroman, S., **Škobić, D.**, Dedić, A. (2015) Biološki monitoring na primjeru rijeke Lištice. *Suvremena pitanja* 19, 94-103.
16. Hafner, D., Dedić, A., Sučić, Ž., Lasić, A., Stanić-Koštroman, S., **Škobić, D.**, Planinić, A. (2015) The composition of lithophytic diatoms in creek Badnje, Masna Luka, Blidinje. *International Scientific Symposium Blidinje 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and Herzegovina*, 71-87.
17. Hafner, D., Dedić, A., Azinović, A., Lasić, A., Stanić-Koštroman, S., **Škobić, D.**, Knezović, L. (2015) Epiphytic diatoms on Chara sp. In *Badnje creek (Mansa Luka), Blidinje, 2015. Book of Abstract, Proceeding of the University of Mostar, Bosnia and*

Herzegovina 141-153

18. Stanić-Koštroman, S., Škobić, D., Dedić, A., Šljivić, A., Herceg, N. (2016) Kakvoća vode rijeke Radobolje, Bosna i Hercegovina. Zbornik radova II. međunarodni i VI. hrvatski znanstveno-stručni skup Voda za sv e, 18. Ožujka 2016. Osijek, Hrvatska, 254-269.
19. Martinović Bevanda, A., Ivanković, A., Talić, S., Batinić, K., Škobić, D., Brkljača, M., Martinović, I., prusina, T. (2018) Chemometric Classification of White Hercegovinum Wine Žilavka Based on Physical and Chemical Properties. Knjiga radova Znanstveno-stručni skup "130 godina organiziranog vinogradarstva i vinarstva u BiH" 21-22. Rujna, Mostar, BiH
20. Dedić, A., Galić, T., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2018) A biological water quality assessment based on phytobenthos and macroinvertebrates at three stations on the Neretva river. Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ works of the Faculty of Forestry University of Sarajevo 48, No. 2, 41-53.
21. Dedić, A., Stanić-Koštroman, S., Đolo, S., Lasić, A. & Škobić, D. (2019) Preliminary study of trophic relation between diatoms and endemic species *Drusus ramie* Marinković-Gospodnetić (1970) (Insecta: Trichoptera) at the Lištica spring, Bosnia and Herzegovina. In Proceeding ISEM8 October, 2-5
22. Dedić, A., Čaveliš, M., Lasić, A., Škobić, D., Stanić-Koštroman, S. (2019) Kvaliteta vode i ekološki status rijeke Rame. *Suvremena pitanja* 27. 155-168.
23. Dedić, A., Antunović, A., Kamberović, J., Stanić-Koštroman, S., Škobić, D., Lasić, A., Hafner, D. (2019) Using diatoms in biological assessment of the water quality on the example of small karstic river in Bosnia and Herzegovina. *Radovi Šumarskog fakulteta Univerziteta u Sarajevu/ Works of the Faculty of Forestry University of Sarajevo*, No. 1, 52-68
24. Dedić, A., Gerhardt, A., Kelly, M.G., Stanić-Koštroman, S., Šiljeg, M., Kalamujić Stroil, B., Kamberović, J., Matelj, Z., Pešić, V., Vučković, I., Snigirova, A., Bogatova, Y., Barinova, S., Radulović, S., Cvijanović, D., Lasić, A., Škobić, D., Sudar, A., Mrđan, D., Herceg, N. (2020) Innovative methods and approaches for WFD: ideas to fill knowledge gaps in science and policy. *Water Solutions* 3, 30-42.

