In this minor four topics in biomedical sciences are being discussed. In addition there is an open slot in January to give you the opportunity to choose another course of your own interest. Some courses will go into greater depth in certain topics (Biochemistry of Health and Disease, Molecular Principles of Brain Disorders) and Experimental Immunology will show you, hands on, how immunological research is performed and interpreted. The course Antimicrobial compounds will show you how interdisciplinary research may disclose new drug targets and lead to drugs for clinical use. The minor is advanced and interdisciplinary and is a good preparation for various master programs.

Courses:
- Antimicrobial compounds (period 1)
- Experimental Immunology (period 1)
- Biochemistry of Health and Disease (period 2)
- Molecular Principles of Brain Disorders (period 2)
- Optional course (period 3)

In period 3, the minor can be completed by choosing a course that is part of another FALW minor for which you fulfill the requirements for admission. Any other choice for a course in period 3 requires approval of the Examination Board and results in the annotation "Vrije Minor" on your diploma, instead of the annotation "Minor Topics in Biomedical Sciences".
## Inhoudsopgave

<table>
<thead>
<tr>
<th>Aangeraden keuzevakken</th>
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Antimicrobial Compounds: From Clinical Use to Target Analysis and Drug Development

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Doel vak
This course aims to offer understanding in the interaction of microbial pathogens with their host and how infections with these pathogens can be treated. The use of antimicrobials as well as the rational of antimicrobial guidelines associated with antibiotic/antimicrobial resistance will be discussed. Furthermore, the emerging problems of antibiotic resistance, the discovery of new antibiotics and the process of bringing these new compounds into the clinic will be covered.

After this course the student can:
- Discuss Host-microbial interactions.
- Discuss the problems associated with antibiotic/antimicrobial resistance.
- Apply and explain methods to test pathogens for drug susceptibility, including tests used for detecting specific resistance mechanisms.
- Explain how new antibiotics are identified, developed, approved and brought to the clinic.
- Explain and discuss the problems involved in developing and using antiviral agents for HIV.
- Present and discuss critically read scientific articles dealing with antibiotic development
from the 1940 till 2017.

Inhoud vak
The emergence and spread of antimicrobial resistance in pathogens is a major health threat that is often discussed in the media. Yet, the development of new antibiotics with new working mechanisms only decreased over the past decades. Why is the generation of new antimicrobials so difficult?
In this course we will first look at the use of antimicrobials (with an emphasis on antibiotics) in the clinic and the emergence and spread of antibiotic resistance among human pathogens. How do clinicians decide which antibiotics to use, how do you minimize the development and especially the spread of antibiotic resistance?
In the second part of the course we will focus on the isolation of new antibiotics. What is a good drug target? What is a good compound? And how do you set up screens to find compounds blocking these new targets?
In the last part of the course we will focus on the roadblocks and bottlenecks you will encounter once you have identified a new active compound, i.e. what factors are crucial to make a successful introduction of new compounds in the clinic.
This course aims to provide a thorough understanding of antibiotic usage and development of new antibiotics. At the same time knowledge on the evolution and spread of antibiotic resistance will be provided. It aims to equip students with the specialized knowledge necessary to understand the primary literature and all different aspects of this topic.

Onderwijsvorm
The course has three different parts: lectures, practicum and work-groups.
contact hours:
Lectures: 26
Literature Work-group: 12
Practicum: 10

Toetsvorm
Two partial Exams (open questions & multiple choice), together they form the Exam. The Exam constitutes 80% of the final mark. In addition, the mark of the exam must be >5.5 in order to pass the course.

The literature assignment is examined by a presentation and discussion. For the assignment the students work in groups. The mark of the assignment constitutes 20% of final mark.

Literatuur
To be announced (book or reader)

Aanbevolen voorkennis
Bachelor's course 'Infectieziekten' or an equivalent course in Microbiology and Molecular Biology with theoretical knowledge of different classes of microbial pathogens. Furthermore practical skills of handling microorganisms safely is highly recommended.

Doelgroep
Students interested in infectious diseases and/or microbiology and/or pharmacology.

