

## ECOBIAS ERASMUS+ FINAL CONFERENCE

International University of Travnik, Bosnia and Herzegovina

9<sup>th</sup> – 10<sup>th</sup> December 2022

Erasmus+ project: Development of master curricula in ecological monitoring and aquatic bioassessment for Western Balkans HEIs/ECOBIAS

## Institutional ECOBIAS project report University of Tuzla – UNTZ P8 2020-2023

PhD Jasmina Kamberović, coordinator of the  
Ecobias project at University of Tuzla

In the preparation of the presentation assisted

Edina Hajdarević, PhD



**ECOBIAS**



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# University of Tuzla, P8

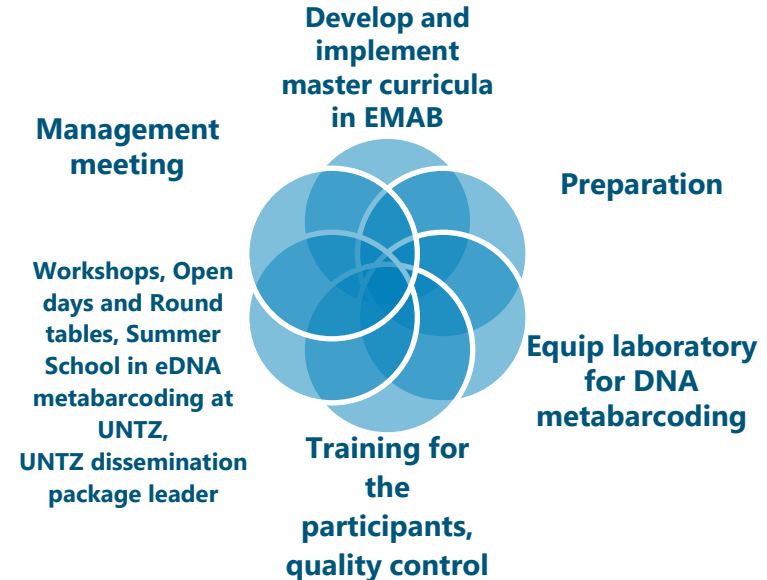


**Objectives of the ERASMUS+ ECOBIAS project at UNTZ: Equipment, networking, capacity building, dissemination package leader**

**Project fund: 952 984 €**

**University of Tuzla fund: 120 679 €**

**Fund for equipment: 63 000 €**



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Jasmina  
Kamberović



Vedad  
Pašić



Nermina  
Hadžigrahić



Vesna  
Bratovčić

## Participants - University of Tuzla

In total:

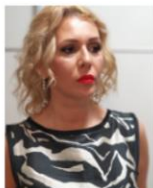
27 actively involved participants

Teachers participants: 17

Department of Biology, Chemistry, Mathematics and Geography



Avdul Adrović



Elvira Hadžiahmetović  
Jurida



Adisa Ahmić



Edina Hajdarević



Sanida Bektić



Amela Hercegovac



Samira Huseinović



Snježana Hodžić



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Isat Skenderović



Alen Bajrić



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Alma Tanović Hulusić

Fikreta Jahić

Enida Omerhodžić

Tatjana Brekalo Jaganjac

Azra Žigić

Amira Bajraktarević

Nedima Dudić



## WP Preparation 2020

UNTZ actively participated in preparation:

1. Report in Task 1.2 Analysis of Partner Countries Knowledge/Skills/Practice in ecological monitoring and freshwater bioassessment
2. Report in Task 1.3 Analysis of existing curricula related to EMAB in both programme and partner country partner
3. Report in Task 1.4 Analysis of labor market needs relevant to EMAB in PCs



