



# BIOTECHNOLOGY FOR THE LIFE SCIENCES

## RESEARCH-FOCUSED MASTERS PROGRAM

### AT THE DEPARTMENT OF BIOTECHNOLOGY RIJEKA, CROATIA



Europska unija  
"Zajedno do boljitka EU"

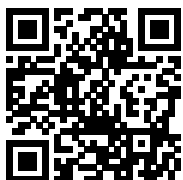


EUROPSKI STRUKTURNI  
I INVESTICIJSKI FONDovi



ODJEL ZA  
BIOTEHNOLOGIJU  
I POTENCIJAL

Projekt je sufinancirala Europska unija iz Europskog socijalnog fonda.



The establishment of this course, including printing of this booklet and tuition costs for the 2020/2021 student intake, are co-financed by the European Union from the European Social Fund under the project „Strategic Internationalisation of Graduate Studies in Mathematics and Biotechnology – OPTILIFE”.

For more information on EU funds visit [www.strukturnifondovi.hr](http://www.strukturnifondovi.hr).

The content of this publication is the sole responsibility of the University of Rijeka.

Projekt “Strateška internacionalizacija diplomskih studija matematike i biotehnologije – OPTILIFE” je sufinancirala Europska unija iz Europskog socijalnog fonda.

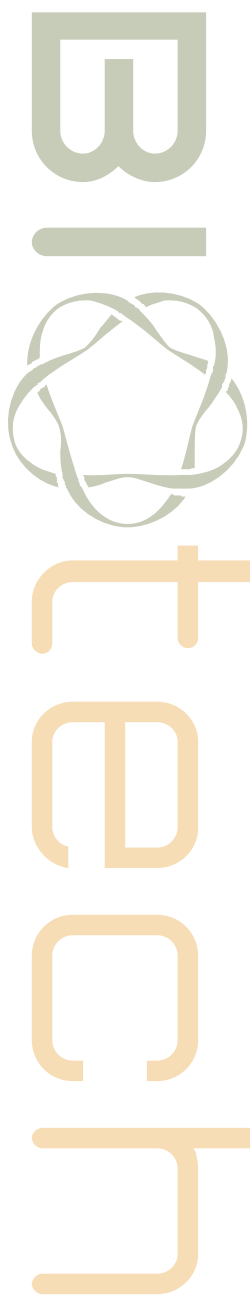
Za više informacija o EU fondovima posjetite [www.strukturnifondovi.hr](http://www.strukturnifondovi.hr).

Sadržaj ove publikacije isključiva je odgovornost Sveučilišta u Rijeci.



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Biotechnology for the Life Sciences is a two-year long research-focused master's degree program, offered by the Department of Biotechnology at the University of Rijeka, Croatia, that will be thought in English language.

#### Why should I enroll?

This course is tailored specifically to highly motivated students that may wish to pursue a career life science and biotechnology research. Students are assumed to already possess a strong theoretical background, and therefore the program focuses on teaching the intellectual and laboratory skills required for a modern researcher. Student will gain significant experience in performing independent research and by the end of the two year program, should be ideally positioned to begin doctoral studies or enter a research position in industry.

#### What does it involve?

Half of the first year, is spent learning basic research skills, as well as exploring emerging areas of research in biotechnology and the life sciences more generally. Additionally, in the first year students gain research experience during two 8-week long laboratory apprenticeships. The second year is almost entirely dedicated to executing a research project in a laboratory of choice.

#### Who can apply?

Applications are open to students of any nationality with an interest in pursuing a career in biotechnology or life science research. Applicants must have completed an undergraduate degree (BSc or equivalent) in biology, chemistry or a relevant sub discipline, and possess strong communication skills in the English language. Admission to the program is limited and will be based on a review of the students' application materials and an official interview.

Biotehnoška istraživanja znanosti o životu je dvogodišnji diplomski program temeljen na znanstveno-istraživačkom radu na Odjelu za biotehnologiju, Sveučilišta u Rijeci, koji će se provoditi na engleskom jeziku.

