The aim of the programme is to equip the student with the knowledge, skills and understanding required to operate as an independent professional within the disciplines covered by the Master’s programme, and to be a suitable candidate for a subsequent career in biomedical research. The Master’s programme in Biomedical Sciences guarantees its students in-depth research experience with a solid academic basis, combined with the communication skills that are needed to perform at the international level.

The student can choose from the following specializations:

First and/or second year Research specializations (54-60 EC):

-Immunology
-Infectious Diseases
-Neurobiology

Second year Research specializations (54-60 EC), only for students that started in study year 2014-2015 or earlier:

-Medical and Behavioural Genomics
-Psicophysiology

The I/C/S/E specializations are only available in the second year of the master:

-International Public Health (54 EC)
-Science Communication specialization (54 EC)
-Specialization Science in Society (54 EC)
-Education specialization (60 EC)

The I/C/S/E specializations are one-year programmes that cannot be combined with each other, and which must be combined with one of the research specializations.

More information
-All compulsory courses and electives you find in the year schedule;
-A complete description of the programme you find in the Teaching and Examination Regulations;
-For more information about the programma you can contact the academic advisor (VU students only);
-As a VU student you need to register for all courses via VUnet. Only after you completed your enrollment for the study programme you can register for courses;
-More information on all the courses you find through the links below
Inhoudsopgave

<table>
<thead>
<tr>
<th>MSc Biomedical Sciences, Research Specializations year 1 and/or 2</th>
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<tbody>
<tr>
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<td>Optional course spec. Immunology</td>
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<td>MSc Biomedical Sciences, Second Year ICSE Specializations</td>
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<td>Master Leraar VHO Biologie vanaf 2015</td>
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<tr>
<td>LVHO Biologie, overgangsregels</td>
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<tr>
<td>MSc Biomedical Sciences, spec. International Public Health</td>
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<td>MSc Biomedical Sciences, Spec. Science in Society</td>
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<td>Vak: Peergroup Fase 2 (Periode 3+4+5)</td>
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MSc Biomedical Sciences, Research Specializations year 1 and/or 2

First and/or second year Research specializations (54-60 EC):
Immunology
Infectious Diseases
Neurobiology

The prescribed scope of a research specialization is 54-60 EC.
A research specialization therefore includes:
• a research internship (30 EC)
• at least 3 courses from the specialization (18 EC)
• a choice (6-12EC) from:
  o literature thesis in the field of the specialization (9 EC)*;
  o an extra optional course from the specialization (6 EC)
  o an extension of the internship (3-6 EC)**
* When the student chooses one research specialization, the subject of the
  literature thesis has to lie within the field of this specialization (9 EC).
** The total EC for both internships together may not exceed 66EC.

The programme is completed with the compulsory general courses (6 EC)
and a second specialization of 54-60 EC.

Opleidingsdelen:
- MSc Biomedical Sciences, spec. Immunology
- MSc Biomedical Sciences, spec. Infectious Diseases
- MSc BMED spec. Neurobiology

MSc Biomedical Sciences, spec. Immunology

The Master’s graduate with a specialization in Immunology has a broad understanding of immunological processes, ranging from the molecular and cellular interactions between host and pathogen to an integrative knowledge of the role of the immune system in various pathologies, such as cancer, infectious diseases and autoimmunity. The Master’s graduate has specialized in one of the subjects within the field of immunology. He/she possesses knowledge of current theory and the key research questions in the field of immunology and has an understanding of the scientific and social relevance of this subject area.

The prescribed scope of the specialization Immunology is 54-60 EC.
This research specialization therefore includes:
• a research internship (30 EC)
• at least 3 courses from the specialization (18 EC)
• a choice (6-12EC) from:
  o literature thesis in the field of the specialization (9 EC)*;
  o an extra optional course from the specialization (6 EC)
  o an extension of the internship (3-6 EC)**
* When the student chooses one research specialization, the subject of the
  literature thesis has to lie within the field of this specialization (9 EC).
** The total EC for both internships together may not exceed 66EC.
The programme is completed with the compulsory general courses (6 EC) and a second specialization of 54-60 EC.

The course programme consists of the following components, with the study load for each component given in EC.

Opleidingsdelen:

- Optional course spec. Immunology
- verplichte vakken

Optional course spec. Immunology

Vakken:

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verplichte vakken

Vakken:

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MSc Biomedical Sciences, spec. Infectious Diseases

The Master's graduate with a specialization in Infectious diseases has a broad understanding of the biology of pathogenic organisms and the interaction between pathogens and their hosts. The Master's graduate has the ability to conduct scientific research in the field of medical microbiology and to critically assess the results of microbial research. The Master's graduate has specialized in one of the subjects within the field of medical microbiology. He/she possesses knowledge of current theory and the key research questions in this field and has an understanding of the scientific and social relevance of this subject area.

The prescribed scope of the specialization Infectious Diseases is 54-60 EC.

This research specialization therefore includes:
- a research internship (30 EC)
- at least 3 courses from the specialization (18 EC)
- a choice (6-12EC) from:
- a literature thesis in the field of the specialization (9 EC)*;
o an extra optional course from the specialization (6 EC)
o an extension of the internship (3-6 EC)**
* When the student chooses one research specialization, the subject of the
literature thesis has to lie within the field of this specialization (9
EC).
** The total EC for both internships together may not exceed 66EC.

The programme is completed with the compulsory general courses (6 EC)
and a second specialization of 54-60 EC.

The course programme consists of the following components, with
the study load for each component given in EC.

Opleidingsdelen:
- Optional courses spec. Infectious Diseases
- verplichte vakken

Optional courses spec. Infectious Diseases

Vakken:

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<tr>
<th>Naam</th>
<th>Periode</th>
<th>Credits</th>
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verplichte vakken

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<td>Parasitology</td>
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MSc BMED spec. Neurobiology

The Master’s graduate with a specialization in Neurobiology has
knowledge, insight and understanding of the state of the art in terms of
developing theories and insight into the most important current research
issues in the neurosciences. The Master’s graduate has the ability to
conduct scientific research in the field of neurobiological research and
to critically assess the results. The Master’s graduate has specialized
in one of the subjects within the field of neurobiology. He/she possesses knowledge of the significance of neurobiology within the context of brain research and some of its clinical implications.

The prescribed scope of the specialization Neurobiology is 54-60 EC. This research specialization therefore includes:
• a research internship (30 EC)
• at least 3 courses from the specialization (18 EC)
• a choice (6-12EC) from:
  o literature thesis in the field of the specialization (9 EC)*;
  o an extra optional course from the specialization (6 EC)
  o an extension of the internship (3-6 EC)**
* When the student chooses one research specialization, the subject of the literature thesis has to lie within the field of this specialization (9 EC).
** The total EC for both internships together may not exceed 66EC.

The programme is completed with the compulsory general courses (6 EC) and a second specialization of 54-60 EC.

The course programme consists of the following components, with the study load for each component given in EC.

Opleidingsdelen:

- Optional Courses Neurobiology: 6 EC required
- Compulsory courses Neurobiology

Optional Courses Neurobiology: 6 EC required

Vakken:

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<td>Clinical Neurosciences</td>
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Compulsory courses Neurobiology

Vakken:

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MSc Biomedical Sciences, Second Year ICSE Specializations
The I/C/S/E specializations are only available in the second year of the master:
International Public Health (IPH; 54 EC)
Science Communication specialization (54 EC)
Specialization Science in Society (SiS; 54 EC)
Education specialization (60 EC)

The prescribed scope of the specializations in IPH, Communication or SiS is 54 EC, and includes:
• 4 courses from the specialization (24 EC)
• an internship within the specialization (30 EC)

The Master's programme is completed with the compulsory general courses (6 EC) and a first year research specialization (60 EC; including the literature thesis (9 EC)).

Opleidingsdelen:

- MSc Biomedical Sciences, Communication Specialisation
- Biology
- MSc Biomedical Sciences, spec. International Public Health
- MSc Biomedical Sciences, Spec. Science in Society

MSc Biomedical Sciences, Communication Specialisation

Biomedical science is increasingly becoming an interdisciplinary research field in which biomedical scientists can no longer function effectively in isolation. Rather, they benefit from interaction with other scientists (such as those in the fields of molecular biology, neurobiology and immunobiology) and societal actors (such as doctors, patients and policymakers). Communication about science takes place between academic peers and between scientists and the general public. This makes the Communication specialization a complex and dynamic field of research and practice, for example on patient participation in health research, the use and effects of media metaphors and hype, and public understanding of emergent technologies. The Master’s graduate with this specialization has a theoretical understanding of the complex problems that arise during such communication processes, and has developed the necessary skills to act professionally at this interface to enhance communication and the outcomes of communication between scientific actors and society.

The specializations Science Communication is only available in the second year of the master.
The prescribed scope of the specialization is 54 EC, and includes:
• 4 courses from the specialization (24 EC)
• an internship within the specialization (30 EC)

The Master's programme is completed with the compulsory general courses (6 EC) and a first year research specialization (60 EC; including the literature thesis (9 EC)).

Opleidingsdelen:

- Compulsory courses
- Choose at least two of these courses
- Choose one of these courses
Compulsory courses

Vakken:

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Choose at least two of these courses

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Choose one of these courses

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Biology

The Master's graduate with a specialization in Education obtains a certificate that qualifies the graduate to teach Biology in secondary schools (this is a ‘grade one’ certificate, i.e. it qualifies the graduate to teach pupils who will sit public exams in the subject).

The programme for the Education specialization essentially consists of one year of specific teacher training. This 60 EC-programme is taught in Dutch. Note that the Education Specialization is identical to the Master's in ‘Leraar Voorbereidend Hoger Onderwijs - Biologie’. The programme can be started twice a year, in
September and February.
For courses and more information on the Education specialization:

The prescribed scope of the Education specialization is 60 EC

Opleidingsdelen:

- Master Leraar VHO Biologie vanaf 2015
- LVHO Biologie, overgangsregels

Master Leraar VHO Biologie vanaf 2015

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LVHO Biologie, overgangsregels

MSc Biomedical Sciences, spec. International Public Health

The Master's graduate with a specialization in International public health has a broad understanding of current and future challenges in international public health, their main causes, and applied and potential interventions. The Master's graduate has specialized knowledge of relevant concepts from various disciplines, including epidemiology, policy science, anthropology, management studies, biomedical sciences and health sciences. The Master's graduate has the ability to conduct scientific research in the field of international public health and to critically assess the results of international public health research. The Master's graduate has specialized in one of the subjects within the field of international public health. He/she possesses knowledge of current theory and the key research questions in this field and has an understanding of the scientific and social relevance of this subject area.

The specializations International Public Health is only available in the second year of the master.
The prescribed scope of the specialization is 54 EC, and includes:
• 4 courses from the specialization (24 EC)
• an internship within the specialization (30 EC)

The Master's programme is completed with the compulsory general courses (6 EC) and a first year research specialization (60 EC; including the literature thesis (9 EC)).

A course in epidemiology (6 EC) is compulsory to be admissible to this specific specialization. VU-students with a deficiency in epidemiology can obtain the relevant knowledge through the bachelor's course 'Epidemiology', external students can contact the master's coordinator or specialization coordinator for options.

Opleidingsdelen:
- MSc Biomedical Sciences, spec. International Public Health
- MSc Biomedical Sciences, spec. International Public Health

MSc Biomedical Sciences, spec. International Public Health

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MSc Biomedical Sciences, spec. International Public Health

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<td>Health, Globalisation and Human Rights</td>
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MSc Biomedical Sciences, Spec. Science in Society
The Master's graduate with a specialization Science in Society combines an academic approach with the skills and competences that will allow him or her to perform scientific research at the interface of the biomedical sciences and society. The specialization aims to develop strategies that contribute to an understanding of complex societal problems and strategies to solve complex societal problems through interdisciplinary research. In addition, the programme analyses the social, economic and ethical aspects of new developments in the biomedical sciences, so as to assess their implications for society. Master's graduates have the necessary skills to collaborate and communicate with researchers from various scientific disciplines (including but not limited to those in the life sciences) and societal actors, and the ability to use these academic insights.

The specializations Science in Society is only available in the second year of the master.
The prescribed scope of the specialization is 54 EC, and includes:
• 4 courses from the specialization (24 EC)
• an internship within the specialization (30 EC)

The Master's programme is completed with the compulsory general courses (6 EC) and a first year research specialization (60 EC; including the literature thesis (9 EC)).

Opleidingsdelen:

- MSc BMED spec. Science in society - compulsory courses
- Choose at least one of these courses

MSc BMED spec. Science in society - compulsory courses

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<td>Research methods for analyzing complex problems</td>
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Choose at least one of these courses

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Internship for students without spec.

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Advanced Molecular Immunology and Cell Biology

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<tr>
<td>Coördinator</td>
<td>drs. K. Brouwer</td>
</tr>
<tr>
<td>Examinator</td>
<td>prof. dr. R.E. Mebius</td>
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</table>
**Doel vak**

To acquire insight into:

- cellular interactions within the immune system and how molecular diversity is generated to regulate immune responses.
- the various strategies of host immune responses against pathogens, and how pathogens escape proper immune responses.
- the various strategies of the host to positively or negatively affect immune responses during cancer.
- mechanisms by which the immune system regulates either immune activation or tolerance induction.
- the mechanism of cell migration within the immune system.