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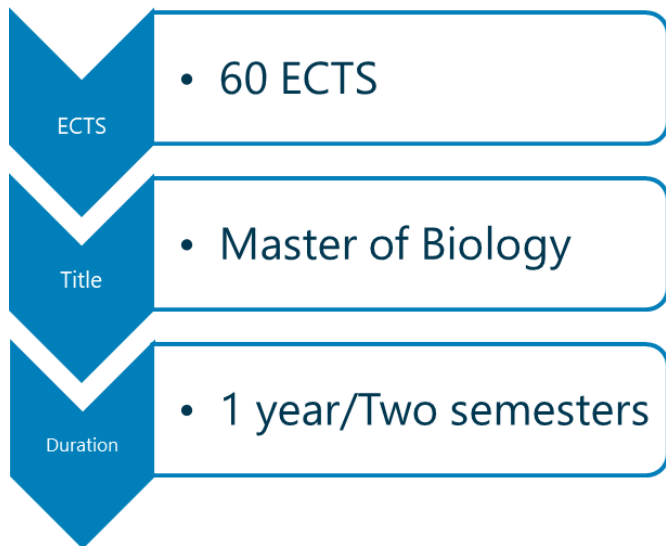
# WP Development

Report in Task 2.1 Development of aims, specific competencies and learning outcomes of master curricula and LLL trainings in EMAB

2020/2021

Report in Task 2.2 Development of courses design and syllabus for ECOBIAS curricula and LLL trainings

2020/2021



UNIVERZITET U TUZLI  
PRIRODNO-MATEMATIČKI FAKULTET

II CIKLUS STUDIJA

ELABORAT O DRUŠTVENO - EKONOMSKOJ  
OPRAVDANOSTI OSNIVANJA STUDIJSKOG PROGRAMA

„EKOMONITORING I BIOINDIKACIJA VODA“



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# WP Development

## Task 2.2 Development of courses design and syllabus for ECOBIAS curricula and LLL trainings Master program: Ecological monitoring and aquatic bioassessment at UNTZ



| Course  | 1st semester           |    |    |      | 2nd semester |    |    |      |
|---|------------------------|----|----|------|--------------|----|----|------|
|   | Classes                |    |    | ECTS | Classes      |    |    | ECTS |
|   | L                      | AE | LE |      | L            | AE | LE |      |
| Freshwater ecology                                    | 3                      | 0  | 1  | 6    |              |    |    |      |
| Field practice in aquatic monitoring                  | 3                      | 0  | 0  | 6    |              |    |    |      |
| Elective course 1                                     | 2                      | 0  | 1  | 6    |              |    |    |      |
| Elective course 2                                     | 2                      | 0  | 1  | 6    |              |    |    |      |
| Elective course 3                                     | 2                      | 0  | 1  | 6    |              |    |    |      |
| Classification protocols and systems in ecomonitoring |                        |    |    |      | 3            | 0  | 1  | 6    |
| Final master's thesis                                 |                        |    |    |      | 0            | 0  | 0  | 24   |
| <b>Total per semester</b>                             | 12                     | 0  | 4  | 30   | 3            | 0  | 1  | 30   |
| <b>TOTAL TEACHING CLASSES</b>                         |                        | 16 |    |      |              | 4  |    |      |
| <b>TOTAL</b>  | 20 CLASSES OF TEACHING |    |    |      | 60 ECTS      |    |    |      |

### List of compulsory courses

| No. | Course  | P | A | L | ECTS |
|-----|---|---|---|---|------|
| 1.  | Freshwater ecology                                    | 3 | 0 | 1 | 6    |
| 2.  | Field practice in aquatic monitoring                  | 3 | 0 | 0 | 6    |
| 3.  | Classification protocols and systems in ecomonitoring | 3 | 0 | 1 | 6    |

