

Detailed curriculum for the course:
Biology of mental illness

Academic year:	2026/2027
Programs:	Istraživanje i razvoj lijekova (UNIRI) Biotehnologija u medicini (UNIRI) Medicinska kemija (UNIRI) BioYUFE elective course
Course code:	EBIL168
ECTS points:	3
Language of the course:	English
Teaching hours:	30 hours (11 hours lecture, 19 hours seminar)

Pre-requisites for enrolment: No specific courses required.

Course leader and contact information:

Title and name: Izv.prof.dr.sc. Nicholas J. Bradshaw
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Time period: 5th March 2026 – 14th May 2026

Teaching staff: Izv. prof. dr. sc. Nicholas J. Bradshaw
Dr. sc. Ana Filošević Vujnović
Doc. dr. sc. Aristeia Pavešić Radonja, dr. med
Dr. med. Ilijana Stanivuk

Required literature:

None, although students will be required to undertake independent reading in preparation for the seminars.

Course description:

Major mental illnesses are devastating conditions that represent one of the most significant causes of disability both globally and within Europe. Despite the enormous personal and economic effects of these illnesses, progress in revealing their underlying biology has been slow, and is only now truly beginning to be understood.

In this course, students will be taught about biological aspects of major mental illnesses, with a particular focus on schizophrenia, bipolar disorder and major depressive disorder. Lectures will provide an overview of the aetiology and symptoms of these conditions, before focussing in turn on therapeutic options available for treatment, how we define the conditions, the biological causes of the conditions at a personal and cellular level and how these conditions can be studied in clinical and laboratory situations.

Assessment will occur through a individual written tasks and group seminar-based activities, including the debates. For the group tasks, students will be required to work together with students from other YUFE Universities.

Through this course, it is intended that students will develop an understanding of the devastating and widespread conditions, but also gain a broader understanding of the experimental methods by which researchers can investigate and eventually understand complicated biological conditions.

Learning outcomes:

After completion of the course, students should be able to:

- 1) Describe the symptoms and methods of diagnosis for a range of mental illnesses
- 2) List a range of treatment options for these conditions and discuss (where known) their means of action
- 3) Understand and describe environmental factors contributing to their onset
- 4) Understand the role of heritability in major mental illness, and genetic methods by which candidate genes for the conditions can be identified
- 5) As an example, describe several prominent examples of genes studied in relation to schizophrenia
- 6) Understand the potential uses and limitations of different animal models in mental illness research
- 7) Discuss the means by which genetic-environmental interactions can be studied, both in the clinic and using animal models
- 8) As an example, describe the use of *Drosophila* in addiction research
- 9) Discuss modern approaches to major mental illness, including protein-based methods
- 10) Debate and discuss ethical and sociological issues regarding mental illness

Detailed course content:

Lectures:

- L1. Introduction to mental illness – 1 hour
- L2. Treatment options – 1 hour
- L3. Environmental risk factor – 1 hour
- L4. Genetic risk factors – 1 hours
- L5. Synaptic pruning & mental illness – 1 hours
- L6. Animal models of major mental illness – 1 hour
- L7. Research lecture – Addiction and *Drosophila* – 1 hour
- L8-10. Additional research lectures 1-1.5 hours each

Seminars:

- S1. Working in a clinic – 2 hours
- S2. Mental illness internationally – 2 hours
- S3. Social issues – 2 hours
- S4. Mental illness and pandemics – 2 hours
- S5. Genetics and society – 2 hours
- S6. Other mental illnesses – 2 hours
- S7. Animal studies – 2 hours
- S8. Addiction – 2 hours
- S9. Final presentations – 3 hours

Requirements, methods of assessment and evaluation:

Qualification and grades (according to *Pravilniku o studijima Sveučilišta u Rijeci*):

Assessment during the course (50%)

70% of the course will be assessed on seminar work performed during the course, which will consist of presentations, debates and written tasks. Note, that ability in the English language will not be specifically assessed at any stage of the course, however the course will require students to be able to make themselves understood in both spoken and written English.