UČEŠĆE NA KONGRESIMA:

- 11.** Skobic, D., Rogosic, J (2004) Effect of biological diversity and interaction of tannins and saponins in herbivore diet. (eds.): The Summaries for International Symposium «Sustainable Utilization of Indigenous Plant and Animal Genetic Resources in the Mediterranean Region» 14th-16th october 2004, Mostar, Bosnia and Herzegovina, 32
- 12.** Stanić-Koštroman, S., Škobić, D. & Durbešić, P. (2007) Composition and trophic structure of macrozoobenthos communities in Radobolja river. In: Bogut, I. (ed.): Proceedings of the International scientific expert symposium-Fish breeding in hydro power reservoirs (hydro accumulations)- management possibility and environmental protection. 24th-26th Octobre 2007, Neum, 353-368
- 13.** Stanić-Koštroman, S., Durbešić, P., Škobić, D. and Knezović, L. (2010) Human activities impact on water quality of the Lištica river, Bosnia and Herzegovina. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 38
- 14.** Knezović, L., Franjević, D., Kalafatić, M., Rajević, N., Škobić, D. (2010) Molecular phylogenetic analyses of the mitochondrial gene sequences of cytochrome oxidase I (COI). The Second International Scientific Symposium "MOLECULAR GENETICS RESEARCH TODAY AND ITS APPLICATION POSSIBILITIES", October 22,2010 Tuzla, Bosnia and Herzegovina.
- 15.** Škobić, D., Rogošić, J., Stanić-Koštroman, S. and Knezović, L. (2010) Effect of

fennel (*Foeniculum vulgare* Mill.) on consumption of the Mediterranean *Juniperus* species by goats. 11th biennial Mediterranean Symposium October 27-29, 2010 Zadar, Croatia, 48

- 16.** Saric, T., Rogosic, J., Beck, R., Zupan, I., Zjalic, S., Musa, A. And **Skobic, D.** (2012) Mediterranean shrub *Pistacia lentiscus* L. As a potential tool in the control of nematodes in sheep. Book of Abstracts of the 63rd Annual Meeting of the European Federation of Animal Science / - Wageningen: Wageningen Academic Publishers, 2012, 109-109
- 17.** Hafner, D., Dedić, A., Azinović, T., Lasić, A., Stanić-Koštroman, S., **Škobić, D.**, Knezović, L. (2015) Epifitske dijatomeje na vrsti *Chara sp.* potoka Badnje (Masna Luka), Blidinje. Međunarodni znanstveni simpozij "Blidinje 2015.," Listopad 9.-10. 2015. Mostar, Bosna i Hercegovina, 141.
- 18.** **Škobić, D.**, Šljivić, A. (2015) Usporedba fizikalno-kemijskih svojstava krških Rijeka i utjecaj onečišćenja. 2. Znanstveno-stručna konferencija s međunarodnim sudjelovanjem "Zaštita voda u kršu" Listopad, 15.-16. 2015 Mostar, Bosna i Hercegovina, 65
- 19.** Stanić-Koštroman, S, Herceg, N., Dedić, A., **Škobić, D.**, Lasić, A., Buljubašić, A. (2019) Integralna procjena ekološkog statusa rijeke Lištice. 8th Internatioanal Conference "Water for All", March, 21.-22. 2019. Osijek, Croatia.
- 20.** Gerhard, A., Stanić-Koštroman, S., Dedić, A., Lasić, A., **Škobić, D.** (2019) Inovativni integralni alati za praćenje onečišćenja u vodenim ekosustavima. Drugi BiH kongres o vodama. Studeni, 7.-8. 2019. Sarajevo, Bosna i Hercegovina.

PROJEKTI:

Suradnik na projektima

- «Uvođenje održivog sustava gospodarenja planinskim pašnjacima u cilju proizvodnje autohtonih sireva» (2003-2004) ,
- «Istraživanje ekosustava rijeka Lištice i Radobolje, utjecaji onečišćenja i mjere zaštite» (2005-2007),
- «Potencijalni mehanizmi za bolje korištenje krmnih potencijala primorskih pašnjačko-šumskih sastojina» (2007-2009),
- «Revizija ribolovne osnove za ribolovno područje Središnja Bosna» (2013-2014), «Istraživanje biocenoza i ekološkog statusa Dinarskih tekućica» (2014-2015),
- «Istraživanje ekološkog statusa u svrhu zaštite voda i bioraznolikosti rijeka Lištice i Radobolje» (2015-do 2016.).
- Voditelj istraživačke sektorske studije „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) u sklopu projekta „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“
- «Analiza fitotoksina u školjkašima Srednjeg Jadrana (Neumski zaljev) »(2017-2018)
- «Primjena mjerila zelene javne nabavke u svrhu smanjenja nastanka otpada i promocija» (2020)
- «Afirmiranje usluga ekosustava u svrhu unapređenja održivog turizma Ramskog jezera» (2020)
- «Biološki monitoring površinskih voda na vodnom području Jadranskog mora» (2018-2021)