Overige informatie
The course is coordinated by dr. Astrid van der Sar. The subthemes are coordinated by: dr. Karin van Dijk (clinical microbiology), dr. Edith
Dit vak is onderdeel van een minor en heeft een maximaal aantal deelnemers. Studenten die de hele minor doen, hebben voorrang.

Biochemistry in Health and Disease

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**Doel vak**
The aim of the course is to increase knowledge and understanding of biochemistry at a fundamental level and to develop a perspective on the role of biochemistry in health and disease.

**Inhoud vak**
Contents of the course:
* Biochemical and molecular mechanisms by which cellular adhesion, communication and signalling is regulated in the human body.
* Changes of these mechanisms in diseases with clinical examples of congenital and acquired diseases such as heart and vascular diseases, (chronic) infectious diseases, multiple sclerosis, alzheimer disease, congenital disorders of glycosylation and cancer.

Metabolic aspects of biochemistry are combined with their application to the diagnosis and monitoring of diseases, and the development of therapies including drug design.

**Onderwijsvorm**
Lectures (26-28h), learning in small groups (2h), laboratory course (4h) and computer practica (8h); in addition, time for self-study is included in the course.

**Toetsvorm**
Written exam (90%). Participation in Laboratory course and project (10%) are mandatory and will be assessed separately.
**Literatuur**
- Additional information & literature provided at the start of the course on Canvas.

**Vereiste voorkennis**
Basic knowledge Biochemistry

**Aanbevolen voorkennis**
Basic knowledge Immunology

**Doelgroep**
The course provides an excellent basis for students which aim to focus on medical biology (in particular immunology, infectious diseases and/or oncology) in their master period.

**Overige informatie**
Lecturers:

Dit vak is onderdeel van een minor en heeft een maximaal aantal deelnemers. Studenten die de hele minor doen, hebben voorrang.

**Community-based Health Interventions**

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<td>dr. N. Blignaut-van Westrhenen</td>
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**Doel vak**
- To describe and explain the current status, history and theoretical underpinning of CbHIs
- To describe and evaluate the different aspects of CbHIs (including design, implementation, monitoring and evaluation of CBHI).
- Identify organizational conditions for implementing CbHI (like organizational learning and change, and attention for knowledge transfer and sustainability).
- Analyse strengths and opportunities of CbHIs, leading to a well-grounded advice for optimization.
- Discuss and analyse case studies of CbHIs in their context in a
participatory way that is ethically sound.
- Describe and explain knowledge and understanding through verbal as well as written communication.

**Inhoud vak**
Numerous interventions are developed and implemented in the area of health care and prevention. Although there is often much attention for national or even international scale interventions, community-based health interventions (CbHIs) are a rapidly upcoming phenomenon. The underlying transition of perceiving health as an individual attribute to health as a result of complex social and local aspects is supporting the importance of CbHIs.

CbHIs are an innovative approach to severe and complex problems. In CbHIs, health is perceived as the result of interaction between individual and environmental aspects. Therefore, implementers of CbHIs take an interdisciplinary approach to public health issues. For instance, (self) management of diabetes, sexual health, mental health, and obesity are addressed by CbHI, but also community problems like loneliness of elderly or limited access to drinking water can be targeted. CbHIs are flexible and participatory in nature. As a result, they are easier to adapt to specific situations and are often designed in collaboration with the target group.

This course focuses on why CbHIs are essential for solving complex health issues and the types of interventions involved. We will take you through the history of CbHIs and the theoretical foundations of this strategy. In addition, we will give insights into aspects of design, implementation, monitoring and evaluation of CbHIs, taking into account appropriate attitudes, skills and knowledge to influence public health in a community setting. The ethical issues involved in community work are very important and issues such as stakeholder participation, sustainability and scaling-up of the intervention and its effects are discussed. Furthermore, the importance of learning from and adapting to emerging issues is discussed in relation to implementing CbHIs. We will explore the importance of learning capacity of the organisations that implement CbHIs, and their role as spiders in a web of multiple stakeholders that are involved with different perspectives, objectives and goals.