### List of elective courses

|     |   |   |   |   |   |
|-----|---|---|---|---|---|
| 4.  | Conservation Ecology                            | 2 | 0 | 1 | 6 |
| 5.  | GIS and Remote Sensing in ecomonitoring         | 2 | 0 | 1 | 6 |
| 6.  | Numerical ecology                               | 2 | 0 | 1 | 6 |
| 7.  | eDNA monitoring                                 | 2 | 0 | 1 | 6 |
| 8.  | Aquatic ecotoxicology                           | 2 | 0 | 1 | 6 |
| 9.  | Freshwater microbiology                         | 2 | 0 | 1 | 6 |
| 10. | Wetland and riparian ecology                    | 2 | 0 | 1 | 6 |
| 11. | Practicum in ecology and botany                 | 2 | 0 | 1 | 6 |
| 12. | Practicum in ecology and zoology                | 2 | 0 | 1 | 6 |
| 13. | Forensic essentials in aquatic insects' ecology | 2 | 0 | 1 | 6 |



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## WP Development

### Task 2.3 Purchasing of literature, software and laboratory equipment, installation and activation

2020/2021/2023



Total Budget for equipment: 63 000 EUR

Total spent: 62 826.7 EUR

In total 18 lots:

10 lots in joint tender UNSA-UNTZ-UNIBL-SUM (microscopes, multimeters, photometers, computers, electrofisher, water safety, laboratory apparatus, sampling equipments, chemicals, laboratory accessories)

5 lots at UNTZ (literature, transportable fridge, medical supplies, software, unmanned aerial vehicle)

3 lots in the Summer School at UNTZ (chemicals, lab. accessories, fridge).

**Equipped Ecobias Laboratory for DNA Metabarcoding at UNTZ - Laboratory 48**

**Additionally equipped Laboratory 51: Ecobias Laboratory for Zoology, Ecology and Biological Monitoring**



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# Equipment at UNTZ, what we wanted?



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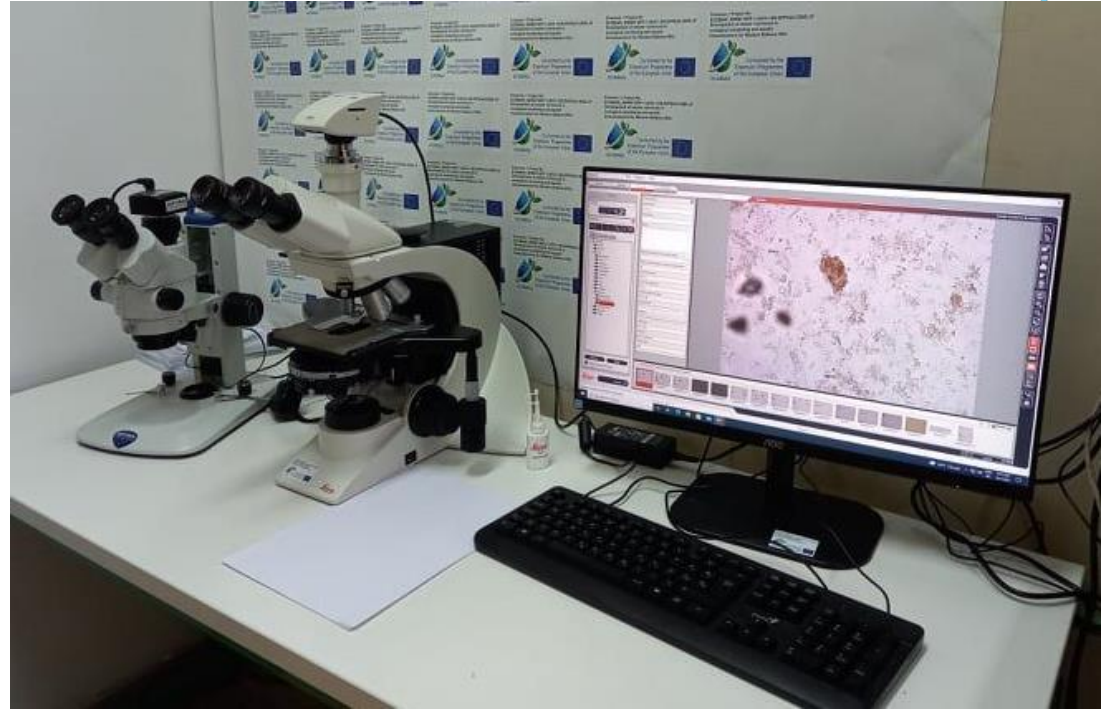




..... we have got!