**End terms:**

**Knowledge:** At the end of the course the student is familiar with current knowledge on the (molecular) pathways involved in the induction and regulation of immune responses in health and disease.

**Skills:**

- The student is capable of applying the acquired knowledge and can interpret scientific literature and scientific hypotheses of each of the topics described above.
- The student is able to formulate a scientific hypothesis and can design a research proposal addressing the hypothesis.
- The student is able to present and discuss the research proposal with peers.

**Inhoud vak**

Immunology is a rapid growing field of research in medicine and attracts a lot of attention for its contribution in various diseases such as infection diseases, cancer and auto-immunity. The course will give the student the opportunity to enhance the knowledge on the scientific aspects within the field of immunology. Special focus lies on the immunological processes underlying homeostasis control i.e., tolerance induction, immunity, antigen presentation and processes that lead to the development of inflammatory diseases (infection diseases through pathogens), auto-immunity (neuro-immunology) and cancer. Because this is an advanced course in the field of immunology, and will go into depth, particular on molecular details, students should be familiar with basic immunology preferably via a previous basic training course in immunology.

**Onderwijsvorm**

The course covers immunological processes at the molecular level, and consists of lectures (H; 22 hours) and study groups (W; 14 hours).

In the study groups students will read review articles as well as primary scientific articles on the subjects and discuss in groups opposing views on the molecular immunological processes that occur in the different stages of homeostasis and disease control. State of the art will be discussed of all topics, which will facilitate the study of scientific articles. Additionally, there is time for self study as well as time to design a research proposal (pro; 4 hours), which will be presented. The first weeks include lectures, study groups, self study and preparation and presentation of the research proposal, whereas the last part mainly covers self study and the exam.
Contact hours with teachers and/or coordinators: 40

Toetsvorm
Study groups and active participation are compulsory. A substitution assignment is required when one or more workshops have not been attended, or when participation is judged as unsatisfactory.

A written exam (T) at the end of the course includes assay (‘open’) (90% of grade). A minimum score of 5.5 for the written exam is required in order to pass. The research proposal (Pres) has to be presented and accounts for 10% of the grade.

Literatuur
Lectures, reviews and scientific papers are part of the material that covers the exam (posted on Canvas).

Vereiste voorkennis
Solid knowledge on basic immunology is compulsory before the start of the course.

Doelgroep
Students with a keen interest to study immunological processes that form a basis for a variety of occurrences of diseases. In particular those that cover the interaction between host-pathogen, host–tumor and homeostatic control.
Compulsory course for MSc Biomedical Sciences student with specialization Immunology, optional course for specialization Infectious Diseases

Overige informatie
Lecturer(s):

Analysis of Governmental Policy

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<td>dr. O.E. Popa</td>
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<tr>
<td>Docent(en)</td>
<td>J.W. Schuijer, drs. ir. A. Fraaije, A.E. Bunders MSc, drs. ir. F. Vogels</td>
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Doel vak
- To acquire critical knowledge regarding different policy models and theories;
- To master the correct use of central concepts in political and policy
discourses;
- To create skills for the analysis of complex societal questions or dilemmas;
- To learn to integrate scientific expertise with laypersons' experience;
- To practice data collection and analysis;
- To learn to set up valid lines of argumentation from data to policy recommendations;
- To experience writing a policy advisory report;
- To improve communication skills during a group project;
- To improve skills in working effectively in a project team, through team building, team analysis and feedback.

**Inhoud vak**

Governmental policy affects millions of people and is thus object of intensive debate and target of strong societal forces, like political parties, media and interest groups. Being an advisor or policy maker requires a thorough understanding of the dynamics of policy making, as well as from the psychological side as from the more social structures and their influence on a deliberative democracy.

The course contains several lectures on theoretical concepts and models concerning policy analysis. Furthermore you will be challenged, under supervision, to apply and practice these concepts and models in the project assignment. From the very first day, you will be part of a project team of about ten students. You are confronted with a real policy problem from an external commissioning institution (e.g. a non-governmental organization, a Ministry, an advisory council). Within those 4 weeks you will collect data by literature review and interviews and conduct an interdisciplinary analysis on the basis of which you provide an advice. Specific attention is paid to working in a project team and team building. At the end of the course, you prepare an advisory report. On the last day of the course you present the report to the representative of the external institution who commissioned the project. In that presentation your team will highlight the main results of your analysis and defend the recommendations you propose.

**Onderwijsvorm**

Analysis of Governmental Policy is a parttime course of eight weeks (6 ECTS). Tuition methods include lectures, training workshops, and self-study. Attendance to lectures and project meetings is compusory. In our experience, relying on self-study alone is insufficient to pass the exam.

**Toetsvorm**

Written multiple-choice exam (30%)
Personal performance in group meetings (20%)
Group products (50%): report (25%), presentation (25%)
All have to be passed successfully for the student to pass the course

**Literatuur**


**Aanbevolen voorkennis**

The project integrates the research design made and lessons learned from the first compulsory MPA course: Research Methods for Analyzing Complex Problems
**Doelgroep**
Compulsory course within the Masterprogramme Management, Policy Analysis and Entrepreneurship for the health and life sciences (MPA) and the Societal differentiation of Health, Life and Natural Sciences Masters programmes.

**Intekenprocedure**
Additional information about the schedule for work groups is available in Canvas.

**Overige informatie**
The case is policy analysis and advice, but the exercised methods and skills are equally applicable to strategic marketing advice or evaluation studies. The teams will be coached by workgroup tutors.

**Behavioral Genetics**

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**Doel vak**
To provide the Master of Neuroscience students with a solid basis in human behavioral genetic research. This entails:
- A good understanding of the most commonly used methods in behavioral genetics (including twin studies, genetic linkage and genome-wide association studies)
- The ability to critically read and understand behavioral genetic research articles
- Familiarity with the most important research findings in the field
- Familiarity with the most common software programs used in this field of research.

**Inhoud vak**
Behavior genetics focuses on the inheritance of individual differences in complex traits. Such traits are most likely influenced by multiple genetic and environmental factors. The effects of genetic and environmental factors may be additive or interactive and lead to individual differences in complex traits and diseases that are quantitative rather than qualitative. In this course theory and principles from population genetics and biometrical genetics will be introduced, including genetic and cultural inheritance of complex phenotypes. Designs of family, adoption and twin studies and their applications to variation in cognitive abilities, personality and psychiatric disease will be discussed. The advances in molecular genetics have generated substantial progress in identifying the genetic basis of heritable traits using linkage and genome-wide association approaches. Both approaches will be reviewed and illustrated using...
recent studies aiming to identify genes underlying the vulnerability for psychiatric disorders, such as schizophrenia and mood disorders. Practical exercises will guide the student through some of the available online tools that facilitate the interpretation of gene-finding studies.

**Onderwijsvorm**
Lectures (6, 2 hours each) and computer practicals (6, 3 hours each).

**Toetsvorm**
Written exam consisting of open-end questions (60%) + writing assignment (40%).
To obtain a final grade of 6 or higher, students have to pass both the exam and the writing assignment.

**Literatuur**
Research articles, exact reading list to be announced on Canvas 2 weeks before the course.

**Vereiste voorkennis**
Students from disciplines other than neuroscience should contact the course coordinator to discuss the possibility of entry in this course.

**Doelgroep**
First year students of the master neuroscience and students interested in behavioral genetic research (e.g. twin studies or gene-finding methods, with a focus on behavioral phenotypes).

**Overige informatie**
Attending the practicals is compulsory

**Business Management in Health and Life Sciences**

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**Doel vak**
1. To acquire knowledge and understanding into theory of knowledge valorisation in health and life sciences
2. To acquire knowledge and insight in how to organise, protect and finance a business in health and life sciences
3. To acquire knowledge and understanding into the pharmaceutical industry's business model and business processes
4. To acquire knowledge and understanding into the challenges that face the pharmaceutical industry
5. To apply newly acquired knowledge and understanding by solving case examples
6. To apply newly acquired knowledge and understanding in writing a business plan
7. To reflect on and critically evaluate the role of the pharmaceutical industry in the healthcare system
8. To learn to autonomously write a business plan

**Inhoud vak**

As a result of external factors (for example ageing of the population and technological advancement, leading to increased healthcare costs), it is being stated that our healthcare system is under pressure. As a central stakeholder in this healthcare system, the pharmaceutical industry is facing significant challenges the coming years. More than ever, the pharmaceutical industry is challenged to survive. Business Management in the Health and Life Sciences focuses on gaining insight in the pharmaceutical industry, its business model, business processes, challenges, as well as strategies and actions to overcome these challenges.

During the course, prof. dr. Eric Claassen (http://www.falw.vu.nl/en/research/athena-institute/staff/claassen.asp) together with highly experienced guest lecturers from the field will teach theoretical and practical knowledge during lectures and seminars. Tangible subjects that will be discussed during the lectures and seminars include the pharmaceutical industry’s business model and business processes, intellectual property, portfolio management, finance, risk capital, grants and subsidies, team building and people management, different legal entities, fiscal and legal aspects when starting a new company, SWOT analysis in the life sciences and clinical trials.

The newly acquired knowledge is tested via an assignment (during which students will write either a personal career business plan or a ‘real’ business plan) (40% of the total grade), a written exam (40% of the total grade), and a computer seminars (20% of the final grade).

**Onderwijsvorm**

Lectures: ±50 h
Computer seminars: 7,5 h
Work on assignment and self-study: ±- 40h

**Toetsvorm**

Written exam: 40%
Personal Business Plan: 40%
Computer seminar: 20%
All parts have to be passed successfully.

**Literatuur**


**Doelgroep**

Optional course for Master students Management, Policy Analysis and Entrepreneurship in Health and Life Sciences (MPA), Societal differentiation of the Health, Life & Natural Sciences.
Clinical Development and Clinical Trials

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Doel vak
- To gain knowledge and insight into the function clinical trials in today's healthcare system
- To gain knowledge and insight into the design of clinical trials
- To gain knowledge and insight into the conduct of clinical trials, including the applying rules and regulations (including ICH-GCP)
- To gain knowledge and insight into and critically reflect on the roles, tasks and responsibilities of the stakeholders involved in clinical trials
- To gain insight into challenges in clinical development as well as in strategies to deal with these challenges
- To learn where and how to look up rules and regulations

Inhoud vak
In today's healthcare system, clinical trials have gained the status of golden standard to test the safety and efficacy of newly developed drugs. For new drugs to enter the market, clinical trials must be passed and as a consequence, clinical trial outcomes have major effects on our healthcare system. While our healthcare system currently is under pressure to remain affordable and available to all, at the same time, clinical trial regulations are increasingly tightened and the prominence of clinical trials in our healthcare system is being criticized. For that matter, it is of great importance to learn about and reflect on the role of clinical trials in today's healthcare system.

The Clinical Development & Clinical Trials course will elaborate on the function, design and conduct of clinical trials, as well as the relevant stakeholders involved. The course consists of a theoretical part and an important practical part (e.g. gaining knowledge on clinical trial regulations). Classes include for example: ‘Life Cycle of a Clinical
The gained knowledge and skills will be evaluated by means of a written exam at the end of the course.

**Onderwijsvorm**
Lectures: +35 h
Self study: +40 h

**Toetsvorm**
Written exam: 100%

**Literatuur**
(Additional reading will be provided via Canvas and will serve as background reading for the lectures).

**Doelgroep**
Optional course for Master students Management, Policy Analysis and Entrepreneurship in Health and Life Sciences (MPA), Societal differentiation of the Health, Life & Natural Sciences.

**Overige informatie**
Guest lecturers, organisations/companies:
• Eric Klaver, FourPlus Clinical

**Clinical Immunology**

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**Doel vak**
• To understand immunopathogenic processes that play a role in the onset and chronicity of three immunological diseases, that cover allergy, auto-immunity and infection diseases, such as celiac disease, multiple sclerosis and AIDS.
• To acquire insight in both clinical parameters as well as basic scientific principles that play a role in these diseases.
• To acquire insights in the currently used treatments to reduce disease activity.
• To understand the mechanism by which the immune system regulates these diseases, and how one could modify immune response to the benefit of the patient.
patient.
• To apply the acquired knowledge of scientific literature and scientific hypotheses of each of the topics described above in debating clubs where disease-related statements will be defended.

Inhoud vak
During the course, three immunological diseases will be discussed one-by-one:
celiac disease, multiple sclerosis and AIDS.

Each theme will start with a clinical introduction into the features of the disease by a practicing clinician at the VUmc, who illustrates the symptoms in patients that have these diseases.
During each period a certain number of lectures will be given on the immunological mechanisms that play a role during these complex diseases. These lectures highlight molecular immunological tools used, as well as novel strategies such as genomics-proteomics profiling of the disease, the use of animal models that mimic disease, as well as vaccine development and treatment methodology of the diseases.
In turn, the students are able to apply the obtained knowledge in debating clubs, where disease-related statements have to be defended. These debating clubs are scheduled at the end of each theme.