**Onderwijsvorm**
Lectures (18 hours)
Self-study (65 hours)
Work groups (12 hours)
Field visits (8 hours)
Assignment (65 hours)

**Toetsvorm**
Written exam with open questions (60%), group assignment of written report (30%), oral presentation in the form of a pitch and discussion (10%).
All parts need to be passed.

**Literatuur**
Book: Community Based Health Interventions: Principles and Application by Sally Guttmacher, Patricia J. Kelly, Yumary Ruiz-Janecko and articles on Canvas
Aanbevolen voorkennis
We recommend that student have been enrolled in the course future challenges in global health and drivers for change in global health.

Doelgroep
Bachelor students from Biomedical Sciences, Health & Life, Health Sciences, bachelor programs in the natural sciences and similar bachelor programs that participate in the minor Global Health.

Overige informatie
Guest lecturers will be invited to discuss fieldwork and research

Lecturers:
Nadine Blignaut-van Westrhenen
Bobby Zachariah
Dr. Barbara Regeer
Prof. dr. Marjolein Zweekhorst

Drugs and Addiction

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<td>dr. T. Pattij</td>
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<td>dr. L. Diergaard, dr. T. Pattij</td>
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Doel vak
Students will obtain insight in the neurobiological, clinical and socio-economical aspects of drug and alcohol abuse and critically discuss and evaluate a current hot topic in addiction treatment/prevention.

Inhoud vak
Addiction is the most widely occurring psychiatric disorder, which continues to extract enormous human and financial costs on our western society. The central feature of drug addiction is compulsive drug use, i.e. loss of control over apparently voluntary acts of drug seeking and drug taking. Currently, the leading view on addiction is that repeated drug consumption by vulnerable individuals (genotype) causes compulsive drug-seeking behaviour (phenotype) due to long-lasting neurobiological changes in the brain. Whereas numerous compounds (with or without cognitive therapy), have been tested clinically in the past, available treatments are as yet inadequate for most people and the risk of relapse to active drug use remains very high (80-90%), even after extended periods of abstinence. Against this background, the course will allow students to become familiar with the epidemiology, psychology, neurobiology, psychopharmacology and therapy of addictive behaviour with a focus on nicotine, psychostimulant, heroin, cannabis and alcohol addiction as well as compulsive gambling. Political and societal aspects of addictive behaviour will also be addressed.
Onderwijsvorm
Lectures, workshops, site-visits and self-tuition

Toetsvorm
Individual essay which accounts for 70% of final mark and written mid-term exam which accounts for 30% of final mark.

Literatuur
Primary literature: links to scientific papers will be provided in advance.

Aanbevolen voorkennis
Basic neuroscience knowledge

Doelgroep
3rd year bachelor Health Sciences and related bachelor programmes

Intekenprocedure
Due to limited number of places available for the site-visits, preregistration for participation in the site-visits may be required. Information for this registration procedure will be posted on Canvas.

Overige informatie
Course coordinators:
Dr. L. Diergaarde, department of Anatomy and Neurosciences, VU university medical center
Dr. T. Pattij, department of Anatomy and Neurosciences, VU university medical center
Various teachers from within our university and guest lecturers from other universities and institutes will provide lectures in the course.

Dit vak is onderdeel van een minor en heeft een maximaal aantal deelnemers. Studenten die de hele minor doen, hebben voorrang.

Evolutionary Genetics

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Onderwijsvorm
- Lectures and literature discussions by students (ca 50 hr)
- Working groups (ca 8 hr, mandatory)
- Literature presentation (ca 10 hr, mandatory)
- Computer practical (ca 12 hr, mandatory)
- Weblectures on specific topics
• Self study (ca 85 hr)

Literatuur
• Research and overview articles of subjects that are not thoroughly discussed in the book. These will be provided via the Canvas site of the course.