Microscopes, stereomicroscopes



DIC Microscope, Trinocular zoom stereo microscope with a camera



Photometer



Multi-parameter portable meter



centrifuge



Water deionizer



ThermoMixer for  
microtubes and PCR



Fridge



FLUOROMETER BOX/Qubit



Electrophoresis equipment





# Equipment at UNTZ



Laboratory scale



Set of 4 Variable Volume Pipettes, Pipette stands, 4 -6 places



Smart Pipettor



Vacuum pump for the field water filtration

# Equipment at UNTZ



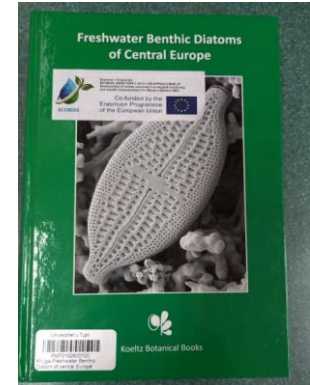
Neoprene overalls,  
Foot fishing waders



Electrofisher



Transportable  
refrigerator



Literature



# Equipment at UNTZ



Filters, bottles



Bottom grab sampler

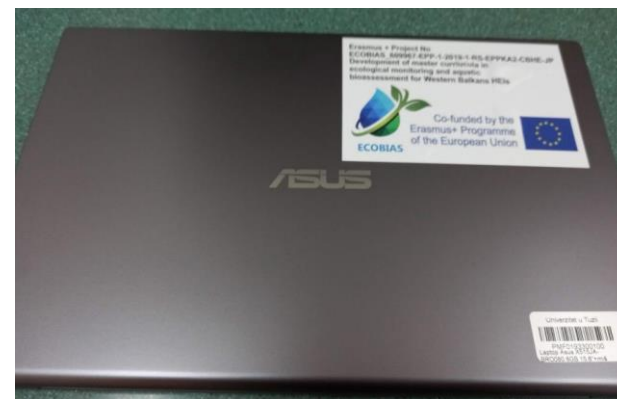


Niskin water sampler



Professional Hand  
Net with Wooden  
Handle  
Secchi disc

# Equipment at UNTZ



Computer equipment





Unmanned aerial vehicle (Drone)

# Equipment at UNTZ



Lab equipment accessories, chemicals, kits, reagents



## WP 2 Development

### Task 2.4 Theme-based training of teaching staff for acquiring new EMAB methods and field techniques



Participate from UNTZ have participated in 13 trainings.

We were host for 10 trainings, and guests in 3 trainings.  
We had one retraining.



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# Trainings live and hybrid at UNTZ, task 2.4

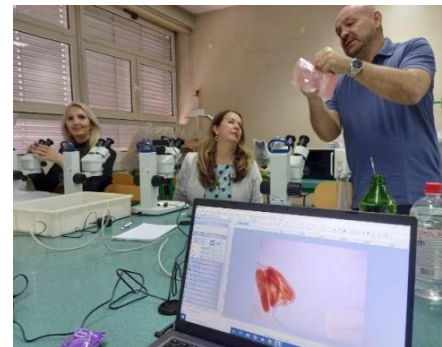
Practicum in Ecology/Zoology  
24-25<sup>th</sup> May 2021