Final presentation (50%)

The final exam will take the form of a presentation and be completed online after the end of the course. Students have the right to retake this up to two times (up to three additional presentation dates can be scheduled in total for the class, and will be arranged by agreement with the course leader)

Eligibility to sit the final exam will be based on scores achieved during the course (out of a maximum of 30%):

- Students scoring between 0 and 14.9% will not be allowed to sit the final exam
- Students scoring between 15% and 30% will be allowed to sit the final exam

Final grades

For Croatian and BioYUFE students, grades will be awarded based on the final score:

Percentage score	ECTS grade	Croatian grade
90% to 100%	A	Excellent (5)
75% to 89.9%	B	Very good (4)
60% to 74.9%	C	Good (3)
50% to 59.9%	D	Satisfactory (2)
0% to 49.9%	F	Unsatisfactory (1)

The final grade is based on the sum of percentage points accumulated during the course and on the final exam. Passing grades are excellent (5), very good (4), good (3) and satisfactory (2).

Additional information:

Academic integrity

Students are required to respect the principles of academic integrity. For students attending the University of Rijeka, please refer to the documents: *Etički kodeks Sveučilišta u Rijeci* and *Etički kodeks za studente*.

Holding of classes:

All classes will be held over Zoom, using this link:

<https://uni-bremen.zoom-x.de/j/7470547643?pwd=TmVkckJkMithWXQrWXo4MU5N2NoZz09>

Meeting ID: 747 054 7643

Passcode: bioyufe

Date	Time	Activity	Teacher
05.03.2027	13:00-16:00	Lecture 1 Introduction to mental illness	Nicholas Bradshaw
		Seminar 1 Working in a psychiatry clinic	Aristea Pavešić Radonja Ilijana Stanivuk
12.03.2027	13:00-16:00	Lecture 2 Treatment options	Nicholas Bradshaw
		Seminar 2 Mental illness internationally	Nicholas Bradshaw
19.03.2027	13:00-16:00	Lecture 3 Environmental risk factors	Nicholas Bradshaw
		Seminar 3 Social issues	Nicholas Bradshaw
26.03.2027	No classes (Good Friday)		
02.04.2027	13:00-16:00	Lecture 4 Genetic risk factors	Nicholas Bradshaw
		Seminar 4 Mental illness & pandemics	Nicholas Bradshaw
09.04.2027	13:00-16:00 (CEST)	Lecture 5 Synaptic pruning	Nicholas Bradshaw
		Seminar 5 Genetics & society	Nicholas Bradshaw
16.04.2027	13:00-16:00 (CEST)	Lecture 6 Animal research	Nicholas Bradshaw
		Seminar 6 Other mental illnesses	Nicholas Bradshaw

Date	Time	Activity	Teacher
23.04.2027	13:00-16:00	Lecture 7 Drosophila as a model	Ana Filošević Vujnović
		Seminar 7 Animal research	Nicholas Bradshaw
30.04.2027	13:00-16:00	Seminar 8 Drosophila as a model	Ana Filošević Vujnović
		Lecture 8 Research lecture 1	Nicholas Bradshaw
07.05.2027	13:00-16:00	Lecture 9 Research lecture 2	Nicholas Bradshaw
		Lecture 10 Research lecture 3	Nicholas Bradshaw
14.05.2027	13:00-16:00	Seminar 9 Final presentations	Nicholas Bradshaw
17.05.2027	13:00-16:00	Seminar 9 Final presentations reserve day*	Nicholas Bradshaw

* The intention is for all students to give their final presentations on 14.05.2027. However, if a large number of students take the course, then presentations will instead be split over 14.05.2027 and 17.05.2027. In this case, each student only needs to attend one of the “Final presentations” sessions, but are welcome to attend both if they wish.