Koordinator I voditelj projekta:

- Koordinator ERASMUS+ projekta iz oblasti jačanja kapaciteta visokoškolskih ustanova pod naslovom „Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs.“(2020-2023)

- Voditelj istraživačke sektorske studije „Istraživanje flore, faune, staništa i ekosustava na području zahvata CHE Vrilo“ (2016-2017) u sklopu projekta „Consulting Services for Environmental Investigations in the Project area of Pump-Storage Hydro Power Plant Vrilo“

Suradnik ili voditelj na stručnim studijama:

- „Prirodne znamenitosti Hercegovačko-neretvanske županije“ –voditelj studije; Udruga „Centar za ekologiju, okoliš i turizam“ (2019)
- „Opis postojećeg stanja biljnog i životinjskog svijeta pri izradi SUO za regionalnu sanitarnu deponiju Karanovac“ –suradnik; ECOPLAN (2015).

NAČINI IZVOĐENJA NASTAVE I OSTALIH AKTIVNOSTI TEČAJEVA

Realizacija tečajeva cjeloživotnog učenja iz oblasti Ekološkog monitoringa voda podrazumijeva predavanja, laboratorijsku nastavu i terensku nastavu. Predavanja i laboratorijska nastava će se realizirati u prostorijama Fakulteta prirodoslovno-matematičkih i odgojnih znanosti Sveučilišta u Mostaru (amfiteatar, učionice, laboratorije), dok će se terenska nastava realizirati na terenu (odabrani lokaliteti u okruženju na rijekama Neretva, Buna, Jasenica i slično, kao i u parku prirode Hutovo blato).

Sve aktivnosti će biti realizovane u skladu sa Planom rada koji je predstavljen u informacijskim listama za svaki pojedinačni tečaj. Materijali za učenje i terenski protokoli su pripremljeni od strane programskih zemalja i prevedeni na naš jezik od strane eksperata iz partnerskih zemalja. Napisane udžbenike su recenzirali nezavisni eksperti.

Materijali za učenje će biti publikovani on-line kako bi takođe bili pristupačni i polaznicima kurseva i nastavnicima iz drugih institucija visokog obrazovanja iz zemalja Zapadnog Balkana.

PROSTORNI I MATERIJALNI PREDUVJETI ZA IZVEDBU TEČAJEVA

U okviru realizacije projekta ECOBIAS, radi se na opremanju laboratorije koja uključuje opremu za ekološki monitoring voda, pri čemu se dopunjava postojeća oprema i nabavlja nova, a u cilju izvođenja sofisticirane analize biološkog monitoringa voda. Također u okviru projekta ECOBIAS nadopunit će se oprema koja je potrebna za terenska istraživanja u sklopu tečajeva iz oblasti ekološkog monitoringa.

UVJETI UPISA

Program mogu pratiti polaznici sa minimalno završenim osnovnim studijama iz oblasti biologije, ekologije, tehnologije, poljoprivrede i srodnih nauka.

TROŠKOVI UPISA

Pošto je planirano da se program realizuje u okviru Erasmus + projekta ECOBIAS, nisu predviđeni troškovi upisa i pohađanja kursa.

BROJ PREDVIĐENIH POLAZNIKA

Broj polaznika po tečaju nije ograničen.