#### Zašto da upišem ovaj studij?

Ovaj diplomski studij kreiran je isključivo za visoko motivirane pojedince koji žele svoju karijeru posvetiti biotehnoškim znanstvenim istraživanjima, te istraživanjima znanosti o životu. Pretpostavka je da će budući studenti posjedovati kvalitetnu teoretsku osnovu u navedenim područjima, obzirom da će se programom naglasiti usvajanje intelektualnih i laboratorijskih vještina koje suvremeni istraživač mora posjedovati. Studenti će steći značajno iskustvo u provođenju samostalnog znanstveno-istraživačkog rada, što će im omogućiti upis na doktorske studije i kompetitivnost na suvremenom tržištu rada.

#### Što studij uključuje?

Polovica prve godine studija uključivati će učenje osnovnih istraživačkih vještina, kao i upoznavanje s novim istraživanjima u području biotehnologije i općenito znanosti o životu. Tijekom prve godine studenti će osim toga steći iskustvo u znanstveno-istraživačkom radu tijekom prakse provedene u dva različita laboratorija, svako u trajanju od osam tjedana. Druga godina studija je gotovo u potpunosti posvećena provedbi istraživanja za diplomski rad u jednom od istraživačkih laboratorija po vlastitom izboru.

#### Tko se može prijaviti?

Prijave su otvorene za studente svih nacionalnosti koji posjeduju znanstveni interes u području biotehnologije i znanosti o životu. Pristupnici moraju imati završeni preddiplomski studij (baccalaureus ili ekvivalent) u području biologije, kemije ili srodnih područja i biti odlični govornici na engleskom jeziku. Upis na studij je ograničen pa će selekcijski postupak uključivati evaluaciju prijavnih materijala i službeni intervju na engleskom jeziku.





Dear future colleagues,

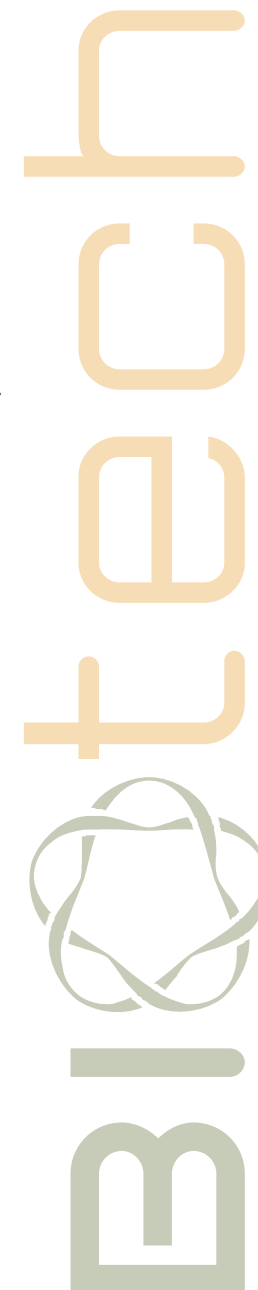
Science can sometimes be tiring and sometimes you just have to take a break.

Well... students at the Department of Biotechnology really know how to do it and they are involved in many interesting activities in their spare time. Some students manage projects in the *Biotechnology Student Association* at the *University of Rijeka* (USBRI) while others volunteer. For instance, you can become one of the *Traveling Scientists* and popularize science among kids through kitchen experiments in kindergartens and elementary schools. Or you can create your own natural cosmetics as part of *NatuRIs*. You can join thousands of students from all over the region and participate in the *STEM games* – a huge sports and science competition. If you want to travel, join your colleagues on a professional trip to some European research institutions. Rijeka is also known for its fifth season - the carnival. With 500 students, take on a new face and walk around the city as part of the largest Campus carnival group. If you are more into sports you can join our Department's sports team and represent us at *UNISport league*, have fun at *Open Sports Day* or run at *Wings for Life* race as part of large University team!

The best way to find out limitless opportunities here in Rijeka is to come and join us next academic year.

*Dorotea Neuberg*

*Head of the Biotechnology Student Association (2019–2020)*



## Admission requirements

To enroll in the “Biotechnology for the Life Sciences” international master’s degree program, candidates must have completed an undergraduate degree program, consisting of at least 180 ECTS credits (or international equivalent). Undergraduate students who will have completed their degree program before the start of the next academic year may also apply; however, admittance will require submission of a degree certificate. The applicant’s undergraduate degree program should include at least 60% biology, chemistry and/or appropriate biological disciplines, such as molecular biology, cell biology, biomedical sciences, virology, microbiology, neuroscience or biotechnology. Applicants will also be required to demonstrate sufficient communication skills in English, which will be assessed by video interview.