Forensic essentials in aquatic insects ecology  
17-20<sup>th</sup> May 2021



Practicum in Ecology/Botany  
29-20<sup>th</sup> September 2021



# Trainings live and hybrid at UNTZ, task 2.4

Freshwater ecology  
28-30<sup>th</sup> September 2021

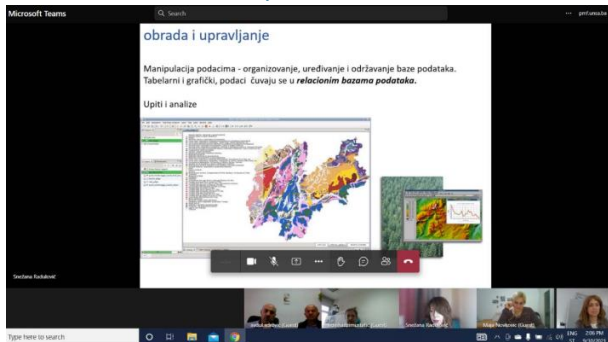


Wetland and riparian ecology  
28-29<sup>th</sup> September 2021



# Trainings online at UNTZ as a host, task 2.4

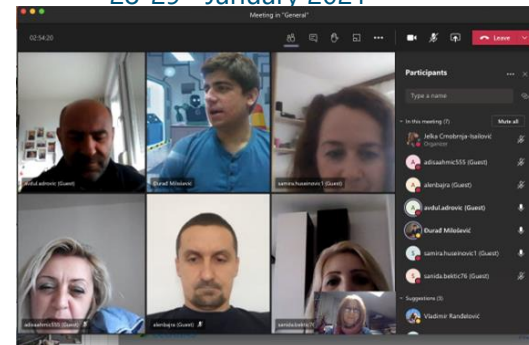
## Gis and remote sensing in Ecology 29-30<sup>th</sup> September 2021



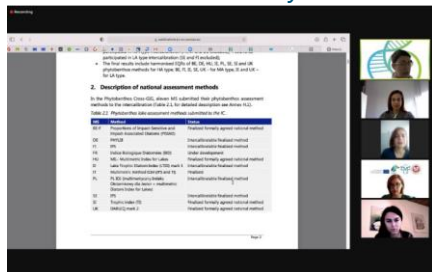
## Aquatic ecotoxicology 28-29<sup>th</sup> January 2021



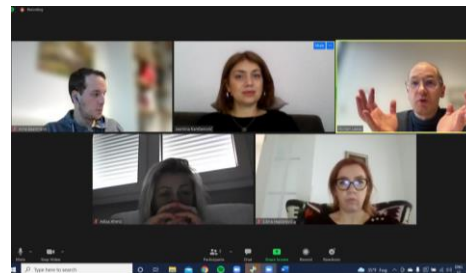
## Conservation ecology 28-29<sup>th</sup> January 2021



## Classification protocols and systems in ecomonitoring 27-28<sup>th</sup> January 2021



## eDNA in monitoring 14-15<sup>th</sup> December 2021





# Guest trainings

Retraining in eDNA in monitoring for UNTZ participants in May 2022 at University Duisburg - Essen



Field practice in aquatic monitoring 30th June - 2nd July 2021, live training at SUM Freshwater microbiology-UNIBL – online participation of UNTZ participants  
Numerical ecology – UDG, online participation of UNTZ participants





**Task 2.6 Accreditation/ approval of MSc curricula:** Master curricula Ecological monitoring and aquatic bioassessment approved in July 2021.

## Task 2.7 Implementation of developed MSc curricula at UNTZ

In academic 2021/2022 year:

10 enroll students of the new master curricula at UNTZ

In total 9 active subjects: 3 compulsory, 6 elective



In academic 2022/2022 year

3 enroll students

In total 6 active subjects: 3 compulsory, 3 elective



## WP 4 - QUALITY ASSURANCE

Involved in preparation of the event reports

Also:

- 4.1 Establishment of Quality Assurance Board
- 4.3 Regular Quality Assurance Board meetings
- 4.4 Inter-project coaching