Onderwijsvorm
The course covers immunological processes as well as clinical parameters both at the molecular as well as the cellular level and will discuss both innate and adaptive immune responses. The course consists of lectures, self-study and debating clubs. Diseases are discussed one-by-one and the final part of the course mainly covers self-study and the exam.

Contact hours:
19 hours lectures
appr. 6 hours debating clubs

Toetsvorm
Both lectures and debating clubs are compulsory, and form part of the material that covers the exam. Active participation in debating clubs is part of the appraisal. Written exam at the end of week 8 includes 10 ‘assay ‘questions.

Literatuur
Immunobiology by Janeway 8th edition or Parham 3rd/4th edition, including a handout which contains recent reviews specialized on the immunological diseases discussed. Next to that, self-study and literature search is required to be prepared for debating clubs.

Vereiste voorkennis
Bachelor’s course Immunology. A solid base on knowledge on immunology is compulsory before start of the study.

Doelgroep
Students with a keen interest to study immunological processes within the complexity of diseases such as allergy, multiple sclerosis and AIDS.
Given the broad relevance of immunology in life sciences this course also provides excellent opportunities for other differentiations and Master programs.
Compulsory course for MSc Biomedical Sciences students with specialization Immunology.
Overige informatie

Lecturers:
Dr. E.J.G. Peters, dr. B.W. van Oosten, dr. B.
de Jong, dr. G. Kooij, prof. dr. J. van Horssen, prof. dr. P.
van der Valk, dr. H. Bontkes, prof. dr. T.D. de Gruijl,
prof. dr. Y. van Kooyk

External lecturers:
Dr. J. Borghans (UMCU)
Prof. dr. F. Koning (LUMC)
Dr. J. Samsom (ErasmusMC)
Dr. W.A. Paxton (AMC)
Prof. dr. T.B.H. Geijtenbeek (AMC)
Prof. dr. B’t Hart (UMCG)

Clinical Neurosciences

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Doel vak
The aim of this course is twofold: 1. Provide knowledge on neurological disease, and 2. Initiate a translational way of thinking as a neuroscientist.

To do this, we will provide knowledge on common neurological disorders: Multiple sclerosis, childhood white matter disorders, dementia, movement disorders, neuropsychiatric disorders and neuro-oncology. Translational thinking will be stimulated by continuously investigating the (histo)pathology, clinical and imaging abnormalities for diagnosis and prognosis and therapeutic options. Teachers are a combination of clinicans and researchers, to promote translational thinking.

Inhoud vak

Multiple sclerosis:
Description of the clinical phenotypes of the disease. Introduction of neuroimaging specifically adapted for MS. The use of neuropathology to understand disease mechanisms in MS.

Childhood white matter disorders:

Dementias:
Description of the main clinical manifestations of dementia.
Introduction of cognitive assessment in dementias. Demonstration of the neuropathological features of dementias.

Movement disorders:
Description of the motor and cognitive manifestations of movements disorders. During this course the focus will be on Parkinson's disease.

Neuropsychiatric disorders:
Description of the clinical manifestation of the main neuropsychiatric disorders in a broad translational way; from molecule to mind.
Introduction of the underlying neuroanatomy and pathophysiology and discussion on what the use is of neuroimaging in neuropsychiatry.

Neuro-oncology:
Description of the clinical/cognitive manifestations of brain tumors, mainly glioma. The effects of these tumors on brain networks is the main focus.

Onderwijsvorm
Lectures, student presentations, practical
The course runs for eight weeks, on Mondays and Thursdays

Toetsvorm
Group presentation (10% of grade)
Written essay, in the form of an introduction of a research paper (30%)
Written exam with open questions (60%)
Sufficient grades for the presentation, the essay, as well as the exam are required in order to pass the course.

Literatuur
Research papers and course slides provided on Canvas

Vereiste voorkennis
All students following the masters program in Neurosciences at the VU are required to take this course.
External candidates are also allowed, if accepted by the course coordinator.

Aanbevolen voorkennis
For external candidates, some (basic) knowledge on the brain and neuroanatomy is highly recommended.

Doelgroep
Students interested in clinical neuroscience

Intekenprocedure
Enrolment in vu-net.

Overige informatie
Questions: clinicalneuroscience@vumc.nl
This course is coördinated by: dr. M.M. Schoonheim (Menno) and dr. D.P. Bakker (Dewi)

Communication, Organization and Management
Doel vak
To get acquainted with theories on organisational behaviour
To obtain a deeper understanding of communication from the perspective of sharing and influencing results
To acquire knowledge on organisational structures and designs
To get acquainted with important theories on organisational transitions and change management
To acquire insight into different management practices in the health and life sciences sector
To gain insight in leadership and interpersonal behaviour
To obtain insight in methods for motivation and conflict management
To improve communication skills
To practise analytical and advisory skills

Inhoud vak
Organisations in the health and life science sector are changing fast, a phenomenon driven by newly emerging technologies and increasing societal complexity. A growing number of students with a beta degree will hold professional and managerial functions in these organisations. During this course students will learn how to be effective performers within these environments, both individually and in teams. This requires an understanding of the macro aspects of organisational behaviour, including designing organisations, managerial skills and ways of strategic thinking. Several speakers conduct lecturers on aspects as motivation, managing interpersonal behaviour, leadership, communication and developing and changing organisations. The speakers explain theories from literature and relate them to their practical experiences. Also, practical cases of health care companies will be analysed and discussed, resulting in advisory reports for management. With the other students you discuss your experiences and a coach helps you relate the experiences to theory.

Onderwijsvorm
Lectures: approximately 22 hours
Response lectures: 4 hours
Training workshops 16 hours
Self-study and writing project assignment: remaining hours.

Toetsvorm
Written exam (60%) and assignment (40%). Grades of both parts must at least be 6 or higher.

Literatuur
To be announced on Canvas

Doelgroep
Compulsory course within the Master programme Management, Policy Analysis and Entrepreneurship for the Health and Life Sciences (MPA) and the Societal differentiation of Health, Life and Natural Sciences Masters programmes

**Overige informatie**
Attendance to training/discussions is indispensable

**Lecturers:**
dr. E.M.P Urias
guest lectures will be announced on Canvas

### Containment Strategies of Infectious Diseases in Global Context

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<tr>
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<td>dr. D.R. Essink</td>
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<tr>
<td>Docent(en)</td>
<td>dr. D.R. Essink, prof. dr. P.R. Klatser, prof. dr. J.F. van den Bosch</td>
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<td>Hoorcollege, Werkgroep</td>
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**Doel vak**
The endpoint of this course is that the student
• Has acquired in-depth theoretical and practical knowledge in relation to health intervention strategies for infectious diseases.
• Has acquired insights in various infectious diseases and characteristics in relation to containment strategies.
• Has acquired insight into the role of international institutions, such as the WHO, governmental advisory bodies, relevant professionals, executing institutions, NGOs and communities in designing and carrying out health interventions.
• Understands which barriers are important when implementing containment strategies of infectious diseases, with a focus on vaccination programs.
• Has acquired insight in theoretical concepts and methods to interpret results, evaluations and the effectiveness of programs.
• Has learned and practiced interdisciplinary methods and techniques to plan health interventions at community level in an interactive way.

**Inhoud vak**
This course covers developments in intervention strategies used to address health needs in a global context. Containment strategies of infectious diseases, in particular vaccination programmes, alert systems and intervention strategies, provide specific areas of attention. The containment strategies to be discussed include programmes for known infections (including vaccination strategies and in case of absence of a vaccine, diagnosis and treatment strategies) and emerging infections (including isolation, prevention and
communication strategies).
The student learns how to analyze bottlenecks and opportunities of the various strategies, how to interpret the results and to evaluate the implementation of programmes.
In addition, the student will take part in a group assignment on how to design containment strategies at community level in an interactive way, for e.g. tuberculosis, polio, rabies, malaria, HIV/AIDS, Ebola, etc. A presentation and writing of an essay will be part of the group assignment.

**Onderwijsvorm**
Lectures, group assignment, presentation, essay, self-study.
Basic background knowledge will be provided by VU lecturers, whereas relevant guest lecturers will present practical field examples.
Group assignment attendance is compulsory.
Contact hours: lectures 34 hrs, group work 8 hrs.
Self-study approx. 80 hrs.

**Toetsvorm**
Individual exam (60%) and group assignment presentation and essay (40%). Both parts must at least be sufficient (6 or higher)

**Literatuur**

Slide sets of lectures as made available on Canvas.
Lecturers may make further readings available on Canvas.

**Vereiste voorkennis**
Basic knowledge about the pathogenesis of infectious diseases, microbiology and immunology

**Aanbevolen voorkennis**
Minor course AB_1046 "Infectious Diseases and Vaccine Development"

**Doelgroep**
Compulsory course within the Master differentiation International Public Health; optional course for students in other differentiations of the Masters Health Sciences, Biomedical Sciences, and Management, Policy Analysis and Entrepreneurship in Health and Life Sciences. Students from other backgrounds, please contact our secretariat for further information at secretariaat.athena@vu.nl

**Intekenprocedure**
Enrollment through Canvas.

**Overige informatie**
VU lecturers:
Prof. dr. Han van den Bosch
Prof. dr. Paul Klatser
Dr. Dirk Essink
Dr Bernard Ganter

Guest lecturers:
Dr. Jim van Steenbergen (RIVM/LUMC)
Dr. Helma Ruijs (RIVM)
Dr Frank Cobeleins (KNCV)
Data Analysis and Visualisation

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<td>dr. C.C. Minica</td>
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<td>dr. L.E.J. de Zeeuw</td>
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**Doel vak**
The objectives of the course are
- for the student to acquire a basic knowledge of statistical thinking, about the stochastic nature of variables, about samples drawn from populations, distributions of both data and estimators, and the inferences that can be drawn from these.
- for the student to conceive the correct hypothesis, to be able to select the appropriate statistical analysis for a particular experiment or research design.
- for the student to be able to understand scientific articles statistically and to be able to evaluate and critically think about the methods used.
- for the student to actually perform statistical tests in SPSS, explore and test the underlying assumptions, and report the results in both graphic and textual format.

**Inhoud vak**
Data analysis is the process of inspecting, cleaning, transforming and modeling data to be able to test scientific hypotheses and answer research questions. The lectures of this course will provide an overview of the basics of quantitative methods. This includes independent t-test, (partial) correlation, regression, multilevel modelling, ANOVA, ANCOVA, factorial ANOVA, paired samples t-test, repeated measures ANOVA and power. Each lecture will provide the theoretical background. The practicals will guide you through a statistical software package, SPSS. You will receive hands-on experience in the main steps involved in statistical analysis, from the formulation of hypotheses, selecting the right analysis types, running the analyses, to reporting the obtained results. This hands-on experience will be invaluable for your internships later that year and the second year of the Master of Neuroscience.
Onderwijsvorm
8 lectures, 8 computer practicals and 2 presentation sessions

Toetsvorm
The final score will be determined by the presentation (20%) and multiple choice + open ended questions exam (80%). 5 assignments have to be handed in that do not count towards the final grade. To pass the course, students need to pass the assignments, presentation and exam.

Literatuur
The literature consists of chapters from a book and several scientific papers. You will be required to know lecture material, practical material, as well as the scientific papers and book chapters.
• Andy Field Discovering Statistics using SPSS, 4rd edition, Sage. - Chapters 1-9, 11-14, 20 (20.1-20.6)
• Button et al. 2013 Nature Reviews Neuroscience; doi:10.1038/nrn3475
• Krzywinski & Altman, 2013 Nat Methods; doi:10.1038/nmeth.2738
• Ioannidis 2005 PLoS Medicine; doi: 10.1371/journal.pmed.0020124
• Tsilidis et al 2013 PLoS Biology; doi:10.1371/journal.pbio.1001609

Vereiste voorkennis
It is assumed that you are familiar with chapters 1-5 of the book before entering the course. The first lecture and practical will provide a short review of these five chapters, but cannot aim to fit all that reading material into two hours of lecture. The first lecture will include an entry test just to give you (and us) an insight into your own knowledge of statistics.

Didactiek 1

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Doel vak
De cursus Didactiek 1 is onderdeel van de eerste fase (fase I) van de Universitaire Lerarenopleiding (ULO) van de VU, en loopt parallel aan de cursus Praktijk 1. De cursus is breed van opzet en omvat verschillende onderdelen die in samenhang worden aangeboden: algemene didactiek (AD), vakdidactiek (VD) en peergroup (PG).
Aan het eind van de cursus heeft de student de nodige basale algemeen didactische en vakdidactische bagage aan te reiken die nodig is voor het handelen als docent in simpele en overzichtelijke situaties op niveau van één les. Hierbij wordt nadrukkelijk aangesloten bij de ontwikkelingsfase waarin de docent-in-opleiding (dio) zich bevindt (zie inhoud).