Doelgroep
Students of the Minor ‘Evolutionary Biology and Ecology’, and other third-year BSc students Biology, Biomedical Sciences, Bioinformatics and systemsbiology

Experimental Immunology

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Doel vak
This course will further extend the basic immunological knowledge obtained in the bachelor courses ‘Immunologie’ or ‘Celbiologie en Immunologie’ and will prepare the students for immunology internships and the master specialization Immunology.

The aim of the course is to:
• Acquire practical experience in immunological techniques
• Acquire theoretical knowledge about immunological techniques and model systems, how to address immunological questions and how to interpret experimental results.
• Advance immunological knowledge about many aspects of the innate and adaptive immune system
• Learn to communicate findings by giving an oral seminar

Inhoud vak
Lectures, experimental training (practica) and presentations
• Lectures which will address immunological techniques and current immunological research models (17 hours).
• Experimental training to gain ‘hands-on’ experience with immunological techniques (30 hours).
• Students will have to give an oral presentation on a immunological subject (3 hours plus preparation).
• Self study

Onderwijsvorm
Immunology lectures and experimental training. Attendance of experimental training and presentations is compulsory. Attendance of
lectures is highly recommended.

Toetsvorm
Written exam with open questions (90%), experimental training (pass), oral presentation of assignment (10%).

Literatuur

Additional literature and experimental protocols will be supplied by Canvas two weeks before the start of the course.

Vereiste voorkennis
Since this is an advanced immunology course, students should have passed the bachelor course 'Bedreiging en Afweer'(Biomedical Sciences) or 'Immunologie'(Gezondheid en Leven).

Aanbevolen voorkennis
Parham: The Immune System, Chapters 1-10.

Doelgroep
3rd year Bachelor students Biomedical Sciences that have passed the course 'Bedreiging en Afweer' or 'Immunologie' and 3rd year Bachelor students Gezondheid en Leven that have passed the course 'Immunologie' or 'Celbiologie en Immunologie' and have chosen the biomedical variant.

Overige informatie
Maximum number participants: 80
Parham: The Immune System, Chapters 1-10.

Docenten:

Dit vak is onderdeel van een minor en heeft een maximaal aantal deelnemers. Studenten die de hele minor doen, hebben voorrang.

Marketingtechnieken en Social Marketing

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<td>prof. dr. I.H.M. Steenhuis, dr. C.M. Renders</td>
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Doel vak
De student:
• heeft kennis van de theorie, definities en belangrijkste principes van marketing en social marketing en kan deze beschrijven.
• kan de factoren die consumentengedrag beïnvloeden beschrijven en uitleggen.
• heeft kennis van de verschillende manieren en theorieën van marketingcommunicatie en kan uitleggen hoe verschillende strategieën binnen marketingcommunicatie het gedrag kan beïnvloeden.
• is in staat om de rol, mogelijkheden en voorbeelden van Multimedia gebruik bij social marketing uit te leggen.
• is in staat om een social marketing plan te ontwerpen, te evalueren en te 'verkopen'.

Inhoud vak
In deze cursus leren studenten basisprincipes van marketing en hoe deze principes kunnen worden toegepast in communicatie over gezondheid, zorg en ziekte. Hoe overtuig je een doelgroep om comfort en vrije tijd in te leveren, groepsdruk te weerstaan, gewoonten af te leren en aan te leren, meer geld en tijd te spenserden en te denken voordat men doet, zodat gezond gedrag wordt bevorderd. De student zal zich verdiepen in menselijk gedrag in groepen om een maatschappelijk gezondheidsprobleem op te lossen door middel van een sociaal marketingplan. Ook de rol van multimedia hierbij zal worden besproken. Daarnaast zullen studenten kennis en begrip krijgen van diverse soorten onderzoek ten behoeve van de marketingcommunicatiefunctie en leren schakelen tussen theorie, praktijk en onderzoek ten behoeve van de marketing op het gebied van gezondheid.
Naast colleges is er een centrale groepsopdracht in de vorm van het maken van een social marketingplan. Deze opdracht wordt in groepen van 3-4 studenten uitgevoerd en daarbij passen studenten één van de geleerde methoden toe op een recent onderwerp in de publieke discussie.