NASTAVNI PROGRAMI

Naziv kolegija	Akvatične i semiakvatične makrofite		Kod kolegija	ASM
Studijski program Ciklus	LLL		Godina studija	
ECTS vrijednost boda:	6		Broj sati po semestru (p+v+s)	30+30
Nositelj kolegija/nastavnik:	Doc. dr. sc. Anđelka Lasić, Doc. dr.sc. Anita Dedić			
E-mail adresa i broj telefona:	andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457 anita.dedic@fpmoz.sum.ba; + 387 36 445 457			
Terenski rad	20	Pismeni ispit	20	
Samostalni istraživački rad	20	Usmeni ispit	40	
Ciljevi kolegija:	Cilj ovog tečaja je pružiti opće znanje o istraživanju vodenih makrofita u jezerima i rijekama u svrhu procjene ekološkog statusa, koristeći ove organizme kao elemente biološkog kvaliteta u skladu s obje: EU standardne metode (Europski komitet za standardizaciju, Voda kvaliteta: EN 15460, EN14184: 2016) kao i temeljni znanstveni pristup			
Ishodi učenja (opće i specifične kompetencije):	<p>Nakon odslušanog tečaja polaznici će biti osposobljeni:</p> <ul style="list-style-type: none"> • Da samostalno vrše planiranje i postupak istraživanja, • Da prikupe i identificiraju makrofite kao i strukturu vegetacije, • Da pravilno koristiti relevantnu literaturu, a posebno determinacijske ključeve i baze podataka, • Te da obrade kvantitativne metrike, osobine i ekološke indekse makrofita 			
Literatura:	<ul style="list-style-type: none"> • EN 14184: 2014 Water Quality – Guidance for the surveying of aquatic macrophytes in running waters, Comite Europeen de Normalisation • Jeppesen, E., Søndergaard, M., Søndergaard, M., Christofferson, K. (Eds.) (2012). The structuring role of submerged macrophytes in lakes. Springer Science & Business Media. • Nastavni materijal publicirani u okviru ECOBIAS projekta 			

Naziv kolegija	Akvatične makroinvertebrate u monitoringu voda		Kod kolegija	AMMV
Studijski program Ciklus	LLL		Godina studija	
ECTS vrijednost boda:	6		Broj sati po semestru (p+v+s)	30+30
Nositelj kolegija/nastavnik:	Red. prof. dr. sc. Svjetlana Stanić-Koštroman			
Kontakt sati/konzultacije:	prema dogovoru			
E-mail adresa i broj telefona:	svjetlana.stanic.kostroman@fpmoz.sum.ba; + 387 36 445 468 dragan.skobic@fpmoz.sum.ba; + 387 36 445 468			
Terenski rad:	20	Pismeni ispit	20	
Samostalni istraživački rad	20	Usmeni ispit	40	
Ciljevi kolegija:	Ovaj tečaj će se fokusirati na sticanje znanja o morfološkim svojstvima i ekološkim svojstvima uobičajenih taksona makroinvertebrata na Balkanskom poluotoku i ulozi strukture zajednice bentosa u procesu bioanalize. Bentoski makroinvertebrati su vjerovatno najsloženiji dio biotičkih elemenata kvalitete (BQE) potrebnih za procjenu slatkovodnih voda zbog svoje raznovrsnosti, obilja, ekoloških svojstava i životnog ciklusa. Ovaj tečaj će pružiti najsavremenija znanja o ovim temama i pružiti odgovarajuće taksonomske / sistemske karakteristike neophodne u procesu identifikacije makroinvertebrata. Na kraju ćemo se pozabaviti specifičnostima balkanske faune i staništa makro beskičmenjaka.			
Ishodi učenja (opće i specifične kompetencije):	Polaznici tečaja će biti u stanju identificirati glavne grupe makroinvertebrata, što će im omogućiti da izgrade odgovarajuće baze podataka i izračunaju neke od indeksa koji se koriste u procjeni slatkovodnih bioloških područja kao i na lotičkim i lentičkim staništima..			
Literatura:	<ul style="list-style-type: none"> • Hauer, F.R. & Resh., V.H. (1996). Benthic Macroinvertebrates, In: Methods in Stream Ecology, F.R. Hauer & G.A. Lamberti (eds), pp. 339-369, Academy Press, New York, USA. • Nastavni materijal publiciran u okviru ECOBIAS projekta. 			

