Exchange programme Vrije Universiteit Amsterdam

Vrije Universiteit Amsterdam - Exchange programme Vrije Universiteit Amsterdam - 2024-2025

Exchange

Vrije Universiteit Amsterdam offers many English-taught courses in a variety of subjects, ranging from arts & culture and social sciences, neurosciences and computer science, to economics and business administration.

The International Office is responsible for course approval and course registration for exchange students. For details about course registration, requirements, credits, semesters and so on, please visit the exchange programmes webpages.

Molecular Microbiology

Course Code	AB_470610
Credits	6
Period	P3
Course Level	300
Language Of Tuition	English
Faculty	Faculty of Science
Course Coordinator	dr. J.P. van Ulsen
Examiner	dr. J.P. van Ulsen
Teaching Staff	dr. J.P. van Ulsen, dr. S. Luirink, dr. M.P. Bergman, prof. dr. W. Bitter, dr. ir. Y.J.M. Bollen, dr. E.N.G. Houben
Teaching method(s)	Symposium, Lecture, Seminar, Practical

Course Objective

Students following this course will obtain in-depth theoretical knowledge of various microbiological topics, including the techniques applied to investigate those topics. Furthermore, the Laboratory research project will allow students to combine theory and experimental approaches to answer research questions that are related to the topics discussed in the theoretical part of the course. For that purpose, the complex molecular processes in the bacterial cell serve as central theme. The emphasis is on structure and function of the cell envelope, its role in bacterial pathogenesis and vaccine development.

At the end, the students are able to understand and know:

- Fundamental molecular processes that are important for growth, functioning and pathogenicity of micro-organisms.
- Practical and experimental approaches in molecular microbiology, immunology, bacterial DNA technology, protein techniques.

Course Content

This course consists of two parts:

1. A theoretical series of 12 lectures (24h contact)
2. A Laboratory project with 3 full days of practical work and analysis of data at home.

1. The Lectures focus on bacterial processes that enable them to colonize and survive in their niches, which can be an underlying cause for bacterial infections . A major topic is the biogenesis of the complex cell envelope of Gram-negative bacteria, because this bacterial compartment is directly involved in contact with the environment and plays a pivotal role in host-pathogen interactions.

2. The Laboratory project involves a small experimental project that is performed by the student personally (no groups). The topic of the microbiological research project is related to the work performed in the Molecular Microbiology department.

The project involves three stages:

- Reading two scientific papers for scientific background, which is followed by a literature discussion
- The actual experimental work in the Laboratory (week 2 and 3 several days of lab work yielding data to be analysed at home; this project is busy and requires full days)
- Writing a labjournal and presenting the work in workdiscussion meetings (compulsory; 4h contact).

Additional Information Teaching Methods

Theory; Lectures series Research project: in a small group with a supervisor planning and conducting a research project in the laboratory of that supervisor. Full participation in the laboratory project is obligatory (requires full days).

Method of Assessment

Deliverables for the course are:

- A written Lab journal (75% of Lab project mark))
- Presentation at workdiscussions (presence required)
- Presentation of final results (25% of Lab project mark)
- A written exam on the lectures series (the exam consists of essay questions)

The Lab project and the Exam each count for 50% towards the final mark, which needs to be 5.5 or higher to pass the course.

Additional requirements:

- You pass the course when the Research project has been completed, including the lab-journal (handed in digitally via Canvas).

Entry Requirements

Literature

Background:
Brock, Biology of Microorgamisms, current edition. Madigan, Martinko DunLap Clark and Parker, Pearson Education, Inc or an equivalent Microbiology textbook.

Each Lecture will be supported by a concise review on the topic, but also includes data and insights of the lecturer. For the Lectures a list of reviews is provided. These are updated yearly to keep the course up-to-date. The list will be published on the Canvas site prior to the start of the course.

Additional Information Target Audience

This course is part of the Minor Biomolecular Sciences. However, when available, students of other biomolecular- or biomedical-oriented minors can enroll.

Additional Information

Guest Lecturer: Dr. P. van der Ley; Laboratory of Vaccine Research, Intravac, Bilthoven.

Course with a lot of direct contact with the professors, associate and assistant professors, PhD's and postdocs.

Custom Course Registration

Maximum number of participants: 44