Details of the application procedure will be published on the course website, [biotech4lifesci.uniri.hr](http://biotech4lifesci.uniri.hr)



## Rijeka

With 200,000 inhabitants, Rijeka (pronounced “Ree-eck-uh”) is the third largest city in Croatia and the largest Croatian seaport. Rijeka is situated on the Kvarner Bay, in the northern Adriatic Sea. The city is located very close to the borders of Slovenia and Italy, and it is surrounded by mountains and numerous picturesque coastal towns. The word “Rijeka” means river in Croatian. The river Rječina, which supplies the city’s drinking water, is formed by a karst spring, 325 meters above sea level, and flows for approximately 18 kilometers into the city of Rijeka, where it enters the Adriatic Sea. Rijeka has a pleasant Mediterranean climate with warm summers and relatively mild winters.

Along with its role as an economic and transport hub, Rijeka retains its importance as a cultural, educational and sports center in the region. Numerous cultural events take place in Rijeka, such as theatre performances, concerts, exhibitions, an international carnival, fairs, and sporting events. The city was selected to be the 2020 European Capital of Culture.

Rijeka’s main promenade, the “Korzo”, reflects the city itself – on the Korzo you can read Rijeka. The Korzo is the place where you can hear the typical rhythm of Rijeka’s steps, regardless of the time of the day. Korzo is not just Rijeka’s high street, it is its lifeblood, but also its mirror.





## Interesting facts about Rijeka:

- The first torpedo in the world was made in Rijeka
- Fiorello la Guardia, New York's most famous mayor, worked in the American consulate in Rijeka
- Rijeka is the town with the highest number of baroque marble altars on the eastern part of the Adriatic coast
- The first steam engine in south-eastern Europe was produced in Rijeka
- The first museum in Croatia was founded in Trsat in 1843
- The first photo of a gunshot was taken here
- One of the only preserved Titanic lifebelts in the world, can be found here



## University of Rijeka (UniRi)

The University of Rijeka was founded in 1973, and presently it is home to ten faculties, one academy, and four University departments. The average student enrollment at the University of Rijeka is 17,000, including approximately 11,500 full-time and 5,500 part-time students enrolled in more than 160 accredited study programs. These include 39 undergraduate programs, 54 graduate programs, as well as multiple vocational and postgraduate specialist programs. The University of Rijeka prides itself on being a center of research excellence for the country of Croatia and the wider region. A main goal of the research conducted at the University of Rijeka is to develop and transfer novel technologies and information from the University to the community. To facilitate this, the University continues to invest into scientific research infrastructure, which drives research and educational activities within our community.





## Department of Biotechnology

The Department of Biotechnology was founded in 2008 by a group of eminent scientists and university professors from Croatia and abroad. Biotechnology is a rapidly growing interdisciplinary field of science that covers basic and applied research in the fields of biology, chemistry, biomedicine and bioinformatics.

Some of the specific research areas in the Department are:

- genomics (the discovery of new human gene markers, behavioral genetics);
- proteomics (search for biomarkers for early detection, prevention and treatment of diseases),
- metabolomics (analyzes of metabolism products as potential biomarkers of disease);
- cellular and molecular biology (in vitro and in vivo studies in the fields of neuroscience, hematology, immunology, virology, microbiology and tumor biology);
- chemistry of natural compounds (exploration of new, potential drugs and active substances isolated from natural sources);
- synthetic chemistry (organic synthesis of new potential drugs);
- computational chemistry (molecular modeling and in-cell simulations); ecology (identification of native species and water and air pollution);
- peptide nanotechnology;
- food technology (analysis of food and nutritional supplements).

The Department of Biotechnology, as a scientific research and teaching institution, employs around 50 staff, most of whom are scientific and teaching staff. The department currently offers the following programs:

### Biotechnology and Drug Research

- Undergraduate (BSc), 3 years, Croatian

### Biotechnology for the Life Sciences

- Graduate (MSc), 2 years, English

### Biotechnology in Medicine

- Graduate (MSc), 2 years, Croatian

### Drug Research and Development

- Graduate (MSc), 2 years, Croatian

### Medicinal Chemistry

- Graduate (MSc), 2 years, Croatian

### Medicinal Chemistry

- Doctoral (PhD), 3 years, Croatian or English

Croatian language programs include collaboration with the Ruđer Bosković Institute (Zagreb), an independent research institution, and with the private biotechnology/pharmaceutical companies JGL (Rijeka) and Fidelta (Zagreb).