Onderwijsvorm
De cursus wordt gewaardeerd met 6 ECTs en loopt van 8 Januari tot 2 Februari
Het is een voltijdse cursus. Dit betekent dat 42 uur per week nodig zijn om de doelen van deze cursus te kunnen nastreven. Regelmatig aanwezigheid gedurende de weken van de cursus is verplicht.
De cursus bestaat uit hoorcolleges (h), werkcolleges (w) en een practicumopdracht (pra) waarover ook presentaties zullen worden gehouden.

Toetsvorm
Een individueel schriftelijk tentamen dat voor 60% bijdraagt aan het eindcijfer van de cursus, een groepsopdracht (maken van een social marketing plan) die voor 35% bijdraagt en een presentatie die voor 5% bijdraagt.
De cursus is volbracht indien voor alle drie de onderdelen een 5,5 of hoger wordt gescoord en de student aanwezig was bij de Peer-Review sessie.

Literatuur
Hfdst 1 t/m 4 (p45 t/m 52), Hfdst 7 (t/m p106), Hfdst 10 t/m 12 (p193 t/m 203), Hfdst 13 t/m 15.
Daarnaast zal verplichte aanvullende literatuur op Canvas worden
gezet.

**Aanbevolen voorkennis**
Voor deelname aan de cursus wordt verondersteld dat de studenten beschikken over basiskennis over 1) kwalitatief onderzoek en over 2) gezondheid, zorg en ziekte.
Voor de studenten die hier niet over beschikken zal extra literatuur op Canvas worden gezet.

**Doelgroep**
Studenten Communicatie- & Informatiewetenschappen, Taalwetenschap, Communicatiwetenschap, Gezondheidswetenschappen, Gezondheid en leven, Bewegingswetenschappen,Geneeskunde, Economie, Bedrijfskunde, Psychologie of Rechten

**Intekenprocedure**
Registratie voor de cursus via VU-net. Registratie voor de opdracht in subgroepen via Canvas.

**Overige informatie**
Gastdocenten:
o.a
Drs W. de Vries (Faculteit der Economische Wetenschappen en Bedrijfskunde, Vrije Universiteit)
Drs A. Bosman (Schuttelaar & Partners, JOGG-bureau (Jongeren op Gezond Gewicht)
Prof dr P. Kerkhof (Faculteit Sociale Wetenschappen, afdeling Communicatiwetenschap)

Voor deelname aan de cursus wordt verondersteld dat de studenten beschikken over basiskennis over 1) kwalitatief onderzoek en over 2) gezondheid, zorg en ziekte.
Voor de studenten die hier niet over beschikken zal extra literatuur op Canvas worden gezet.

**Molecular Microbiology**

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<td>Coördinator</td>
<td>dr. J.P. van Ulsen</td>
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<td>Hoorcollege, Computerpracticum, Symposium, Practicum</td>
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**Doel vak**
To learn how theory and experimental approaches are combined to answer research questions. 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.

Inhoud vak
A series of 12 lectures (24h contact)

A laboratory project of 3 weeks:
- writing a Research Proposal (week 1; 3h contact)
- performing Laboratory Research (week 2 and 3; 70h contact [full-time days])
- preparing a presentation and participating in a symposium (3h contact)

Onderwijsvorm
Theory; Lectures series
Research project: in a small group with a supervisor planning and conducting a research project in the laboratory of that supervisor. The full participation in the laboratory project is obligatory.

Toetsvorm
Deliverables for the course are:
- A written Research proposal (25%)
- A presentation at a symposium (25%)
- A written exam on the lectures series (50%; the mark should be > 5,0 to pass the course)

Literatuur
Background:

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.

Doelgroep
Students of Minor Biomolecular Sciences and of other Minors with biomolecular or biomedical background that can use this course as optional course.

Intekenprocedure
Maximum number of participants: 44

Overige informatie
Guest Lecturer: Dr. P. van der Ley; Laboratory of Vaccine Research, National Institute of Health and the Environment, Bilthoven.

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

Molecular Principles of Brain Disorders

| Vakcode | AB_1049 () |
**Doel vak**
Gain insight into the etiology, expression and treatment of various brain diseases, as well as models used in preclinical science.

