

Course Specifications

Valid as from the academic year 2019-2020

Course size (nominal values; actual values may depend on programme)

Credits	5.0	Study time	150 h	Contact hrs	45.0 h
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Course offerings and teaching methods in academic year 2019-2020

A (semester 1)	English	lecture	22.5 h
		practicum	22.5 h

Lecturers in academic year 2019-2020

Magez, Stefan	KR01	lecturer-in-charge
Radwanska, Magdalena	KR01	co-lecturer

Offered in the following programmes in 2019-2020

Bachelor of Science in Molecular Biotechnology	crdts	offering
	5	A

Teaching languages

English

Keywords

Immunology, Inflammation, Infection, Host-pathogen interaction, Vaccination

Position of the course

This course provides basic knowledge of immune defense mechanisms on a cellular and molecular level. Insight in these mechanisms will then form the basis for an introduction to immunity dysfunction and the resulting immune system-related pathologies

Contents

1. What is immune defense? What are the cells and molecules of the immune system?
2. Innate immunity
3. Adaptive immunity
4. Integration of both immune compartments.
5. Immunological/inflammatory pathologies.
6. Medical and technological applications (vaccination, diagnosis, monoclonal antibodies)
7. The practical use of Immunology (laboratory practical courses): ELISA, FACS, Western Blot

Initial competences

No prior immunology knowledge is required; a basis in molecular biology and cell biology is required. Students should have knowledge of the content of the courses General Biology and Microbiology and Animal Biology as well as Molecular Biological Analysis.

Final competences

- 1 A solid understanding of the basis mechanisms in the mammalian immune system is acquired; so the student can read and understand the immunological literature.
The student will:
 - be aware of the basics of molecules and cells involved in the mammalian immune system
- 2 - understand the basics of how inflammation and anti-inflammation are regulated
- 3 - be aware of basic problems that can occur in the immune system leading to diseases such as autoimmunity and cancer
- 4 - know the structure of antibodies as well as the genetic background of the variation that allows to generate an almost infinite broad immune response
- 5 - be able to discuss the principles of vaccination
- 6 - understand the basic principles of immune-based detection and diagnostic assays

- 7 - be able to assess basic scientific concepts in the field of immunology
- 8 - adopt a positive attitude towards independent and life-long learning
- 9 - show social and communicative competencies in an international multicultural context
- 10 - be able to communicate via an English oral discussion
- 11 - be aware of the complementarity of immunology, genetics and other biological sciences in the study of human evolution, pathogen evolution and biological evolution in general

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, practicum

Learning materials and price

Learning material is provided as PowerPoint presentation and movies explaining basic principles that are both available on Minerva. An education Immunology textbook is strictly followed with respect to content. It is not necessary to purchase the reference book, as copies of the book are available for consultation.

References

Understanding Immunology 3rd edition, Peter Woods, Prentice Hall.
Immunobiology 8th edition, K. Murphy, P. Travers, M. Walport, Garland Science

Course content-related study coaching

Practical courses are designed to directly support the biochemical principles outlined in the course (participation in the latter is obligatory).

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions, report

Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions, report

Examination methods in case of permanent evaluation

Report

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Participation in the practical courses is obligatory. The final exam will have open questions that directly relate to the experiments performed during the practical course

Calculation of the examination mark

Written examination with open questions related to the lecture course material - 80%

Practical course report - 20%.