Course description

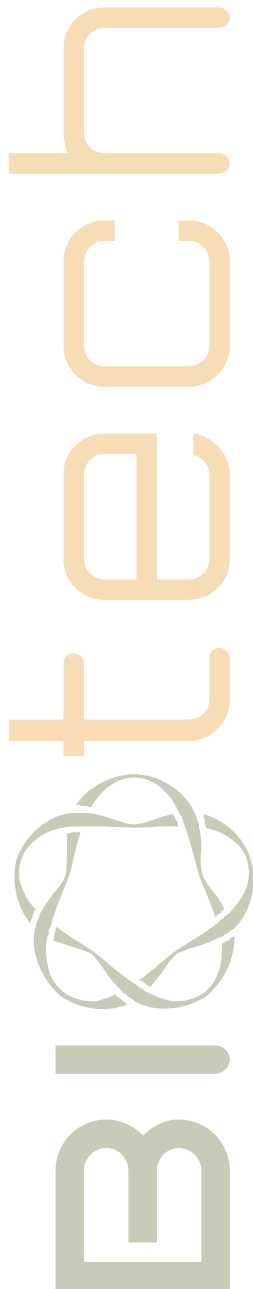
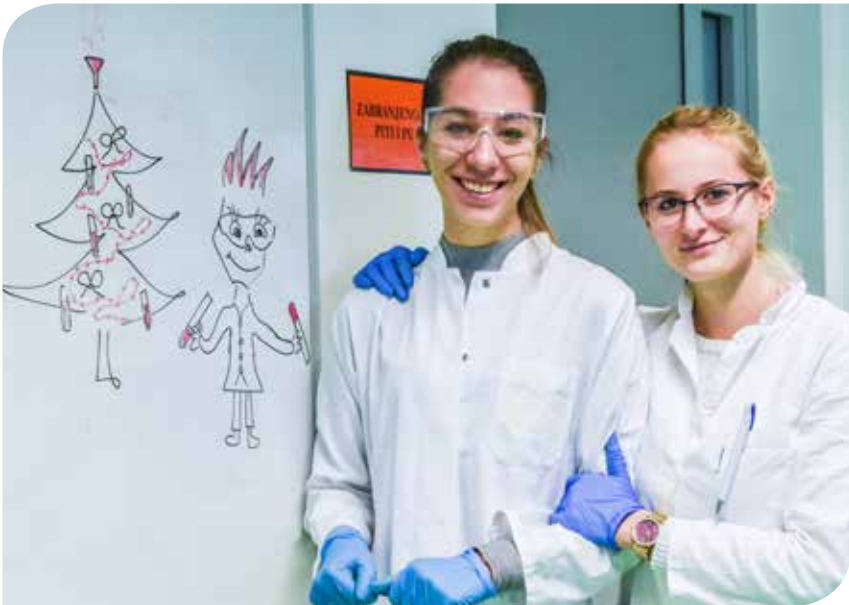
Biotechnology for the Life Sciences operates over two years, with 60 ECTS credits being awarded per year, for a total of 120 ECTS credits. These come from the following courses:

First year			
Skills courses		Research Courses	Theory Courses
<b>Introduction to Research Methods</b>  (9 ECTS)	<b>Introduction to Laboratory Work &amp; Safety</b>  (3 ECTS)	<b>Laboratory Apprenticeships</b>  (2 courses, 24 ECTS total)	<b>Journal Club 1</b>  (3 ECTS)
<b>Intellectual Property</b>  (3 ECTS)	<b>Project Management</b>  (3 ECTS)	<b>Research Proposal &amp; Poster Presentation</b>  (3 ECTS)	<b>Topics in Biotechnology</b>  (4 courses, 12 ECTS total)
Second year			
Research Courses			Theory Courses
<b>Research Project &amp; Thesis Writing</b>  (48 ECTS)	<b>Research Symposium</b>  (3 ECTS)	<b>Thesis Defence</b>  (6 ECTS)	<b>Journal Club 2</b>  (3 ECTS)

Introduction to Research Methods (1st year, 9 ECTS)

This course consists of three main sections that cover the following areas: research methods, scientific writing and data presentation, data analysis using statistical methods and bioethical concerns in conducting and presenting results of a scientific work.