**Inhoud vak**
Our brain enables us to perform even the most complex tasks. Sometimes however, diseases of the brain compromise its optimal function. In this course students learn what the clinical manifestations are of the neurological and psychiatric diseases, and what type of cellular or animal models are around to learn us more on how disturbed processes and systems in the brain lead to these illnesses and that may provide us with clues on treatment options. Various treatments options for these conditions, including the use of pharmacological agents and deep brain stimulation will be discussed.

In this course we will focus on a different themes:
- **Theme 1:** Neurodegenerative disorders (coordinator Dr. Wiep Scheper)
- **Theme 2:** Psychiatric disorders (coordinator Dr. Hylke Vervaeke)
- **Theme 3:** Neurodevelopmental disorders of intellectual disability and autism (coordinator Dr. Rhiannon Meredith)

Next, you will be guided in writing a literature review.

**Onderwijsvorm**
Lectures (44 hours) and literature review (12 hours)

Course coordinators are Hylke Vervaeke and Rolinka Schippers

**Toetsvorm**
Exam (Multiple Choice) (60%), literature study (40%), each at least grade 5.5

**Literatuur**
Powerpoints from the lecture and extra literature on Canvas

**Aanbevolen voorkennis**
Basic (first and second year level) courses in Cell Biology and Neurosciences

**Doelgroep**
Course in the track ‘Neurosciences’ in the minor ‘Biomolecular Sciences and Neurosciences’.

Course in the minor ‘Topics in Biomedical Sciences’
Intekenprocedure
Groups for literature review via Canvas

Overige informatie
The track ‘Neurosciences’ is an excellent preparation for the Master Neurosciences.

This minor course requires a minimum of 25 participants and a maximum of 150.

This course is part of the Minor Neurosciences and the minor Topics in Biomedical Sciences. Students from both minors have priority.

Neuronal Networks and Behavior

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<td>Docent(en)</td>
<td>dr. N.A. Goriounova, dr. L. Witter, dr. M. Meijer, N.F. Straat BSc</td>
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Doel vak
This course is designed for life sciences students who want to learn more about how networks of brain cells control behaviour. To this end, we will discuss different aspects of brain function covering sensory information processing, control of movement, learning and memory, spatial navigation, cognition, emotions. We will focus on how neuronal networks in different brain areas give rise to these functions.

After completing this course the students will be able to:

1. Explain the biological basis of perception (vision, auditory processing, smell and taste), motor and behavioural control, and cognitive and emotional processes. In addition, you will get an understanding of the neurobiological basis of a number of neurological and psychiatric disorders.
2. Explain the general plan of human sensory and movement systems.
3. Apply this general plan to explain the differences and similarities between different sensory systems.
4. Give examples of how and through which neurons and nuclei signal transduction proceeds during interaction of the human brain with the external environment.
5. Apply this knowledge in performing scientific research themselves.
6. Create new research ideas based on the learned practical and theoretical knowledge.

The students will develop the following academic skills:
1. Search for and read scientific literature, extract important
information.
2. Utilise the theoretical background from course lectures and
practicals to critically evaluate neuroscience research, formulate
critical questions and participate in discussion.
3. Acquire hands-on experience in recording from neuronal networks,
conducting experiments and analyzing own data. The students will learn
how to stimulate neurons and record synaptic communication within
neuronal networks, induce synaptic learning.
4. Design and conduct own experiment based on the learned technique
5. Develop practical experimentation skills on analysis of human
startle responses and its sensory and emotional modulation.
6. Summarise the experimental results in a lab report

Inhoud vak
In Neuronal Networks & Behaviour we will discuss different aspects of
brain function ranging from sensory information processing, control of
movement, learning and memory to cognition and emotions. We will study
how neuronal networks in different brain areas give rise to these
functions. To achieve this, we will use a combination of lectures,
written assignments and practicals. These will build on chapters from
the book ‘Neuroscience’ by Purves and colleagues (5th edition).