Naziv kolegija	Fikologija	Kod kolegija	FL
Studijski program Ciklus	LLL	Godina studija	
ECTS vrijednost boda:	6	Broj sati po semestru (p+v+s)	30+30
Nositelj kolegija/nastavnik:	Doc. dr. sc. Anita Dedić Doc.dr.sc. Anđelka Lasić		
E-mail adresa i broj telefona:	anita.dedic@fpmoz.sum.ba; +387 36 445 457 andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457		
Terenski rad:	20	Pismeni ispit:	20
Samostalni istraživački rad:	20	Usmeni ispit:	40
Ciljevi kolegija:	Tečaj je osmišljen da razjasni značaj mikroalgi i cijanobakterija u prirodnim ekosustavima, te kako bi se polaznici pripremili za rješavanje različitih problema vezanih za kvalitet vode i zaštitu životne sredine. Naglasak se stavlja i na razumijevanje važnosti algi i cijanobakterija u pogledu njihovih biokemijskih, fizioloških i genetičkih potencijala, kao i biotehnoških primjena.		
Ishodi učenja (opće i specifične kompetencije):	Polaznici tečaja će demonstrirati razumijevanje specifične stanične organizacije i obrazaca rasta mikroalgi i cijanobakterija; objasniti glavne puteve u fiziologiji i genetici mikroalgi i cijanobakterija; opisati ulogu mikroalgi i cijanobakterija u različitim ekosustavima; objasniti ulogu mikroalgi i cijanobakterija u različitim biotehnoškim procesima, pripremati zbirke kultura.		
Literatura:	<ul style="list-style-type: none"> • Svirčev Z. (2005): <i>Microalgae and Cyanobacteria in Biotechnology</i>. Faculty of Sciences, University of N. Sad. • Blaženčić J. (1988): <i>Systematics of Algae</i>. Naučna knjiga, Belgrade. • Nastavni materijal publiciran u okviru ECOBIAS projekta. 		

Naziv kolegija	GIS i daljinska istraživanja u ekomonitoringu		Kod kolegija	GISDIE
Studijski program Ciklus	LLL		Godina studija	
ECTS vrijednost boda:	6		Broj sati po semestru (p+v+s)	30+30
Nositelji kolegija/nastavnici:	Izv.prof.dr.sc. Dragan Škobić, Doc. dr. sc. Adriana Planinić Doc.dr.sc. Anita Dedić			
E-mail adresa i broj telefona:	Dragan.skobic@fpmoz.sum.ba; + 387 36 445 468 adriana.planinic@fpmoz.sum.ba; + 387 36 445 467 anita.dedic@fpmoz.sum.ba; + 387 36 445 457			
Terenski rad:	20	Pismeni ispit:	20	
Samostalni istraživački rad:	20	Usmeni ispit:	40	
Ciljevi kolegija:	Tečaj je osmišljen kako bi pružio znanje o geografskom informacijskom sustavu (GIS) i tehnologijama daljinskog mjerenja te njihova primjena u ekološkom monitoringu, prikupljanju podataka i donošenju odluka.			
Ishodi učenja (opće i specifične kompetencije):	Studenti će biti osposobljeni provoditi terenska istraživanja korištenjem osnovnih i naprednih tehnologija GIS -a i daljinskog mjerenja (GPS i UAV (bespilotne letjelice)) te obrađivati podatke o sustavima za georeferenciranje, modele prostornih podataka i bazu podataka, analizu i modeliranje prostornih podataka; istraživanje i statistika prostornih podataka; karti širenja i razmjene podataka te stvaranja osnovnog scenarija predviđanja studija utjecaja na okoliš pomoću alata i resursa otvorenog pristupa.			
Literatura:	<ul style="list-style-type: none"> • Radulović S, Cvijanović D. 2016. Osnove ekologije. Udžbenik. Prirodno-matematički-fakultet, Univerzitet u Novom Sadu. Novi Sad. • Radulović, S., Teodorović, I. 2011. Ekologija i monitoring kopnenih voda. Metodološki priručnik. Prirodno-matematički fakultet. Novi Sad • Horning, N. 2010. Remote Sensing for Ecology and Conservation: A Handbook of Techniques. Oxford University Press • Nastavni materijal publiciran u okviru ECOBIAS projekta. 			