The largest part of the course will be devoted to teaching students how to plan, perform and present the results of a scientific investigation. As part of the course, students will learn and practice the basic elements of scientific style of writing, get instructions on how to plan the writing of a scientific paper, thesis, oral or poster presentation. Presenting results of a scientific investigation is not possible without knowing how to test hypotheses using an appropriate statistical method. Students will learn a basic knowledge about different types of statistical analysis and hypothesis testing in the statistical section of the course. In the bioethical section, students will learn and discuss different bioethical principles that they have to apply when planning, performing or presenting their data.





### Introduction to Laboratory Work & Safety (1st year, 3 ECTS)

This course is designed to serve as revision for students, and to ensure that all students are ready to begin immediately in the laboratory. Students will therefore receive training covering occupational health and safety in the laboratory, revise course on some of the calculations that are required when working in a laboratory, receive a basic course on the use of standard computer programs that are required in the day-to-day life of researchers, for the analysis and presentation of data and undertake a range of laboratory exercises, either alone or in pairs, designed to familiarize themselves with basic techniques, skills and equipment of a laboratory.

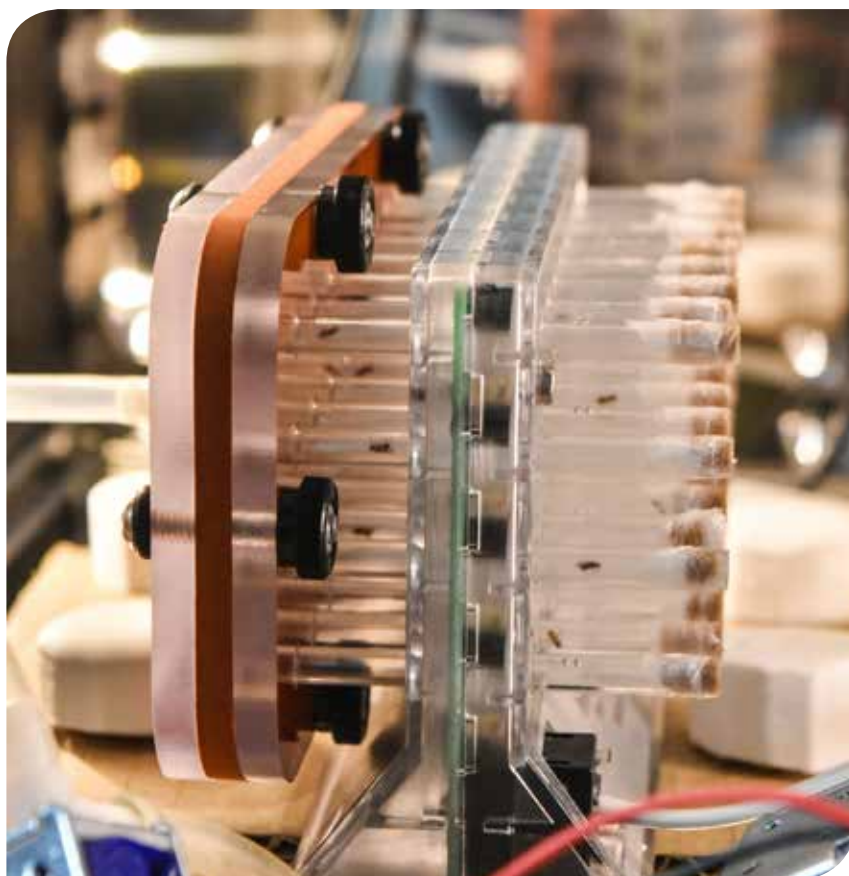


### Intellectual Property (1st year, 3 ECTS)

The course deals with the basic concepts of protection and management of intellectual property rights, studying various forms of protection of intellectual property rights (formal and informal). The ways of applying intellectual property protection and management in scientific research and organizations are discussed. Different ways of commercializing intellectual property are presented. Particular attention is paid to the role and importance of intellectual property protection in the field of biotechnology.