**Inhoud vak**

De cursus is geordend rondom zogeheten kernpraktijken die fundamenteel zijn voor het beroep van docent. Bij Didactiek 1 staan de volgende kernpraktijken centraal: (1) contact maken, (2) de les starten, (3) krediet opbouwen en uitgeven, (4) de les voorbereiden, (5) sturen en corrigeren en (6) volledige instructie geven en de les afsluiten. De reikwijdte van het didactisch denken en handelen is in deze eerste fase meestal nog beperkt tot één les. De genoemde kernpraktijken komen expliciet aan de orde bij AD. Bij VD wordt aangesloten bij deze kernpraktijken en wordt de vertaalslag gemaakt naar het eigen (school)vak. Daarnaast worden bij VD belangrijke vakdidactische concepten en werkwijzen geïntroduceerd.

Bij PG staat de eigen onderwijspraktijk van de docent-in-opleiding (dio) centraal. Concrete vragen en situaties uit de praktijk vormen aanleiding tot analyse en reflectie. Waar bij AD en VD de nadruk ligt op de rollen van de uitvoerende en ontwerpende docent en pedagoog, wordt bij PG nadrukkelijk vorm gegeven aan de rol van onderzoekende professional.

De ervaring leert dat de kernpraktijken die bij Didactiek 1 centraal staan bij de meeste dio's uitgebreid aan de orde komen tijdens het eerste deel van de praktijkstage (Praktijk 1). Alle inhoudscomponenten uit deze cursus worden tijdens de bijeenkomsten en in verwerking verbonden met de werkplekpraktijk van de student. De dio en de werkplekbegeleider krijgen ook suggesties voor (observatie)opdrachten die kunnen bijdragen aan de ontwikkeling van de competenties die bij deze kernpraktijken horen.

**Onderwijsvorm**

Alle onderwijs vindt plaats op de instituutsdag (maandag). Studenten zijn de hele dag aanwezig. In de ochtend is er een hoor/werkcollege AD, waarbij dio's van verschillende vakken samen zitten. De colleges AD worden steeds verzorgd door een tweetal docenten. In de middag is er een werkcollege VD onder begeleiding van de vakdidacticus. Deze colleges worden samen met dio’s van hetzelfde vak in verschillende samenstellingen (homogeen en heterogeen) gevolgd.

Tenslotte zijn er, verspreid over de periode, drie PG bijeenkomsten, waarbij dio’s van verschillende vakken in kleine groepen en onder begeleiding de eigen onderwijspraktijk onder de loep nemen en eventuele concerns daarbij bespreken.

Bij alle onderdelen (AD, VD en PG) wordt een actieve houding van de student gevraagd, zowel tijdens de bijeenkomsten als daarbuiten. Regelmatig worden er verwerkingsopdrachten gegeven, waar individueel of in groepsverband aan wordt gewerkt. Deze opdrachten worden formatief geëvalueerd, onder andere door middel van (peer)feedback.

**Toetsvorm**
Didactiek 1 wordt afgesloten met een startproef waarin de studenten demonstreren dat zij één les kunnen ontwerpen en uitvoeren en kunnen reflecteren op de manier waarop voorbereiding, uitvoering en afronding hebben plaatsgevonden. De proef bestaat uit een lesontwerp (incl. verantwoording op basis van theorie, en eigen leerdoelen bij deze les), een videocompilatie (15 min.) van de gegeven les en een terugblik op de les. Bij het ontwerpen en uitvoeren van de les staan de kernpraktijken behandeld in de colleges algemene didactiek en vakdidactiek centraal (met een focus op de les en de leerling). De terugblik op ontwerp en uitvoering vindt plaats aan de hand van de perspectieven van een docent als professioneel, ontwerper, uitvoerder, pedagoog en teamlid en de daarbij behorende relevante theorie. De proef wordt beoordeeld aan de hand van een beoordelingsformulier gerelateerd aan de rubrics die voor elk van de docentperspectieven zijn geformuleerd voor fase I.

**Literatuur**

Bij deze cursus worden de volgende algemeen didactische handboeken gebruikt:

Oudere edities van bovenstaande boeken zijn over het algemeen goed bruikbaar.

Behalve van bovenstaande literatuur wordt veelvuldig gebruik gemaakt van relevante en actuele wetenschappelijke literatuur. Deze artikelen worden tijdens de cursus ter beschikking gesteld. De literatuur die bij VD gebruikt wordt is afhankelijk van het schoolvak waarvoor wordt opgeleid.

**Overige informatie**

Beheersing van de inhoud van het desbetreffende schoolvak wordt als voorkennis verondersteld.

**Didactiek 2**

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<tr>
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<td>drs. L.J. van Well-van Grotheest</td>
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<td>drs. L.J. van Well-van Grotheest</td>
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De cursus Didactiek 2 is onderdeel van de tweede fase (fase II) van de Universitaire Lerarenopleiding (ULO) van de VU, en loopt parallel aan de cursus Praktijk 2. De cursus omvat verschillende onderdelen die in samenhang worden aangeboden: algemene didactiek (AD), vakdidactiek (VD) en peergroup (PG).

Aan het eind van de cursus heeft de student de nodige algemeen didactische en vakdidactische bagage aan te reiken die nodig is voor het handelen als docent waarbij op basis van bestaande lesmaterialen wordt gewerkt. Hierbij wordt nadrukkelijk aangesloten bij de ontwikkelingsfase waarin de docent-in-opleiding (dio) zich bevindt (zie inhoud).

Inhoud vak
Didactiek 2 is geordend rondom een aantal voor het beroep van docent fundamentele kernpraktijken. Bij Didactiek 2 staan de volgende kernpraktijken centraal: (1) leerprocessen zichtbaar maken, (2) leerprocessen bevorderen, (3) leerprocessen toetsen, (4) communiceren en leiding geven, (5) leerlingen verantwoordelijkheid geven (van docentgestuurd naar leerlinggestuurd) en (6) aandacht geven aan verschillen. Ten opzichte van de cursus Didactiek 1 wordt de focus verlegd van de (individuele) les naar het leerproces van de leerling. De reikwijdte van het didactisch denken en handelen wordt daarmee ook groter: er wordt een begin gemaakt met het ontwerpen en uitvoeren van reeksen van lessen.

De genoemde kernpraktijken komen expliciet aan de orde bij AD. Bij VD wordt aangesloten bij deze kernpraktijken en wordt de vertaalslag gemaakt naar het eigen (school)vak. Daarnaast worden bij VD belangrijke vakdidactische concepten en werkwijzen geïntroduceerd.

Bij PG staat wederom de eigen onderwijspraktijk van de dio centraal. Waar bij AD en VD de nadruk ligt op de rollen van de uitvoerende en ontwerpende docent en pedagoog, wordt bij PG nadrukkelijk vorm gegeven aan de rol van reflectieve onderzoekende professional. De samenhang tussen Didactiek 2 en Praktijk 2 komt onder andere tot stand doordat de dio en de werkplekbegeleider op school suggesties krijgen voor (observatie)opdrachten die kunnen bijdragen aan de ontwikkeling van de competenties die bij deze kernpraktijken horen. Alle inhoudscomponenten uit deze cursus worden tijdens de bijeenkomsten en in verwerking verbonden met de werkplekpraktijk van de student.

In de laatste weken van de cursus is nadrukkelijker ruimte voor de eigen leervragen en behoefte van de student. Er worden keuzeworkshops aangeboden rondom uiteenlopende (vak)didactische thema’s. Ook zijn er

| Lesmethode(n)               | Werkgroep, Hoorcollege |
| Niveau                     | 400 |

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bijeenkomsten waarin dio's die veel moeite hebben met (o.a.) klassenmanagement extra coaching kunnen krijgen of extra aandacht verdienen op het gebied van bijvoorbeeld lesontwerp.

Onderwijsvorm
Alle onderwijs vindt plaats op de instituutsdag (maandag). Studenten zijn de hele dag aanwezig. In de ochtend is er een hoor/werkcollege AD, waarbij dio's van verschillende vakken samen zitten. De colleges AD worden steeds verzorgd door een tweetal docenten. In de middag is er een werkccollege VD onder begeleiding van de vakdidacticus. Deze colleges worden samen met dio's van hetzelfde vak in verschillende samenstellingen (homogeen en heterogeen) gevolgd.

Tenslotte zijn er, verspreid over de periode, drie PG bijeenkomsten, waarbij dio's van verschillende vakken in kleine groepen en onder begeleiding de eigen onderwijspraktijk onder de loep nemen en eventuele concerns daarbij bespreken.

Bij alle onderdelen (AD, VD en PG) wordt een actieve houding van de student gevraagd, zowel tijdens de bijeenkomsten daarbuiten. Regelmatig worden er verwerkingsopdrachten gegeven, waar individueel of in groepsverband aan wordt gewerkt. Deze opdrachten worden formatief geëvalueerd, onder andere door middel van (peer)feedback.

Toetsvorm
Didactiek 2 wordt afgesloten met een geschreven basisproef waarin de studenten demonstreren dat zij een korte lessenreeks kunnen ontwerpen en (deels) uitvoeren en kunnen reflecteren op de manier waarop voorbereiding, uitvoer en afronding hebben plaatsgevonden. De proef bestaat uit een docentenhandleiding bij de lessenreeks, gebaseerd op bestaand lesmateriaal, (incl. een globale planning, twee uitgewerkte lesontwerpen, verantwoording op basis van praktijk en theorie, en eigen leerdoelen bij deze les), een videocompilatie (15 min.) van de gegeven lessen en een terugblik op ontwerp en uitvoering. Bij het ontwerpen en uitvoeren van de les staan de kernpraktijken behandeld in de colleges algemene didactiek en vakdidactiek centraal (met een focus op de leerling en het leerproces). De terugblik op ontwerp en uitvoering vindt plaats aan de hand van de reflectiecentraal van Korthagen, de perspectieven van een docent als professional, ontwerper, uitvoerder, pedagoog en teamlid en de daarbij behorende relevante theorie. De proef wordt beoordeeld aan de hand van een beoordelingsformulier gerelateerd aan de rubrics die voor elk van de docentperspectieven zijn geformuleerd voor fase 2.

Literatuur
Bij deze cursus worden de volgende algemeen didactische handboeken gebruikt:

Oudere edities van bovenstaande boeken zijn over het algemeen goed bruikbaar.

Behalve van bovenstaande literatuur wordt veelvuldig gebruik gemaakt van relevante en actuele wetenschappelijke literatuur. Deze artikelen worden
tijdens de cursus ter beschikking gesteld. De literatuur die bij VD gebruikt wordt is afhankelijk van het schoolvak waarvoor wordt opgeleid.

**Overige informatie**

Beheersing van de inhoud van het desbetreffende schoolvak wordt als voorkennis verondersteld.

Voorwaardelijk voor afronding van Didactiek 2: een voldoende beoordeling van Didactiek 1.

**Didactiek 3**

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**Doel vak**

De cursus Didactiek 3 is onderdeel van de derde en laatste fase (fase III) van de Universitaire Lerarenopleiding (ULO) van de VU, en loopt parallel aan de cursussen Praktijk 3 en POO 2. De omvang van de cursus is een heel semester.

Aan het eind van de cursus heeft de student de verdiepende pedagogische, didactische en vakdidactische bagage die nodig is voor het handelen als docent in complexe situaties. Hierbij wordt nadrukkelijk aangesloten bij de ontwikkelingsfase waarin de docent-in-opleiding (dio) zich bevindt (zie inhoud).

**Inhoud vak**

Het eerste blok van de cursus Didactiek 3 is weer geordend rondom een aantal voor het beroep van docent fundamentele kernpraktijken, namelijk: (1) differentiëren, (2) toetsen, (3) gedrags- en leerproblemen herkennen, (4) omgaan met gedrags- en leerproblemen, (5) mentor zijn en (6) een plek in de schoolorganisatie innemen.

De cursussen Didactiek 1 en 2 vormen samen het basisdeel van de Universitaire Lerarenopleiding (ULO); de cursus Didactiek 3 moet gezien worden als het verdiepingsdeel. In Didactiek 3 komen meer complexe thema’s en kernpraktijken aan de orde. Het (vak)didactisch denken en handelen strekt zich nu ook uit over de lange termijn: er is bijvoorbeeld uitgebreid aandacht voor het vorm geven aan leerlijnen en het omgaan met gedrags- en leerproblemen. Ook wordt de dio
nadrukkelijker uitgedaagd om een eigen visie op onderwijs vorm te geven en uit te dragen. Zo is de lesmethode niet langer leidend, maar wordt van dio’s in toenemende mate verwacht zelf invulling te geven aan de inhoud en didactiek van de lessen (waarbij natuurlijk zowel bestaand als eigen materiaal kan worden gebruikt). Tenslotte zullen de (vak) didactische overwegingen die ten grondslag liggen aan de eigen visie onderbouwd moeten worden met behulp van relevante literatuur en eigen praktijkervaringen.

In het tweede blok van de cursus is er bij AD nadrukkelijk ruimte voor differentiatie en de eigen leerbehoefte van de student. Er worden verschillende keuzemodules aangeboden rondom uiteenlopende algemeen didactische thema’s, zoals de multiculturele school, zorg op school, omgaan met ordeproblemen en internationalisering. Studenten worden uitgenodigd om (voor een deel) zelf invulling te geven aan deze keuzeruimte.