To actively engage you in exploring the exciting territory of neurons
that shape our behaviour, the first two weeks will be centred on working
on assignments. These assignments are designed to help you prepare for
the lectures. In this way the lectures will go deeper on the subjects
that you already worked on through the assignment and will resolve the
questions that may arise during this preparation. During the lecture we
will often work in smaller groups to discuss the material. In the second
week, a series of practicals will start. During the first practical you
will perform experiments on neuronal networks in brain slices and will
learn basic principles of neuronal network function. You will even have
an opportunity to design and perform your own experiment under
supervision. The second practical takes you to experimenting with
behaviour and modulation of sensory information processing. Here you can
be the subject of the experiment yourself.

Onderwijsvorm
1. Assignments
A system of short Turnitin Assignments was designed to help you with
mastering the course material and prepare for the lectures. You will
receive at each lecture during the first 2 weeks a short list of
questions that you will complete and send using Turnitin Assignments on
BB before the next lecture. The questions will be discussed during the
subsequent lecture. If you submit all the assignments on time you will
get 0.5 extra points added to your exam grade. The primary goal of these
assignments is not to find the correct answers but for you to discover
difficult issues before the lecture, so that we can adequately address
your questions. Completion of all assignments is obligatory for all
students.

2. Lectures (l) by dr. N. Goriounova and dr. O.Stiedl
The first day will start with an opening lecture during which the aims
of the course are highlighted. The first week will contain lectures on
sensory systems; during the second week we will discuss the motor
control of behavior memory and cognition. You are expected to complete
the assignments before the lectures so that we can discuss the topics
and address unclear issues in depth.
Hours per student: 24 hrs
3. Hippocampal brain slice practical (pra) by J. Timmerman
In the second week, the practicals on neuronal networks from the hippocampus will expose you to the actual experimentation that is done to understand functioning of neuronal networks. It will provide you with an insight with what it takes to do research, and it will help you to understand some of the concepts discussed in the course. During the practicals, we will divide the class into multiple small teams of maximum 12 students. You will work in groups of 3 on one experimental setup.
Hours per student: 4

4. Startle eye-blink practical (pra) by dr. O. Stiedl
In the third week, experiments on human subjects are performed with an emphasis on startle reflex modulation in humans. In addition, a number of key primary research articles are discussed that facilitate the understanding of which brain areas are involved in emotional learning and central reflex modulation.
Hours per student: 5

Toetsvorm
The grading procedure will be as follows:
1. Assignments (A): pass/fail. All assignments are to be submitted
2. Practicals (P): pass/fail. Participation in practicals is obligatory
3. Written reports (R): from the practicals corrected after tutor’s feedback. Report electrophysiology practical 10% of the final grade; report startle reflex practical 10%.
4. Written exam (E) consisting of open questions 80%
5. Bonus points of 0.5 added to the exam grade in case all assignments are well done and submitted before deadlines

Grades for the reports and exam should be at least 5.5 and can non compensate each other
Reexamination:
Written exam (E)

Literatuur

Up-to-date course materials are posted on the site to which all students and lecturers have access. Background information for this course, relevant literature and copies of all lecture PowerPoints will be provided in the Course Documents folder on Canvas.

Vereiste voorkennis
Understanding of cell biology, neuronal communication and neuro-anatomy.
Purves et al (5th edition) "Neuroscience" Chapters 1-8

Aanbevolen voorkennis
Basic (first and second year level) courses in Cell Biology and Neurosciences.

Doelgroep
This course is part of the track ‘Neurosciences’ of the minor ‘Biomolecular Sciences and Neurosciences’.

Overige informatie
In addition to the lectures and practicals, we will pay attention to the development of a number of important academic skills: presenting scientific information in an oral presentation, reading and
understanding primary research articles, and designing experiments. These skills will not only be crucial later in your scientific career, but will also help you to learn to distinguish main topics and messages from side issues when preparing for the lectures of your fellow students, or even when preparing your exam.

The track ‘Neurosciences’ is an excellent preparation for the Master Neurosciences.

This minor course requires a minimum of 25 participants to take place.