### Project Management (1st year, 3 ECTS)

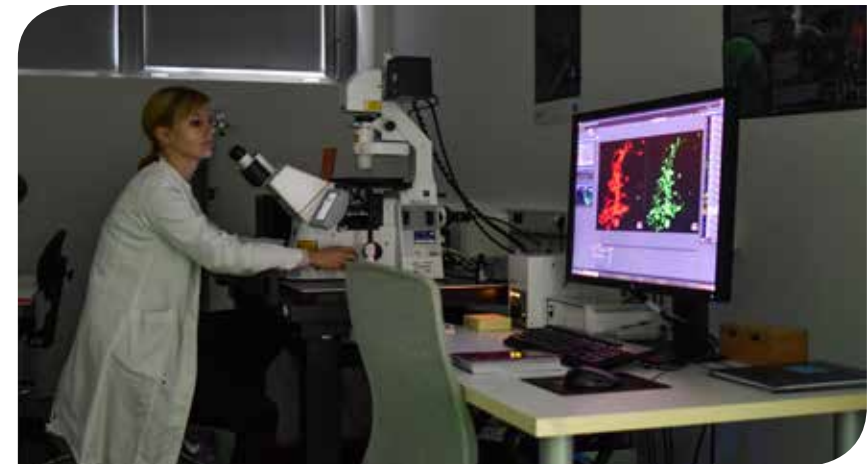
The aim of the course is to acquire basic knowledge to enable students to understand a wide range of possibilities of applying project management concept both in research activities and in practice. This will include defining the context of project management implementation, the importance and role of strategy, the role and importance of project manager, project preparation and implementation, monitoring and completion of project implementation and presentation of project proposals prepared by students during the exercises and their analysis. Students will also, in teams, gain experience of preparing a sample project proposal



### Laboratory Apprenticeships (1st year, 2 courses each, 24 ECTS total)

In their first year, students will each undertake two laboratory apprenticeships. These will involve pairs of students spending 8 weeks working in a research group, under the mentorship of a supervisor. During this time, students will participate in the day-to-day running and experiments of the group, thus gaining first-hand experience of work in a research environment. Students are encouraged to perform their two apprenticeships in laboratories from differing fields of life science research, so that they students can learn two distinct sets of laboratory skills. At the conclusion of their second apprenticeship, students will then select one of their two laboratories to return to for their second year Research Project and, with the help of their supervisor, will develop their Research Proposal for it.







Research Proposal & Poster Presentation (1st year, 3 ECTS)  
Research Symposium (2nd year, 3 ECTS)

Towards the end of the academic year, a Biotechnology for the Life Sciences research symposium will be held, to which all staff and students of the Department of Biotechnology will be invited. At this event, first year students will each present their research proposals in the form of scientific poster presentations. These proposals will have been developed with the assistance of the supervisor for their second year Research Project. At the same event, second year students will present the results of their Research Projects as short lectures. This will provide them with a valuable opportunity to get feedback on their work, before writing and defending their final thesis.



Research Project & Thesis Writing (2nd year, 48 ECTS)  
Thesis Defense (2nd year, 6 ECTS)

At the end of their first year, as part of the course Research Proposal & Poster Presentation, each student will select a mentor for their research project. This will normally be one of the two professors who supervised them for their Laboratory Apprenticeship courses. The student and mentor may also optionally agree on a co-mentor, particularly if the proposed research project is of an interdisciplinary nature. For the majority of the second year, each student will conduct an independent research project, under the supervision of their mentor. This will fit within the mentor's general area of research interest and project(s), and should represent novel research. Students will also be expected to present and discuss their work in formal or informal environments. At the mentor's discretion, this could include lab meetings and/or presentation at (normally local) scientific congresses. Students may also be asked to help write up their work for publication in a scientific journal (either during or after the thesis). Towards the end of their project, students will present their findings as part of the Research Symposium course. Taking into account any feedback received at this event, students will then prepare and submit a graduate thesis based on their research project, which will subsequently be defended in front of a thesis defense committee.

Journal Club 1 (1st year, 3 ECTS)  
Journal Club 2 (2nd year, 3 ECTS)

Throughout both their Laboratory Apprenticeships and Research Projects, students will meet regularly for Journal Club sessions. Each session will be hosted by the leader and/or members a research laboratory, and will involve students from in that group presenting a scientific research paper from the field. Students will also develop their communication and presentation skills, as well their skills at critically reviewing and evaluating scientific material.