Naziv kolegija	Ihtiologija		Kod kolegija	IL
Studijski program Ciklus	LLL		Godina studija	
ECTS vrijednost boda:	6		Broj sati po semestru (p+v+s)	30+30
Nositelj kolegija/nastavnik:	Dr.sc. Ivana Markotić, doc. Dr.sc. Svjetlana Stanić-Koštroman, red.prof.			
E-mail adresa i broj telefona:	ivana.markotic@fpmoz.sum.ba + 387 (0) 36 445 481 svjetlana.stanic.kostroman@fpmoz.sum.ba; + 387 36 445 468			
Terenski rad:	20	Pismeni ispit:	20	
Samostalni istraživački rad:	20	Usmeni ispit:	40	
Ciljevi kolegija:	Ovaj tečaj se bavi svim aspektima ekologije riba od njihove osnovne fiziologije kroz interakcije u okviru mreža ishrane, konkurenciju, reproduktivne strategije i važnost veličine za ekološke interakcije. Istaknut će se značaj ribe kao bioloških pokazatelja. Predstaviti će se različiti multimetrijski pristupi koji se koriste u bioprocjeni.			
Ishodi učenja (opće i specifične kompetencije):	Polaznici će biti u mogućnosti povezati ribu sa kategorijama staništa, tipovima rijeka i eko-regijama, kao i primijeniti znanje iz ekologije, fiziologije i zoogeografije riba kako bi razumjeli funkcionisanje vodenog ekosustava. Polaznici tečaja će savladati primjenu različitih indeksa na bazi ihtiofonda u procjeni ekološkog statusa kopnenih voda.			
Literatura:	<ul style="list-style-type: none"> • Matthews W.J. (2012) <i>Patterns in Freshwater Fish Ecology</i>. Chapman & Hall, New York. • Wootton, R.J., (2012) <i>Fish ecology: tertiary level biology</i>. Blackie, London. 212 pp. • Nastavni materijal publiciran u okviru ECOBIAS projekta. 			

<i>Naziv kolegija</i>	SERCON metoda za konzervacijsku procjenu rijeka		Kod kolegija	SMKPR
<i>Studijski program Ciklus</i>	LLL		Godina Studija	
<i>ECTS vrijednost boda:</i>	6	<i>Semestar</i>	Broj sati po semestru (p+v+s)	30+30
<i>Nositelj kolegija/nastavnik:</i>	Dr.sc. Svjetlana Stanić Koštroman, red.prof., Dr.sc. Dragan Škobić, izv.prof., Dr.sc. Anđelka Lasić, doc., Dr.sc. Anita Dedić, doc. Dr.sc. Ivana Markotić, doc.			
<i>E-mail adresa i broj telefona:</i>	svjetlana.stanic.kostroman@fpmoz.sum.ba; + 387 36 445 468 dragan.skobic@fpmoz.sum.ba; + 387 36 445 468 andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457 anita.dedic@fpmoz.sum.ba; +387 36445-457 ivana.markotic@fpmoz.sum.ba; + 387 36 445 481			
<i>Terenski rad:</i>	20		<i>Pismeni ispit:</i>	20
<i>Samostalni istraživački rad:</i>	20		<i>Usmeni ispit:</i>	40
<i>Ciljevi kolegija:</i>	Osnovni cilj tečaja je da polaznicima omogući sticanje znanja i vještina koje se odnose na ekološku i konzervacijsku procjenu rijeka prema SERCON metodologiji.			
<i>Ishodi učenja (opće i specifične kompetencije):</i>	<p>Nakon odslušanog tečaja polaznici će biti osposobljeni da:</p> <ul style="list-style-type: none"> • prikupljaju i procjenjuju podatke za primjenu SERCON metodologije; • analiziraju podatke u skladu sa konzervacijskim kriterijumima; • primjenjuju SERCON softverske alate za procjenu riječnih staništa; • interpretiraju dobijene informacije i predlažu konzervacione mjere. 			
<i>Literatura:</i>	<ul style="list-style-type: none"> • Boon PJ, Holmes NTH, Maitland PS and Fozzard L. (2004): Sercon Version 2 System For Evaluating Rivers For Conservation, User's Guide and Technical Guide, 2004, SNH UK • Ovuka M, Racković M, Radulović S, Cvijanović D, Živković M, Novković M and Boon P. SERCON Software (System for Evaluating Rivers for Conservation), Version 3.1 (2012-2015): PMF UNS script and available from: http://sercon.pmf.uns.ac.rs/SerconWeb/ • Nastavni materijal publicirani u okviru ECOBIAS projekta 			