**Onderwijsvorm**

Alle onderwijs vindt plaats op de instituutsdag (maandag). Studenten zijn de hele dag aanwezig. In de ochtend is er een hoor/werkcollege AD, waarbij dio’s van verschillende vakken samen zitten. De colleges AD worden steeds verzorgd door een tweetal docenten. In de middag is er een werkccollege VD onder begeleiding van de vakdidacticus. Deze colleges worden samen met dio’s van hetzelfde vak in verschillende samenstellingen (homogeen en heterogeen) gevolgd.

Tenslotte zijn er, verspreid over de periode, drie PG bijeenkomsten, waarbij dio’s van verschillende vakken in kleine groepen en onder begeleiding de eigen onderwijspraktijk onder de loep nemen en eventuele concerns daarbij bespreken. Bij alle onderdelen (AD, VD en PG) wordt een actieve houding van de student gevraagd, zowel tijdens de bijeenkomsten daarbuiten. Regelmatig worden er verwerkingsopdrachten gegeven, waar individueel of in groepsverband aan wordt gewerkt. Deze opdrachten worden formatief geëvalueerd, onder andere door middel van (peer)feedback.

**Toetsvorm**

Didactiek 3 wordt afgesloten met een geschreven meesterproef waarin de studenten demonstreren dat zij een volle lessenreeks kunnen ontwerpen en uitvoeren en kunnen reflecteren op de manier waarop voorbereiding, uitvoer en afronding hebben plaatsgevonden. De proef bestaat uit een lessenreeks met een coherente leerlijn en expliciet gemaakte inhoudelijke en didactische keuzes. Het materiaal bevat: een lessenserie met een toets, een koppeling aan en neerslag van de (pedagogische) onderwijsvisie en visie op het vak van de student en de school, docentenhandleiding, leerlingmateriaal, evaluatie met collega’s en leerlingen, een videocompilatie (15 min.) van de gegeven lessen en een terugblik op ontwerp en uitvoering. Bij het ontwerpen en uitvoeren van de les maakt de student een relevante selectie uit de kernpraktijken die tijdens de opleiding centraal hebben gestaan. De terugblik op ontwerp en uitvoering vindt plaats aan de hand van de reflectiecirkel van Korthagen, de perspectieven van een docent als professional, ontwerper, uitvoerder, pedagoog en teamlid en de daarbij behorende relevante theorie. Hierbij staat de student stil bij zijn/haar ontwikkeling op het gebied van deze rollen. De proef wordt beoordeeld aan de hand van een beoordelingsmodel gerelateerd aan de rubrics die voor elk van de docentperspectieven zijn geformuleerd voor fase 3 (een startbekwame docent).
Literatuur
Bij deze cursus worden de volgende algemeen didactische handboeken gebruikt:

Daarnaast wordt veelvuldig gebruik gemaakt van relevante en actuele wetenschappelijke literatuur. Deze artikelen worden tijdens de cursus ter beschikking gesteld. De literatuur die bij VD gebruikt wordt is afhankelijk van het schoolvak waarvoor wordt opgeleid.

Overige informatie
Beheersing van de inhoud van het desbetreffende schoolvak wordt als voorkennis verondersteld.
Voorwaardelijk voor afronding van Didactiek 3: een voldoende beoordeling van Didactiek 2.

Disability and Development

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Doel vak
• To define the concept of disability and development
• To explain the complexities related to disability and development (e.g. relation to poverty, diversity, identity, disability paradox)
• To explain the issues and barriers faced by people with disabilities (e.g. sexuality)
• To explain the importance of human rights in relation to disability and the UN Convention for the Rights of Persons with Disabilities
• To explain and apply relevant models and frameworks related to disability (e.g. medical model, social model, ICF model, ecological system theory, twin-track approach, stigma).
• To explain issues related to disability research (including participatory and inclusive approaches) and practice (including community-based rehabilitation)
• To apply research skills during the problem-based learning sessions and group assignment (participating in scientific discussions, formulating of research objectives, literature research, abstracting, summarizing and giving feedback on findings, drawing conclusions)
The Disability and Development (D&D) course focuses on a broad range of issues related to disability and rehabilitation in the context of development. This means that the focus is on people with disabilities in low and middle-income countries. Disability affects an estimated 1 billion people worldwide, the majority of whom live in low and middle-income countries. The large majority are poor and have no access to rehabilitation services; neither are facilities in place to allow them to be included in the mainstream of society.

To date, very few services and programmes are available to address these needs. It is expected that there will be a substantial increase in demand for training of a large variety of professionals (e.g. researchers, managers, architects, lawyers, health professionals) with formal training and qualifications in the field of disability-inclusive development. The course will cover essential knowledge and skills in this subject.

The course programme will include the following subjects:
- Disability models and stereotypes,
- Frequencies and distribution of disability,
- Experience of having a disability,
- ICF conceptual framework,
- Disability rights, including the UN Convention on the Rights of Persons with Disabilities,
- Culture and disability,
- Determinants of disability, including stigma and discrimination, poverty, gender and HIV/AIDS,
- Disability-relevant research methods, including examples of participatory methods,
- An introduction to community-based rehabilitation and disability inclusive development.

Onderwijsvorm
Problem-based learning supported by lectures and an article writing assignment.
- Lectures: 24 hours
- Tutorial groups: 24 hours
- Optional event: 4 hours
- Self-study: remaining hours

Toetsvorm
- Individual written examination (60%)
- Group assignment (30%)
- Participation in the tutorial group work (10%)

For all parts a pass grade (> 5.5) needs to be obtained in order to receive a final mark.

Literatuur
See Canvas for suggested readings

Vereiste voorkennis
Bachelor-level education; any subject

Aanbevolen voorkennis
The Disability & Development module is an optional course for Master students Management, Policy Analysis and Entrepreneurship in Health and
Life Sciences (MPA), International Public Health and Biomedical Sciences; external students from low and middle-income countries are strongly encouraged to apply. We encourage the participation of students with disabilities, especially from low and middle-income countries.

**Doelgroep**
The Disability & Development module is an optional course for Master students Management, Policy Analysis and Entrepreneurship in Health and Life Sciences (MPA), International Public Health and Biomedical Sciences; external students from low and middle-income countries are strongly encouraged to apply. We encourage the participation of students with disabilities, especially from low and middle-income countries.

**Overige informatie**
For more information contact Dr. Ruth Peters (r.m.h.peters@vu.nl)

**Epidemiology**

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**Doel vak**
To be able to describe the key characteristics, strengths and weaknesses of traditional epidemiological study designs and select an appropriate study design for a given research question and context;
To be able to understand, calculate, and apply measures of occurrence and association;
To be able to understand and assess possible bias and effect modification;
To be able to understand and apply principles of accuracy in epidemiology;
To gain an understanding of the principles of screening and calculate related measures;
To be able to perform bio statistical analyses with Epi Info and interpret, describe, and present the outcomes.

**Inhoud vak**
The course consists of a theoretical, contextual, and practical component. The theoretical component is divided into two parts: the first part will focus on methodology (e.g. study-designs and bias), whereas the second part will emphasize applying statistical methods commonly used in epidemiology. You will primarily learn how to apply and interpret these methods in an epidemiological setting. We will focus less on the mathematical background (hence, we refer to this as ‘applied biostatistics’). The contextual component will focus on past and current epidemiological developments, for instance the start of the HIV/AIDS pandemic. Lastly, the practical component will focus on applying all your new skills.
Onderwijsvorm
- Lectures (14 hours)
- Work groups (12 hours)
- Computer practicum (8 hours)
- BPO assignment (8 hours)
- Self-study (remaining time)

Toetsvorm
- Exam (100%)
- Assignment (insufficient/ sufficient)
Both elements need to be sufficient.

Literatuur
Available on Canvas

Doelgroep
This course is solely intended for students without a background in epidemiology (i.e. students who attended and completed another bachelor or master course in methodology and applied biostatistics, epidemiology and biostatistics, or similar, are strongly advised not to enroll in this course).

Intekenprocedure
n/a

Overige informatie
For more information contact Dr. Ruth Peters (r.m.h.peters@vu.nl)

Ethics in Life Sciences

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Doel vak
To provide a toolbox of ethical instruments to analyze properly moral problems related (to one's own) research in the life sciences and beyond
- To acquire conceptual knowledge of the central concepts in applied philosophy and professional ethics
- To be able to execute an ethical reflection on issues related to one owns life science specialization and to open it for an impartial and constructive discussion
- To conduct, as a team based project, a moral dialogue
- To acquire the necessary skills to handle ethical issues in an accountable manner, as a professional academic beyond one's own inclinations and prejudgments
To show a respectful and accountable attitude in dealing with group dynamics during the work groups and project.

**Inhoud vak**
Researchers in life sciences generate the knowledge that builds the future of our society. Therefore, professional academics should be accountable for their decisions, experimental designs and presentation of results. In this short course, the principles of justification will be illustrated with cases of technology ethics and medical ethics. The way an ethical review committee on animal research works, is simulated by a role play exercise on an actual research protocol. Finally, as a group training project, an ethical dialogue is prepared and executed in confrontation with another team.

**Onderwijsvorm**
Ethics in the Life Sciences is a fulltime course of four weeks (3 ECTS). The total study time is 80 hours.
The different elements have the following study time:
• Lectures: 13 hours  
• Work groups: 17 hours  
• Group assignment: 24 hours  
• Exam: 2 hour  
• Moral dialogue: 4 hours  
• Self working (reading in the first week): 20 hours
Please note that attendance to the work group meetings is compulsory. Attendance to the lectures is highly recommended. In our experience, relying on self-study alone is insufficient to apply the theory of the lectures in the assignments of the workgroups, and to pass the exam.

**Toetsvorm**
• Degree of intellectual participation in the workgroups (10%)  
• exam (50%)  
• written and verbal execution of the ethical dialogue (40%)
All three elements have to be passed

**Literatuur**
Available on Canvas

**Vereiste voorkennis**
Bsc Biology, Biomedical Sciences, Psychology with profile Biological Psychology or Neuropsychology

**Doelgroep**
Compulsory course in all FALW Master programmes, except Health Sciences and Neuro Sciences

**Overige informatie**
Lectures in English, Most of the work groups are in Dutch. Non Dutch speaking students will be placed in English work groups. All presentations and plenary discussions in English.
In order to maximize the experience of differences in values and preferences, and to increase meaningful ethical inquiry we will place you randomly in the workgroups. Placement will be communicated after the introduction lecture.

**From Molecule to Mind**

| Vakcode | AM_1190 () |
Doel vak
Providing master students, independent of primary training, with a solid basis in molecular and cell biology, neurophysiology and functional neuroanatomy.

Inhoud vak
The course will be used to brush up your knowledge of neurophysiology, molecular and cellular neurobiology and neuroanatomy. During the first day of the course (September 4th 2017) an entry test will be given to get an impression of your cell and molecular neurobiology knowledge level. This test cannot be failed. It is a diagnostic exam that is strictly meant to elucidate in which areas you are proficient and in which you need to improve. Keynote lectures by established researchers on exciting and cutting-edge topics as well as a keynote symposium related to the different research programs on campus will be held to give you an impression of the research we do and to prepare you for your search for an internship position (which will start in February 2018). The exam will consist of three parts: cell biology, neurophysiology and neuroanatomy.

Onderwijsvorm
Lectures, study groups, assignments, practical sessions, presentations, demonstrations.

Toetsvorm
You will have to prepare presentations based on neurophysiology and neuroanatomy related assignments and are expected to participate actively during practical sessions. A written examination with open end questions will consist of three parts: cell biology, neurophysiology and neuroanatomy, each accounting for a third of your final grade.

Literatuur

Practical guide : Human Neuroanatomy.
Macroscopic dissection of the brain, to be handed out during the first practical session.

Recent scientific papers/reviews, to be handed out during the course.
Vereiste voorkennis
A bachelor in Biology, Biomedical Sciences, Psychology with profile Biological Psychology or Neuropsychology, or similar pre-training.

Doelgroep
The vast majority (>70%) of graduates of the Master's programme in Neurosciences go on to join a PhD programme either at VU University Amsterdam or at another academic institute in the Netherlands or abroad. This course will provide you with a firm base in molecular biology, cell biology, neurophysiology and functional neuroanatomy, from which you will benefit for the rest of your scientific career.