## WP 5 DISSEMINATION – UNTZ package leader



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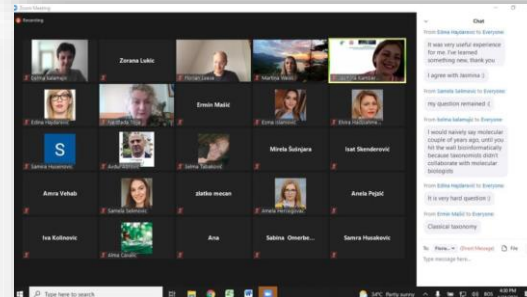
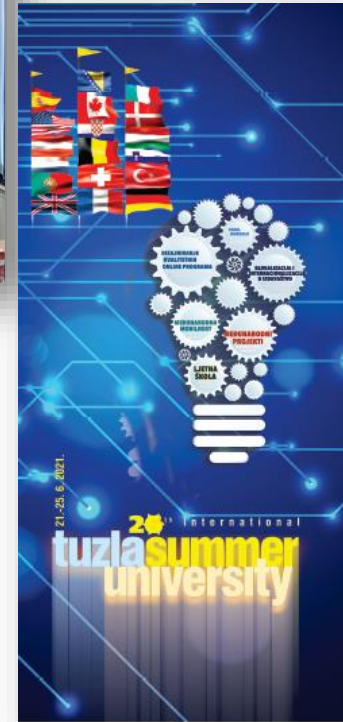
**Task 5.1 Preparing project dissemination plan:** actively involved in preparation of the second revised version in March 2021.

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**Task 5.3 Design, printing, recording, and publishing promo material** - Promo materials for the Open Days, Round tables and Summer School is developed at UNTZ: bags (90), notebook (90), event cards (92), banner (1), shirts (12), certificates (90), large posters (2), small posters and leaflets (50). In total **58 media releases** made at UNTZ.

# Task 5.4 Workshops at Partner Country HEI

- **The second workshop** “New trends in ecological monitoring and aquatic bioassessment” held at UNTZ on 24<sup>th</sup> and 25<sup>th</sup> of June 2021. The aim was transfer of knowledge in EMAB and popularization of new ECOBIAS MSc study programs and LLL courses to students and professionals in EMAB.
- In total 63 participants
- Summary grade = 2,92



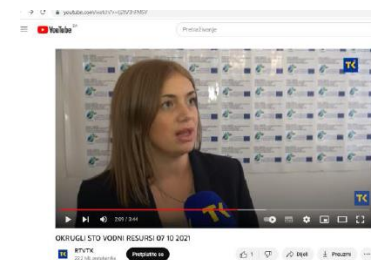
# Task 5.5 Round tables with stakeholders

**1st Round table at UNTZ  
Held at University of Tuzla  
Faculty of Natural Sciences and Mathematics  
on 7th October 2021**

**Enhancement of Cooperation Between HEIs and the Real Sector in  
the Field of Management and Monitoring of Aquatic Resources**



The round table brought together 30 participants: stakeholders, professors, students, public sector, local communities. A discussion was opened on the important topics of improvement the quality of Lake Modrac and very polluted Spreča River, also the need for mutual cooperation between institutions and the need to achieve better results with a multidisciplinary approach and exchange of knowledge.



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# Task 5.5 Round tables with stakeholders

**2<sup>nd</sup> Round table at UNTZ  
Held at University of Tuzla  
Faculty of Natural Sciences and Mathematics  
on 23<sup>th</sup> May 2022**

**Importance of biodiversity in the field of biomonitoring**



RTV7.BA

(Video) U Tuzli održan Okrugli sto o temi "Značaj biodiverziteta u oblasti monitoringa"



The conclusions of the round table were the necessity of creating a database in biodiversity research and creating the database of the biological indicator taxa for further application in ecological monitoring. It was suggested that some of the topics of the master's theses and subsequent scientific papers should be focused on this topic. It was also emphasized that it is necessary to strengthen cooperation between biologist and expert from public sector, stakeholders and nongovernmental organization in order to secure labor position for graduate students.