Naziv kolegija	Terenska praksa u monitoringu voda		Kod kolegija	TPMV
Studijski program Ciklus	LLL		Godina studija	
ECTS vrijednost boda:	6		Broj sati po semestru (p+v+s)	30+30
Nositelj kolegija/nastavnik:	Dr.sc. Anita Dedić, doc., Dr.sc. Anđelka Lasić, doc., Dr.sc. Ivana Markotić, doc.			
E-mail adresa i broj telefona:	anita.dedic@fpmoz.sum.ba; +387 (0)36445-457 andjelka.lasic@fpmoz.sum.ba; + 387 36 445 457 ivana.markotic@fpmoz.sum.ba + 387 (0) 36 445 481			
Terenski rad:	20	Pismeni ispit:	20	
Samostalni istraživački rad:	20	Usmeni ispit:	40	
Ciljevi kolegija:	Cilj ovog tečaja jeste razviti vještine analiziranja stanja različitih stanja vodenih ekosustava.			
Ishodi učenja (opće i specifične kompetencije):	<p>Nakon završenog tečaja polaznici će biti osposobljeni da:</p> <ul style="list-style-type: none"> • analiziraju osnovne tipologije kopnenih voda, fizičko-kemijskih, bioloških i hidromorfoloških parametara ekološkog statusa kopnenih voda. • Prikupljaju terenske podatke za fizičko-kemijske, hidromorfološke i zoološke parametare kvaliteta kopnenih voda • Interpretiraju i klasificiraju terenski očitane podatke. 			
Literatura:	<ul style="list-style-type: none"> • Green ,W.R.Robertson, D.M., and Wilde F.D. (2015): Lakes and reservoirs—Guidelines for study design and sampling: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A10, 65 p. • Hauer, F. R., Lamberti, G. A.(2007): Methods in stream ecology, Elsevier. 2007. • Nastavni materijal publikovan u okviru ECOBIAS projekta. • Milošević, Đ., Stojković-Piperac, M. (2018): Bioindikacije i biomonitoring - praktikum i radna sveska. Prirodno-matematički fakultet, Univerzitet u Nišu. Srbija, Niš • Đug, S. et. al. (2020): Biomonitoring akvatičnih ekosistema. Univerzitet u Sarajevu. Sarajevo. 			

UNIVERSITY OF MOSTAR
SENATE

Reg. number: 01-5323/21
Mostar, September 17, 2021

Based on Article 53 of the Statute of the University of Mostar (reg. number: 1685/20 of February 26, 2020), the Senate of the University of Mostar at its 377th session, held on September 17, 2021, made a

DECISION
on the adoption of the Program/ Elaboration of lifelong learning courses in the field of ecological water monitoring.