Intekenprocedure
For further information, please contact dr. Geert Schenk (g.schenk@vumc.nl)

Overige informatie
Past evaluations of the course have shown that the first weeks are very useful, but also very busy. Therefore, if you have some time to spare during the summer and you want to create some breathing room for yourself during the first weeks of the course, we suggest to read up before the start of the course. If you want to receive an overview of compulsory reading material or if you want any further information, please contact dr. Geert J. Schenk (g.schenk@vumc.nl)

Health, Globalisation and Human Rights

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Doel vak
The student;
- Is able to describe, understand and apply human rights concepts in a global context
- Develops a deeper understanding and A critical attitude towards scientific literature in the field of health, globalization and human rights in order to formulate soundly argued positions
- Is able to create his/her own vision with regard to the socio-cultural dimensions of human rights values in relation to public health
- Is able to apply methods of human rights assessment in relation to innovations in health care
- Demonstrates the ability to write and present according to academic standards
This course focuses on the human rights issues that are raised around the globe in connection with public health concerns. The course introduces the students to the effects of globalization on health issues, to the relevant UN human rights instruments on health and to the mechanisms to promote and protect these rights. Attention is given to a wide range of human rights topics in which health and well being play a crucial role. Examples are situations of armed conflict, reproductive rights, migration and refugee issues and childrens rights. Within the context of current globalisation processes the importance of local cultural insights into the human rights & public health interaction will be discussed. During the course students will prepare and participate in a simulation on a human rights assessment of innovations in health technology and discuss relevant scientific literature in study groups. In the exam students will show their creative problem-solving skills applying them to human rights dilemmas in public health.

Onderwijsvorm
Contact hours

Lectures: 33 hours
Work groups: 12 hours
Group project, simulation and exam: 11 hours
Self study and preparing: remaining hours

Toetsvorm
Group project (10%), Simulation (20%), exam (70%). All parts need to be passed (6.0)

Literatuur
To be announced at the start of the first work group/lecture and via Canvas for group project.

Doelgroep
Optional course for students in all specializations of the Masters Health Sciences, Biomedical Sciences and Management, Policy Analysis and Entrepreneurship in the Health and Life Sciences.

Overige informatie
(Guest) Lectures and guest organisations (under reservation):
Cees Hamelink
Christine Dedding (Children and rights)
Fiona Budge (Culture and Health)
Bert Keizer (Elderly Rights)
Els Mons (Rights and disabled persons)
Women on Waves
Doctors without Borders
And more to be announced.

For more information contact Anna van Luijn (a.van.luijn@vu.nl)

Immunity and Disease
Doel vak

- To expand knowledge on the whole range of immunological diseases, i.e. immunodeficiency, hypersensitivities, allergies, autoimmunity, (prevention of) infectious disease, graft rejection, graft versus host reactions and tumor immunology, with a focus on immunopathology.
- To train how to study immunological literature on selected immune disorders.
- To incorporate state-of-the-art research methods in the study of diseases with an immunological base.
- To introduce critical research questions on immunological aspects of various diseases.

Final attainment levels

The student should be able to:
- explain in depth how and to which extent immune defence mechanisms normally operate, and how they are disturbed in the diseases listed above.
- point out diagnostic methodologies providing the most relevant information for diagnosis and selection and monitoring of therapeutic interventions.

Inhoud vak

The content of Parham’s ‘The Immune System’ (3rd or 4th ed.) is assumed to be known. The chapters 1-14, 17 of Parham (4th ed.) covering diseases listed above will be used as basis for lectures but complemented with state of the art techniques, research models and insights into the clinical aspects. In addition, small-scale working group sessions are scheduled to provide highly interactive discussions regarding selected recent literature in order to highlight cutting edge research questions (2 x 3 hours).

The course content (literature, lectures on chapters and lectures on research models) will be placed on Canvas.

Onderwijsvorm

Lectures (18-20 hrs)
Working groups on literature study (6 hrs)
Debate (2 hrs)
Independent study (approx. 120 hrs)

Toetsvorm

The course will be closed off with a written exam based on a combination of multiple choice (about research models) and open questions (about issues of the book and lectures). This will determine 90% of the final grade; the additional 10% will be determined by the participation in the working groups on literature study.
**Literatuur**
The Immune System, Parham, 4th edition (ISBN 9780815345275). Complementary literature on selected topics will be provided on Canvas.

**Vereiste voorkennis**
Solid knowledge on basic immunology, bachelor degree.

**Aanbevolen voorkennis**

**Doelgroep**
MSc students with a keen interest to study the immunopathology and (potential) therapeutical approaches of a broad range of immunological diseases. Compulsory course for MSc Biomedical Sciences students with specialization Immunology.

**Overige informatie**
Coordinator: dr. Juan Garcia Vallejo
Partner in coordination: dr. Hetty Bontkes
Organization and administration: drs. Karin Brouwer

Lecturers:
prof. dr. W. Bitter (MMI); dr. H.J. Bontkes (Klinische Chemie); dr. S. Cillessen (PA); dr. J. J. Garcia Vallejo (MCBI); dr. K. Gelderman (Sanquin); prof. dr. T. de Gruijl (Med Onco); dr. J. den Haan (MCBI);
dr. E. Hooijberg (PA); dr. T. de Jong (PA); dr. M. Pegtel (PA); prof. dr. T. Rustemeyer (Derma); dr. A. van der Sar (MMI).

**International Comparative Analyses of Health Care Systems**

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<td>Fac. der Aard- en Levenswetenschappen</td>
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<tr>
<td>Coördinator</td>
<td>dr. T. Cesuroglu</td>
</tr>
<tr>
<td>Examinator</td>
<td>dr. T. Cesuroglu</td>
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**Doel vak**
- To understand and recognize the different components of a health system and different models of health system organization using various frameworks for health system analysis
- To understand and analyze outcomes of health systems with respect to equity, fair financial contribution and health status
- To understand the complex adaptive nature of health systems and its constitution
- To understand different methods in analyzing and comparing health systems: health system performance assessment (benchmarking), case study analysis, cost effectiveness analysis
• To understand the underlying reasons for health system reform and
to recognize different health care reform strategies;
• To understand cases study methodology regarding comparison of
components of health systems
• To apply the acquired knowledge in the context of;
• To design, carry out and reflect on a (comparative) analysis of
developing, transitional and developed countries, making use of the
framework for comparative analysis;
• To be able to link the characteristics of policy recommendations,
strategies on health system reform and public opinions on certain
aspects of care to the specific determinants of the country/region at
hand.
• To give a well structured and academically solid lecture on the
comparison of countries;
• To write a clearly structured and academically solid paper on the
comparative analysis you have carried out;

Inhoud vak
Given the fact that health systems worldwide are confronted with
demographical and epidemiological changes, health systems are currently
experiencing a period in which they have to re-assess their set-up,
framework and goals. In this course you will obtain an overview of the
complex nature of health systems and its different components, both with
respect to conceptual components (service delivery, resource creation,
stewardship, financing) and content components (primary care, mental
health care, etc), and you will acquire skills to analyze and compare
these components. In various lectures, both the quantitative aspects,
and the critique there-upon, and the qualitative aspects of health
system comparison is discussed. Furthermore, you will gain insight in
the complexity and culturally determined nature of health system design
and health system reform, through a series of lectures form VU-lecturers
and experts from a variety of institutions such as the Royal Tropical
Institute and the Nivel. Through two assignments, you learn and reflect
on the topics that are discussed throughout the course. First, you will
critically review a comparative analysis report on a specific aspect of
health care in Europe, and present this in a lecture. Second, you will
set up your own comparative analysis between two selected countries on a
specific health care theme. In this case, you are invited to look
critically at your own analysis process. You will report on you findings
by means of a report and via a poster presentation. In both assignments
you will have regular feedback sessions with health researchers in small
groups.

Onderwijsvorm
‘International Comparative Analyses of Health Care Systems’ is a
fulltime course of four
weeks (6 ECTS). The total study time is 160 hours. Tuition methods
include lectures, training workshops, and self-study.
The different elements have the following study time:
- lectures 22 hours
- assignment sessions 28 hours
- pass/fail test 2 hours
- (project) self study remaining hours

Attendance to the assignment sessions is compulsory

Toetsvorm
Your are assessed on the basis of two comparative case study
assignments. Both assignments need to be passed (higher then 5.5).
Assignment 1: 40%
Assignment 2: 60%
In addition a brief pass/fail test is given which needs a pass but is not graded, to check lecture attendance.

Literatuur
A selection of literature will be made on the basis of lectures and state of the art research. (selection of last years literature)


Methods: Benchmarking

  o Message from the director
  o Chapters 1 and 2
  o Statistical Annex

  o Chapters 1, 2, 3 and 10

  o Executive summary
  o Chapter 1
  o Chapter 6

Methods: case study
  o Chapters 1 and 2

Health systems
  - Hsiao (2003). What is a health system and why should we care
    o Chapter 15


- Building the field of health systems and policy research
  o Framing the questions
  o An Agenda for Action
  o Social Science Matters
Aanbevolen voorkennis
It is recommended that students have knowledge on public policy in the context of healthcare.

Doelgroep
Compulsory course within the Master specialization International Public Health, optional course within the Master specialization Infectious Diseases (master programme Biomedical Sciences). In any other circumstances admission should be requested from the course coordinator.

Overige informatie
Guest lecturers:

dr. Rob Baltussen, health economics at (UMCG)
Dr. Michael van den Berg (RIVM)
Barend Gerretsen (KIT)
Prof. dr. Wienke Boerma (NIVEL)

It is recommended that students have knowledge on public policy in the context of healthcare.

Internship Biomedical Sciences- no spec.

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<td>Fac. der Aard- en Levenswetenschappen</td>
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<tr>
<td>Coördinator</td>
<td>dr. R.J. van Belle-van den Berg</td>
</tr>
<tr>
<td>Examinator</td>
<td>dr. R.J. van Belle-van den Berg</td>
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<td>Niveau</td>
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Doel vak
The internship is a compulsory part of the Master’s programme and involves many different aspects, such as theoretical preparation, practical execution, literature survey, report writing, oral presentation, and participation in the scientific activities of a research department.

The internship should be related to the specialization(s) undertaken.

At the end of the internship a scientific report of the work has to be written as well as an oral presentation given.

For more (detailed) information, please see the placement manual Biomedical Sciences

Inhoud vak
The internship is a compulsory part of the Masters’ programme in Biomedical Sciences.

The internship has to be preceded by a research proposal. During the internship, you collect your data and you do the final analysis. Finally you present your findings both orally and in a report.
Internships can be done at various locations, but should be part of an academical or research institute. Projects at academical or research institutes outside the Netherlands are also accepted, provided they are of sufficient academic quality and adequate on-site supervision is guaranteed. In all cases: take care that you will be working on research related to your specialization and that you will be able to collect enough reliable data to write a scientific report in the end. Purely monitoring or inventory projects will not be accepted.

**Onderwijsvorm**
Research project, under supervision of VU-staff.

**Toetsvorm**
Within six weeks after the start of the internship a Go/No Go evaluation is made by the VU supervisor. The aim of this interim evaluation is to decide whether the project and the student both have enough potential to continue (Go) or not (No Go). This evaluation is based on:
- Written material by the student, including a final research proposal and either the Introduction or Methods section of the article or both.
- Attitude of the student and execution of the project during the initial stage.

The final assessment of the internship is undertaken by the VU-supervisor and the second assessor.
In the final assessment, the VU supervisor assesses four different aspects of the internship:
- the attitude of the student
- the execution of the research
- the final report/article
- the oral presentation
The second assessor provides an assessment of the final report only.

The final report counts for 50% of the final grade, the oral presentation for 25% and the execution of the research also for 25%. Only if marks for each item given by the VU-supervisor and the second assessor are 6 or higher and the attitude is a ‘pass’, the internship is regarded as sufficient. The final grade is calculated from the marks given by both assessors and, together with other administrative details, is summarized in the final assessment form, done by the master's coordinator.

**Vereiste voorkennis**
The student is enrolled in the Master's programme Biomedical Sciences of which the internship is part and has gained at least 18 ECTS from the programme. Depending on the specialization, additional requirements for admission have to be met (see the Placement Manual).

The second internship can only start after the first internship has been fully completed.

**Doelgroep**
Students from the MSc Biomedical Sciences

**Intekenprocedure**
Every research project has to be approved by the masters’ coordinator in advance (on behalf of the examination board). The Placement Manual describes the process of completing the internship from the beginning (the admission) through the actual execution with its supervision to the
final stage (assessment and grading) in consecutive order. The various stages of the process will be supported by forms which are supplied in the appendices or in links.

**Overige informatie**
The Placement Manual is based upon the 'Student Placement (Internship) and Research Project Regulations' of the Faculty of Earth and Life Sciences (FALW) and the Academic and Examination Regulations (AER).

Duration of the internship is 5 months (30 EC) and may, under certain circumstances, be elongated to 36 EC (see AER and/or Placement manual).

It is not allowed for your literature thesis and internships to take place on the same or on a highly similar subject.

**Internship Immunology**

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<td>Coördinator</td>
<td>dr. R.J. van Belle-van den Berg</td>
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<td>dr. R.J. van Belle-van den Berg</td>
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<td>Niveau</td>
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**Doel vak**
The internship is a compulsory part of the Master's programme and involves many different aspects, such as theoretical preparation, practical execution, literature survey, report writing, oral presentation, and participation in the scientific activities of a research department.

The internship should be related to Immunology.

At the end of the internship a scientific report of the work has to be written as well as an oral presentation given.

For more (detailed) information, please see the placement manual Biomedical Sciences.

**Inhoud vak**
The internship is a compulsory part of the Masters' programme in Biomedical Sciences.

The internship has to be preceded by a research proposal. During the internship, you collect your data and you do the final analysis. Finally you present your findings both orally and in a report.