Topics in Biotechnology (1st year, 4 courses each, 12 ECTS total)

During their first year, students will be able to each select four elective courses, each looking into areas of modern biotechnology and life science research. Some of these will directly tie into areas of research available for student's Laboratory Apprenticeships and second year Research Projects. Each of these courses will typically comprise 30 contact hours, and be a mixture of lectures, seminars and/or practical components.

## Contacts and services

Want to know more about student life in Rijeka?

- Send an email to our student ambassadors and ask any questions you have – [usbri@uniri.hr](mailto:usbri@uniri.hr).
- Follow Biotechnology Student Association on their LinkedIn page - <https://www.linkedin.com/company/biotechnology-student-association-usbri/>

International student guide:

<https://uniri.hr/wp-content/uploads/2019/04/University-of-Rijeka-International-Student-Guide-2019.pdf>

### Student Centre

Offers accommodation, food service, employment mediation for student jobs as well as leisure time organization.

[scri.uniri@scri.hr](mailto:scri.uniri@scri.hr)

+385 51 584 530

[www.scri.uniri.hr](http://www.scri.uniri.hr)

## Accommodation

Student center Rijeka offers accommodation services in the following Student dormitories:

Student dormitory Ivan Goran Kovačić is located in the western part of Rijeka. The dormitory consists of five units and offers accommodation in single and double rooms for students and double bed apartments for professors and other university guests.

Student dormitory Trsat is located in the eastern part of Rijeka. It was opened in 2016, and it consists of three units. It offers accommodation in single and double rooms for students and single bed apartments for professors and other guests.

Private accommodation: Since available places in the Student dormitories are insufficient to satisfy the total number of students seeking accommodation, to the Student Centre can help students looking for private accommodation. The Student Centre publishes information supplied by seekers (students) and by lessors of private accommodation on their Facebook page “Privatni smještaj-Studentski centar Rijeka”.

<https://www.facebook.com/Privatnismjestaj.SCRI>





## Food service

The Student Center in Rijeka provides quality and diverse food and beverage for students. To use the meal benefits of Student Center, students should have a student X - card

(for more information see [www.srce.hr](http://www.srce.hr)).

## Restaurant Kampus

Radmile Matejčić St 5

Students have at their disposal a number of facilities: several types of menu meals, various dishes, pizzas and brunch to go. From Monday to Friday and Sunday from 7:00 AM to 9:00 PM

## Cafe bar

From Monday to Friday from 7:30 PM to 6:00 PM  
Saturday from 9:00 AM to 9:00 PM  
On Sunday cafe bar is closed.



## Cafe bar Formula

Radmile Matejčić St 2 (University Departments)

There is a coffee bar which offers several hot and cold drinks, sandwiches and cakes for favorable prices. Students with student card can get mentioned products for affordable student prices, but without subsidies.

From Monday to Friday from 7:00 AM to 2:30 PM

On Saturday and Sunday cafe bar is closed.





## University Counseling Center

The University Counseling Center Rijeka (SSC) is a University constituent set up with the aim of providing the University's students and staff with different forms of support and counseling. All SSC services are free of charge. The SSC includes a Psychological Counseling Center, an Office for Students with Disabilities, and a Career Office.

### Office for Students with Disabilities

The office supports students with visual and hearing impairments, physical disability, chronic illnesses, learning disabilities (dyslexia, dysgraphia, and like) or other medical conditions or difficulties that might affect the course of their studies.

[uredssi@uniri.hr](mailto:uredssi@uniri.hr)