I.

The Program/Elaboratory of life-long learning courses in the field of ecological water monitoring is adopted.

II.

An integral part of this Decision is the Program/Elaboration of lifelong learning courses in the field of ecological water monitoring.

III.

The Decision enters into force on the day of its adoption.

Rector

Zoran Tomić, PhD

Deliver:

- Faculty of Science and Education
- Archive

SVEUČILIŠTE U MOSTARU
SENAT

Sveučilište u Mostaru			
Datum: 20.9.2021			
Opis	Broj	Priloga	Vrijednost
01/1	2954/21	-	-

Ur. broj: 01-5323/21
Mostar, 17. rujna 2021.

Na temelju članka 53. Statuta Sveučilišta u Mostaru (ur. broj: 1685/20 od 26. veljače 2020. godine), Senat Sveučilišta u Mostaru na 377. sjednici, održanoj 17. rujna 2021. godine, donio je

ODLUKU

o usvajanju Programa/Elaborata tečajeva cjeloživotnog učenja iz oblasti ekološkog monitoringa voda

I.

Usvaja se Programa/Elaborata tečajeva cjeloživotnog učenja iz oblasti ekološkog monitoringa voda.

II.

Sastavni dio ove Odluke čini Program/Elaborat tečajeva cjeloživotnog učenja iz oblasti ekološkog monitoringa voda.

III.

Odluka stupa na snagu danom donošenja.



Rektor

prof. dr. sc. Zoran Tomić

Dostaviti:

- Fakultetu prirodoslovno-matematičkih i odgojnih znanosti
- pismohrani.

NAČINI PRAĆENJA KVALITETE NASTAVE

Nakon završetka svakog tečaja cjeloživotnog učenja u oblasti ekološkog monitoringa voda, planirano je da se sprovede anketiranje polaznika u cilju identificiranja stupnja zadovoljstva polaznika programom određenog tečaja, sadržajima programa, literaturom, predavačima, načinom organiziranja terenske nastave itd. Rezultati ankete će biti analizirani od strane menadžmenta Projektnog tima i služiti kao osnova za kontinuirano unapređenje kvaliteta samog programa.

OBVEZE POLAZNIKA

Polaznici imaju obavezu da redovno prate predavanja, laboratorijsku i terensku nastavu koja se realizira u okviru tečaja, kao i da aktivno sudjeluju u realizaciji svih aktivnosti koje su planirane programom tečaja.

VRSTA I SADRŽAJ ISPRAVE KOJI SE DOBIJE PO ZAVRŠETKU TEČAJA

Nakon uspješnog završetka programa polaznici stiču certifikat o uspješno položenom tečaju cjeloživotnog učenja iz programa kojeg su položili.

NAČINI PRAĆENJA KVALITETE NASTAVE

Nakon završetka svakog tečaja cjelovitog učenja u oblasti ekološkog monitoringa voda, planirano je da se sprovede anketa u cilju identifikiranja stupnja zadovoljstva polaznika programom obrednog tečaja, sadržajima programa, literaturom, predavačima, načinom organiziranja terenske nastave itd. Rezultati ankete će biti analizirani od strane menadžmenta Projektnog tima i služiti kao osnova za kontinuirano unapređenje kvaliteta samog programa.

OBVEZE POLAZNIKA

Polaznici imaju obvezu da redovno prate predavanja, laboratorijsku i terensku nastavu koju organizira nastavnik, kao i da aktivno sudjeluju u realizaciji svih aktivnosti koje su im predviđene. Polaznici su dužni biti na vrijeme na svim nastavnim časovima i tečajima. Polaznici koji ne dolaze na nastavu bez opravdanog razloga, kao i oni koji ne plaćaju naknadu za nastavu, neće biti uključeni u nastavu. Polaznici koji ne plaćaju naknadu za nastavu, neće biti uključeni u nastavu. Polaznici koji ne plaćaju naknadu za nastavu, neće biti uključeni u nastavu.