Internships can be done at various locations, but should be part of an academical or research institute. Projects at academical or research institutes outside the Netherlands are also accepted, provided they are of sufficient academic quality and adequate on-site supervision is guaranteed. In all cases: take care that you will be working on research related to your specialization and that you will be able to collect
enough reliable data to write a scientific report in the end. Purely
monitoring or inventory projects will not be accepted.

Onderwijsvorm
Research project, under supervision of VU-staff.

Toetsvorm
Within six weeks after the start of the internship a Go/No Go evaluation
is made by the VU supervisor. The aim of this interim evaluation is to
decide whether the project and the student both have enough potential to
continue (Go) or not (No Go). This evaluation is based on:
• Written material by the student, including a final research proposal
and either the Introduction or Methods section of the article or both.
• Attitude of the student and execution of the project during the
initial stage.

The final assessment of the internship is undertaken by the VU-
supervisor and the second assessor.
In the final assessment, the VU supervisor assesses four different
aspects of the internship:
• the attitude of the student
• the execution of the research
• the final report/article
• the oral presentation
The second assessor provides an assessment of the final report only.

The final report counts for 50% of the final grade, the oral
presentation for 25% and the execution of the research also for 25%.
Only if marks for each item given by the VU-supervisor and the second
assessor are 6 or higher and the attitude is a ‘pass’, the internship is
regarded as sufficient. The final grade is calculated from the marks
given by both assessors and, together with other administrative details,
is summarized in the final assessment form, done by the master’s
coordinator.

Vereiste voorkennis
The student is enrolled in the Master’s programme Biomedical Sciences of
which the internship is part.
The student attended the courses:
AM_470656, Advanced Molecular Immunology and Cell Biology
AM_1031, 6EC, Immunity and Disease
AM_470655, 6EC, Clinical Immunology
And the student has acquired 18EC of the following courses:
AM_470656, 6EC, Advanced Molecular Immunology and Cell Biology
AM_1031, 6EC, Immunity and Disease
AM_470655, 6EC, Clinical Immunology
AM_470657, 6EC, Molecular Infection Biology

The second internship can only start after the first internship has been
fully completed.

Doelgroep
MSc Biomedical Sciences students

Intekenprocedure
Every research project has to be approved by the masters’ coordinator in
advance (on behalf of the examination board). The Placement Manual
describes the process of completing the internship from the beginning
(the admission) through the actual execution with its supervision to the
final stage (assessment and grading) in consecutive order. The various stages of the process will be supported by forms which are supplied in the appendices or in links.

**Overige informatie**
The Placement Manual is based upon the 'Student Placement (Internship) and Research Project Regulations' of the Faculty of Earth and Life Sciences (FALW). Detailed information can be found in the Placement manual Biomedical Sciences and in the Academic and Examination Regulations (AER).

Duration of the internship is 5 months (30 EC) and may, under certain circumstances, be elongated to 33 or 36 EC (see AER and/or Placement manual).

It is not allowed for your literature thesis and internships to take place on the same or on a highly similar subject.

**Internship Infectious Diseases**

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<tr>
<td><strong>Coördinator</strong></td>
<td>dr. R.J. van Belle-van den Berg</td>
</tr>
<tr>
<td><strong>Examinator</strong></td>
<td>dr. R.J. van Belle-van den Berg</td>
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<tr>
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**Doel vak**
The internship is a compulsory part of the Master’s programme and involves many different aspects, such as theoretical preparation, practical execution, literature survey, report writing, oral presentation, and participation in the scientific activities of a research department.

The internship should be related to Infectious Diseases.

At the end of the internship a scientific report of the work has to be written as well as an oral presentation given.

For more (detailed) information, please see the placement manual Biomedical Sciences

**Inhoud vak**
The internship is a compulsory part of the Masters' programme in Biomedical Sciences.

The internship has to be preceded by a research proposal. During the internship, you collect your data and you do the final analysis. Finally you present your findings both orally and in a report.

Internships can be done at various locations, but should be part of an academical or research institute. Projects at academical or research institutes outside the Netherlands are also accepted, provided they are of sufficient academic quality and adequate on-site supervision is
guaranteed. In all cases: take care that you will be working on research related to your specialization and that you will be able to collect enough reliable data to write a scientific report in the end. Purely monitoring or inventory projects will not be accepted.

**Onderwijsvorm**
Research project, under supervision of VU-staff.

**Toetsvorm**
Within six weeks after the start of the internship a Go/No Go evaluation is made by the VU supervisor. The aim of this interim evaluation is to decide whether the project and the student both have enough potential to continue (Go) or not (No Go). This evaluation is based on:

- Written material by the student, including a final research proposal and either the Introduction or Methods section of the article or both.
- Attitude of the student and execution of the project during the initial stage.

The final assessment of the internship is undertaken by the VU-supervisor and the second assessor.

In the final assessment, the VU supervisor assesses four different aspects of the internship:

- the attitude of the student
- the execution of the research
- the final report/article
- the oral presentation

The second assessor provides an assessment of the final report only.

The final report counts for 50% of the final grade, the oral presentation for 25% and the execution of the research also for 25%.

Only if marks for each item given by the VU-supervisor and the second assessor are 6 or higher and the attitude is a ‘pass’, the internship is regarded as sufficient. The final grade is calculated from the marks given by both assessors and, together with other administrative details, is summarized in the final assessment form, done by the master’s coordinator.

**Vereiste voorkennis**
The student is enrolled in the Master’s programme Biomedical Sciences of which the internship is part.

The student attended the courses:
- AM_470127, 6EC, Containment Strategies of Infectious Diseases
- AM_470052, 6EC, Parasitology
- AM_470657, 6EC, Molecular Infection Biology

And the student has acquired 18EC of the following courses:
- AM_470656, 6EC, Advanced Molecular Immunology and Cell Biology
- AM_470127, 6EC, Containment Strategies of Infectious Diseases
- AM_470052, 6EC, Parasitology
- AM_470657, 6EC, Molecular Infection Biology
- AM_1021, 3 EC, Microbial Genomics

**Doelgroep**
MSc Biomedical Sciences students

**Intekenprocedure**
Every research project has to be approved by the masters’ coordinator in advance (on behalf of the examination board). The Placement Manual describes the process of completing the internship from the beginning (the admission) through the actual execution with its supervision to the
final stage (assessment and grading) in consecutive order. The various stages of the process will be supported by forms which are supplied in the appendices or in links.

**Overige informatie**
The Placement Manual is based upon the 'Student Placement (Internship) and Research Project Regulations' of the Faculty of Earth and Life Sciences (FALW). Detailed information can be found in the Placement manual Biomedical Sciences and in the Academic and Examination Regulations (AER).

Duration of the internship is 5 months (30 EC) and may, under certain circumstances, be elongated to 33 or 36 EC (see AER and/or Placement manual).

It is not allowed for your literature thesis and internships to take place on the same or on a highly similar subject.

**Internship International Public Health**

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<td>Coördinator</td>
<td>dr. D.R. Essink</td>
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<tr>
<td>Examinator</td>
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**Doel vak**
The internship is a compulsory part of the Master’s programme and involves many different aspects, such as theoretical preparation, practical execution, literature survey, report writing, oral presentation, and participation in the scientific activities of a research department.

The internship should be related to International Public Health.

At the end of the internship a scientific report of the work has to be written as well as an oral presentation given.

For more (detailed) information, please see the placement manual on Canvas (ALW_BMW_9999_01: Master Programmes Biomedical Sciences and Biology)

**Inhoud vak**
The internship is a compulsory part of the Masters’ programme in Biomedical Sciences.

The internship has to be preceded by a research proposal. During the internship, you write an extended research design, collect your data and you do the final analysis. Finally you present your findings both orally and in a report.

Internships can be done at various locations, but should be part of an
academical or research institute. Projects at academical or research institutes outside the Netherlands are also accepted, provided they are of sufficient academic quality and adequate on-site supervision is guaranteed. In all cases: take care that you will be working on research related to your specialization and that you will be able to collect enough reliable data to write a scientific report in the end. Purely monitoring or inventory projects will not be accepted.

**Onderwijsvorm**
Research project, under supervision of VU-staff.

**Toetsvorm**
Within six weeks after the start of the internship a Go/No Go evaluation is made by the VU supervisor. The aim of this interim evaluation is to decide whether the project and the student both have enough potential to continue (Go) or not (No Go). This evaluation is based on:
- Written material by the student, including a final research proposal and either the Introduction or Methods section of the article or both.
- Attitude of the student and execution of the project during the initial stage.

The final assessment of the internship is undertaken by the VU-supervisor and the second assessor. In the final assessment, the VU supervisor assesses four different aspects of the internship:
- the attitude of the student
- the execution of the research
- the final report/article
- the oral presentation
The second assessor provides an assessment of the final report only.

The final report counts for 50% of the final grade, the oral presentation for 25% and the execution of the research also for 25%. Only if marks for each item given by the VU-supervisor and the second assessor are 6 or higher and the attitude is a ‘pass’, the internship is regarded as sufficient. The final grade is calculated from the marks given by both assessors and, together with other administrative details, is summarized in the final assessment form, done by the master's coordinator.

**Vereiste voorkennis**
The student is enrolled in the Master’s programme Biomedical Sciences of which the internship is part.
Before starting the placement, the student:
1) has passed Research Methods for Needs Assessments, and
2) has received an additional 12 ECs in the MSc programme (total at least 18 ECs).
For internships abroad generally an average grade of 7 or higher is required.

The second internship can only start after the first internship has been fully completed.

**Doelgroep**
Students from the MSc Biomedical Sciences with a IPH specialization

**Intekenprocedure**
The research proposal is approved by the placement coordinator and the VU-supervisor, after which the application has to be approved by the
masters’ coordinator in advance (on behalf of the examination board). The Placement Manual describes the process of completing the internship from the beginning (the admission) through the actual execution with its supervision to the final stage (assessment and grading) in consecutive order. The various stages of the process will be supported by forms which are supplied in the appendices or in links. Please see the placement manual on Canvas (ALW_BMW_9999_01: Master Programmes Biomedical Sciences and Biology).

**Overige informatie**
The Placement Manual is based upon the 'Student Placement (Internship) and Research Project Regulations' of the Faculty of Earth and Life Sciences (FALW). Detailed information can be found in the Placement manual Biomedical Sciences on Canvas (ALW_BMW_9999_01: Master Programmes Biomedical Sciences and Biology) and in the Academic and Examination Regulations (AER).

Duration of the internship is 5 months (30 EC) and may, under certain circumstances, be elongated to 36 EC (see AER and/or Placement manual).

It is not allowed for your literature thesis and internships to take place on the same or on a highly similar subject.

**Internship Neurobiology**

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<tr>
<td>Coördinator</td>
<td>dr. R.J. van Belle-van den Berg</td>
</tr>
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<td>Examinator</td>
<td>dr. R.J. van Belle-van den Berg</td>
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<td>Niveau</td>
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**Doel vak**
The internship is a compulsory part of the Master’s programme and involves many different aspects, such as theoretical preparation, practical execution, literature survey, report writing, oral presentation, and participation in the scientific activities of a research department.

The internship should be related to Neurobiology.

At the end of the internship a scientific report of the work has to be written as well as an oral presentation given.

For more (detailed) information, please see the placement manual.

**Inhoud vak**
The internship is a compulsory part of the Masters’ programme in Biomedical Sciences. The internship has to be preceded by a research proposal. During the internship, you collect your data and you do the final analysis. Finally you present your findings both orally and in a report.
Internships can be done at various locations, but should be part of an academical or research institute. Projects at academical or research institutes outside the Netherlands are also accepted, provided they are of sufficient academic quality and adequate on-site supervision is guaranteed. In all cases: take care that you will be working on research related to your specialization and that you will be able to collect enough reliable data to write a scientific report in the end. Purely monitoring or inventory projects will not be accepted.

**Onderwijsvorm**
Research project, under supervision of VU-staff.

**Toetsvorm**
Within six weeks after the start of the internship a Go/No Go evaluation is made by the VU supervisor. The aim of this interim evaluation is to decide whether the project and the student both have enough potential to continue (Go) or not (No Go). This evaluation is based on:

- Written material by the student, including a final research proposal and either the Introduction or Methods section of the article or both.
- Attitude of the student and execution of the project during the initial stage.

The final assessment of the internship is undertaken by the VU-supervisor and the second assessor.

In the final assessment, the VU supervisor assesses four different aspects of the internship:

- the attitude of the student
- the execution of the research
- the final report/article
- the oral presentation

The second assessor provides an assessment of the final report only.

The final report counts for 50% of the final grade, the oral presentation for 25% and the execution of the research also for 25%

Only if marks for each item given by the VU-supervisor and the second assessor are 6 or higher and the attitude is a ‘pass’, the internship is regarded as sufficient. The final grade is calculated from the marks given by both assessors and, together with other administrative details, is summarized in the final assessment form, done by the master's coordinator.

**Vereiste voorkennis**
The student is enrolled in the Master's programme Biomedical Sciences of which the internship is part.
The student attended the courses of period 1 of this specialization, and the student has acquired 18EC of the specialization specific courses.

The second internship can only start after the first internship has been fully completed.