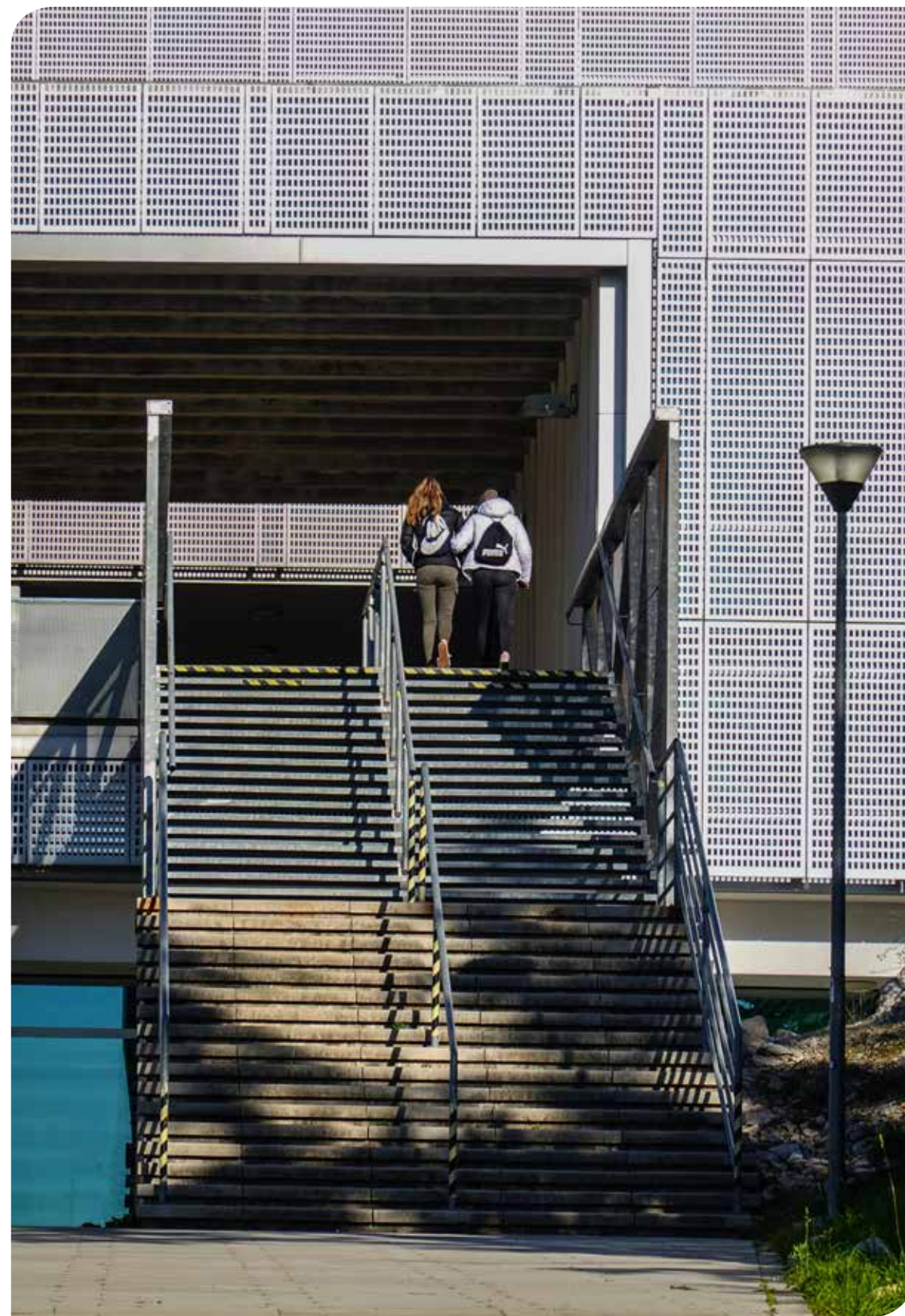
+385 51 265 844

### Psychological counseling office

The University Counseling Center's Psychological Office offers students and other staff members professional the psychological aid needed to improve the quality of their lives and help them realize their academic goals.

[ssc@ssc.uniri.hr](mailto:ssc@ssc.uniri.hr)

+385 51 265 841









## Career Office

The Career Office organizes various activities for coordinating students and providing them with reliable support, including counseling activities (individual and group counseling), informational activities (programs for connecting students with potential employers, employer and student databases, professional training for students), educational activities (workshops, lectures, public discussions) and research activities.

karijere@uniri.hr

+385 51 584 757

## Academic Recognition Qualifications Office

All foreign student will need to have their previous qualifications officially required prior to enrolling

andrea@uniri.hr

+385 51 584 856

## Erasmus Mobility

The University of Rijeka joined the ERAMSUS exchange program in 2009 and since then has signed over 500 Erasmus bilateral agreements with universities from most EU countries. This cooperation includes students and staff exchange. In eight academic years more than 1000 University of Rijeka students and 300 staff members participated in Erasmus.

## Central Office

Radmile Matejčić 3, G-033

Maša Šašinka, Head of Office, Institutional Erasmus Coordinator, e-mail: masa@uniri.hr

## Department of Biotechnology

Assist. Prof. Elitza Markova-Car, Ph.D.,

elitza@biotech.uniri.hr



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