# Task 5.6 Open day at UNTZ

**1<sup>st</sup> Open day at UNTZ**  
**Held at University of Tuzla**  
**Faculty of Natural Sciences and Mathematics**  
**on 28<sup>th</sup> May 2021**





# Task 5.6 Open day at UNTZ

2<sup>nd</sup> Open day at UNTZ  
Held at University of Tuzla  
Faculty of Natural Sciences and Mathematics  
on 24<sup>th</sup> September 2021



https://www.untz.ba/2021/09/24/2nd-dan-otvorenih-vrata-erasmus-ecobias-master-programa-ekonomitoring-i-bioindikacija-voda/

**ODSJEK BILOGIJA**  
Ustanova: Matematičko-fizički fakultet, Univerzitet u Tuzli

Stranica: Osnovna Nauka Publikacije Kontakt

**2. dan otvorenih vrata**  
2nd Ecobias Open Day  
24.9.2021.

Priloga: Promocija ERASMUS+ ECOBIAS master programa  
Ekonomitoring i bioindikacija voda

Učje, kada i kako?  
Priloga: Matematički fakultet, Univerzitet u Tuzli, Fakultet za prirodne nauke i obrazovanje, Univerzitet u Tuzli  
24.9.2021. 14:30 sati

**II dan otvorenih vrata Erasmus+ ECOBIAS master programa**

**Novine**  
ODSJEK BILOGIJA  
Raspored sati  
Raspored nastave  
NASTAVNO OSOBLJE

**Vijest**  
Ovo Sličica iz matičarstva i naša mrežna stranica aktivno realizacije Erasmus+ Ecobias projekta 2021. i 2022.  
Dan otvorenih vrata ERASMUS+ ECOBIAS master programa (program Ekonomitoring i bioindikacija voda) 19. i 20. Maja 2022. održan u Zračnoj luci Tuzla u prostorijama "Avionilinijski" 18. Maja 2022. vijest izdatu na Internetu za generičko pretraživanje (SEARCH) dana 25. Avgusta 2021.

# Task 5.6 Open day at UNTZ

**3<sup>rd</sup> Open day at UNTZ**  
**Held at University of Tuzla**  
**Faculty of Natural Sciences and Mathematics, Protected landscape Konjuh**  
**on 24<sup>th</sup> May 2022**



# Task 5.7 Summer School in DNA Metabarcoding at University of Tuzla

- **Date:** 5<sup>th</sup> – 8<sup>th</sup> September 2022
- **Place:** University of Tuzla, Faculty of Natural Sciences and Mathematics, Field Lake Modrac
- **Event objective:** The summer school in eDNA metabarcoding was organized as a four-day program, which aims to train participants in the research planning of the environmental DNA metabarcoding techniques, sampling methodology, environmental DNA extraction and amplification, and basic steps in sequencing data analysis. Target groups are students and experts.
- The Summer School was attended by **56 students** and **33 professors/assistant/experts** from partner institutions of the Ecobias project





# Task 5.7 Summer School in DNA Metabarcoding at University of Tuzla

- The summer school is organized in a hybrid way (live and online via Skype link) with the support of the University of Duisburg - Essen
- Theory, field, practice, bioinformatics



## WP 6 Management

University of Tuzla was a host for Management meeting held on 25<sup>th</sup>-26<sup>th</sup> January 2021



# Results of the Ecobias project at UNTZ

- The results of the Ecobias project are visible and sustainable in the long term at University of Tuzla.
- Master's program successfully launched. The number of enrolled students more than doubled compared to the planned.
- Trainings and dissemination activities realized, visibility achieved.
- Equipped laboratory.
- Achieved cooperation and networking with other universities, public sector and NGO.
- Strengthened capacity of the institution.

# Thanks to the initiators and coordinators

Prof. dr. Vladimir Ranđelović



Prof. dr. Snežana Radulović



Prof. dr. Dušanka Cvijanović







<https://www.ecobiaserasmus.com/>

<https://www.facebook.com/EcobiasErasmus>

<http://bio.pmf.untz.ba/>

<http://untz.ba/>



# Thank you!