**Doelgroep**
MSc Biomedical Sciences students

**Intekenprocedure**
Every research project has to be approved by the masters’ coordinator in advance (on behalf of the examination board). The Placement Manual describes the process of completing the internship from the beginning (the admission) through the actual execution with its supervision to the final stage (assessment and grading) in consecutive order. The various
stages of the process will be supported by forms which are supplied in
the appendices or in links.

Overige informatie
Detailed information can be found in the Placement Manual, which is
based upon the 'Student Placement (Internship)
and Research Project Regulations' of the Faculty of Earth and Life
Sciences (FALW) and in the Academic and Examination
Regulations (AER).

Duration of the internship is 5 months (30 EC) and may, under certain
circumstances, be extended to 33 or 36 EC (see AER and/or Placement
manual).

It is not allowed for your literature thesis and internships to take
place on the same or on a highly similar subject.

Internship Science in Society

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<td>Fac. der Aard- en Levenswetenschappen</td>
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<tr>
<td>Coördinator</td>
<td>dr. T.J. Schuitmaker-Warnaar</td>
</tr>
<tr>
<td>Examinator</td>
<td>dr. R.J. van Belle-van den Berg</td>
</tr>
</tbody>
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Doel vak
The aim of the internship as part of the Major Science in Society is to
apply the competences acquired during
the previous courses in a research project in order to ground the
knowledge, attitudes and skills of interdisciplinary research. More
specifically, the aims of the internships are:
• The student learns to independently conduct scientific research.
• The student is able to independently find scientific information and
to evaluate this for the benefit of his or her own research question.
• The student is able to apply scientific methods and knowledge, to
answer research questions and to generate evidencebased knowledge.
• The student is able to formulate a research question, to choose, to
implement and to evaluate the (appropriate) research method, and to
phrase the obtained results in report.
• The student is able to cooperate with researchers of various
disciplines.
• The student is able to orally present the research results and to
discuss the findings.
• The student obtains a good impression of a potential future field of
career.

Inhoud vak
The internship is a compulsory part of the one year specialisation as
part of the regular master. The duration of the internship is 5 months
(30 EC). An internship placement must provide the student with the
opportunity to learn how to conduct research under supervision. The
onsite supervisor of the internship is linked to an academic or research
institutions.
Internships can be done at various locations such as the Ministry of Health, Welfare and Sports, the Public Health Inspectorate, the Health Council, medical organizations such as the municipality health service (GGD), consultancies, the (pharmaceutical) industry and several research institutes, such as universities or e.g. the National Institute for Public Health and the Environment (RIVM).

An internship typically has three phases

- In the first phase, you write your research proposal consisting of an introduction, background, theoretical/conceptual framework, research questions and your research methodology.
- In the second phase, you collect your (qualitative and/or quantitative) data.
- In the third phase, you do your final analysis and present your findings both orally and in a report. The presentation seminar is a compulsory part of this third phase.

**Toetsvorm**
Report (55%), Oral presentation (15%), Execution (30%) and Attitude (Pass/fail)

Within six weeks after the start of the master internship, an interim evaluation will take place to assess whether there is a reasonable chance of the placement being brought to a successful completion.

The internship is supervised and assessed by two lecturers. Both lecturers are members of the academic staff at VU University Amsterdam. The onsite supervision can be carried out by a trainee research assistant (AIO), postdoc or researcher.

**Vereiste voorkennis**
To ensure that students do have enough background knowledge, it is required that you have passed the three compulsory courses: ‘Research Methods for Analyzing Complex Problems’, ‘Communication Organization and Management’, and ‘Analysis of Governmental Policy’ (grade at least 6).

**Doelgroep**
Students Major Science in Society

**Intekenprocedure**
Internships can only start when the draft research proposal is approved and signed by the Major coordinator. The application and agreement form (formdesk) has to be approved by the Master's coordinator.

**Overige informatie**
Information on internships is made available on Canvas.

**Literature thesis Biomedical Sciences**

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<td>Fac. der Aard- en Levenswetenschappen</td>
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Doel vak
The 9 EC literature thesis is a compulsory part of the master Biomedical Sciences, with the aim to reflect on scientific literature. In a total of 6 weeks (full time), the student specializes in a certain topic by gathering and analyzing (recent) scientific articles and other literature that can be included in the literature research. The student can decide the topic of the thesis.

The topic of the thesis needs to match one of the student’s research specialization(s).

Onderwijsvorm
Literature thesis, under supervision of VU-staff.

Toetsvorm
The assessment of the literature thesis is undertaken by the VU-supervisor and an optional second supervisor.
The literature thesis is assessed on the following aspects:
• execution of the thesis
• final report/review
• oral presentation

Vereiste voorkennis
We advice you to have finished at least all the specific courses, and preferrably also the internship, of the research specialization of which this thesis is part.

Doelgroep
MSc Biomedical Sciences students

Intekenprocedure
Every literature thesis has to be approved by the masters’ coordinator in advance (on behalf of the examination board). The guidelines for the literature thesis describe the process of completing the literature thesis from the beginning (the admission) through the actual execution with its supervision to the final stage (assessment and grading) in consecutive order. The various stages of the process will be supported by forms.

Overige informatie
Detailed information can be found in the guidelines and in the Academic and Examination Regulations (AER).

It is not allowed for your literature thesis and internships to take place on the same or on a highly similar subject.

Management of Innovative Technologies in Community Based Health Care

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<td>Fac. der Aard- en Levenswetenschappen</td>
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</table>
Doel vak
- To learn about the development and usage of M-health, E-health, point of care diagnostics, self-monitoring tools, (big)data analysis tools.
- To give in depth background of the technological developments and their usage.
- To familiarize with current technologies in community based health care.
- To reflect on the consequences of the technological development for the patient, care provider and the health care system at large.
- To be able to put these developments in context. Students are able to reflect critically on practical issues from specific theoretical perspectives.
- To engage with care providers, patient groups, technology firms and others to learn about and discuss "hot topics and developments"

Inhoud vak
This course will provide the students with an in-depth study of (the development of) front-line innovative technologies in community based health care.
The course is developed by the Amsterdam health & technology institute (Ahti). Ahti is an institute for education, research, and valorization in the area of Urban Health and technology, using a network of global living labs.
The current changes in health care systems and health care provision include a central role for technology. With increasing demands on staff and resources, technology may contribute to sustainable solutions in health care. In this course we expose students to front-line technologies and challenge them to reflect on the consequences new technologies in health care have. Students will focus on technical understanding of the developments as well as how technology can offer cost-effective solutions that can improve the healthcare system as a whole. This topic will be approached based on specific case studies from different perspectives, including patient / consumer, health care provider/entrepreneur, insurer/financier, and scientist / technology developer.

Onderwijsvorm
Management of innovative technologies in community based healthcare is a course of eight weeks (6 ECTS), with a maximum of 25 students.
The most recent course schedule is to be found on Canvas.
The total study time is 160 hours. Tuition methods include interactive lectures, workshops, online exchange and self-study.
In the course we will make use of blended learning where possible and face to face teaching when needed.
The different elements have the following study time:
- lectures: 24 hours
- Work groups: 18 hours
- Groups assignment: 60 hours
- Preparing the presentation: 10 hours
- Self-study: 48 hours

Toetsvorm
Written exam (40%), group assignment (40%), presentation in seminar form (20%). All parts need to be passed.

Literatuur
To be announced on Canvas

Doelgroep
Students in the second year of the MSc Management and Entrepreneurship in the Health and Life Sciences

Microbial Genomics

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<tr>
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<td>Hoorcollege</td>
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Doel vak
1. After the lecture series the students obtained insight in:
   - The historical development of microbiological sciences
   - Techniques to explore the human microbiome
   - Human – Microbe interactions in Health and Disease
   - Metabolic strategies of microorganisms
   - Interventions with probiotics, prebiotics and synbiotics

2. Students have gained experience on thinking and writing about the impact of microbes on either our environment, human health, or industrial applications.

Inhoud vak
During 10 lectures, the enormous diversity of microbial life will become evident. The lectures will include a number of ways to explore microbial life forms associated with our body, in particular related to health and disease. Applications of our knowledge on the human microbiota for diagnostics, prognostics and interventions will be discussed.

10 lectures (obligatory) including a 4-5 p. perspective

Onderwijsvorm
10 lectures (obligatory) including a 4-5 p. perspective

Toetsvorm
Each student will write a perspective (approximately 4-5 pages) for one of the 10 lectures; the abstract will containing a 1 page summary of the lecture, and 3 pages on the relevance of the microbiological topic for society (with particular emphasis on human health). The
selected lecture will be announced after the final lecture.

**Literatuur**

Selected papers:


**Vereiste voorkennis**

Molecular Biology

**Aanbevolen voorkennis**

General and Molecular Microbiology

**Doelgroep**

MSc Students BioMolecular Sciences

**Overige informatie**

Venue: Artis de Volharding

http://www.artis.nl/ontdek-artis/artis-a-z/monumenten-z/de-volharding/

Announcement of lecture series:

http://www.micropia.nl/nl/ontdek/verdiep-je-in-de-microbiologie/the-huma

Lecture topics and speakers:

Microbiome in Health and Disease
Monday Jan 4 (10.00 – 12.00 u)
Prof. Remco Kort (TNO, VUA). Introduction into the human microbiome.
Dries Budding, MD (VUMC). Man and Microbe: a delicate superorganism

Tuesday Jan 5 (10.00 u – 12.00 u)
Dr. Douwe Molenaar (VUA). Dealing with big data of the microbiota.
http://www.ibi.vu.nl/sysbio/doku.php/people/douwe_molenaar

Dr. Evgeni Levin-Tsivtsivadze (TNO). Microbial ecology in health and disease: a machine learning approach.
http://www.learning-machines.com/

Friday Jan 8 (10.00 u – 12.00 u)
Dr. Bas Dutilh (UU). Metagenomic ventures into outer sequence space.
https://www.linkedin.com/in/dutilh

Dr. Guus Roeselers (TNO). Microbial ecology of the gastro-intestinal tract.
https://www.linkedin.com/in/roeselers

Monday Jan 11 (10.00 – 12.00)
Prof. Eddy Smid (WUR). The best foods are made by microbes.
https://www.linkedin.com/pub/eddy-j-smid/9/338/9a8

Prof Wilbert Bitter (VUMC) Die hard with a vengeance, strategy of mycobacterial pathogens.

Tuesday Jan 12 (10.00 – 12.00)
Prof. Janneke van de Wijgert (University of Liverpool, Institute of Infection and Global Health). Microbial ecology of bacterial vaginosis.
https://www.linkedin.com/pub/janneke-van-de-wijgert/7/195/2a0

Prof. Gregor Reid (Canadian Centre for Human Microbiome and Probiotic Research, Lawson Health Research Institute). Fermented milk as a delivery vehicle for probiotics in Africa.

Molecular Infection Biology

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<td>Coördinator</td>
<td>prof. dr. W. Bitter</td>
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Doel vak
To understand how the interaction of a pathogen with its host is studied (in vitro studies, use of alternative in vivo models, different approaches of mutant screening)
To understand the variation within microbial pathogens and the effect this variation has on host adaptation.
To understand what virulence factors are and how they are regulated by the pathogen.
To apply the acquired knowledge to interpret scientific literature and scientific hypotheses regarding pathogen-host interactions.

Inhoud vak
The recent explosion in genomic data of both microbes and eukaryotic hosts and the continuous progress in molecular biology allows a detailed analysis of the molecular interactions between a pathogen and its host. This knowledge is necessary because we are continuously exposed to new emerging pathogens and the resurgence of old plagues and need new vaccines and anti-microbial compounds. However, which technique should and could be used for a specific problem and how to interpret conflicting outcomes using different experimental strategies? This course aims to provide a thorough understanding and practical experience of molecular biology as it applies to infectious agents. The course covers the application of molecular biology to studying the basic biology of pathogenic bacteria and viruses (their virulence factors, taxonomy and genetic typing) and the genetic susceptibility of the host to infection. It aims to equip students with the specialised knowledge and skills necessary to assess primary literature on medical microbiology.

**Onderwijsvorm**
The course has three different parts: lectures, practicum and workshop. In the latter part students will discuss with each other opposing views on controversial topics in medical microbiology that recently appeared in the literature.

contact hours:
lectures: 18
Literature Workshop: 17
Practicum: 30-40

**Toetsvorm**
written exam (50% of final mark and should be minimally 5,5)
literature discussion (workshop, 30% of final mark)
practicum (20% of final mark)

**Literatuur**
Reader will be available one week before the start of the course.

**Vereiste voorkennis**
Bachelor's course ' Infectieziekten' and ' Immunologie' or an equivalent course in Microbiology and Molecular Biology with practical skills of handling microorganisms safely

**Doelgroep**
Students with a keen interest to study the interaction between a pathogen and its host, from a practical as well as a theoretical point of view

**Overige informatie**
Guest lectures:
Dr. Peter van der Ley, RIVM Bilthoven, molecular techniques used for vaccine development
Dr. Lia van der Hoek, AMC Amsterdam, identification of novel viral pathogens

**Parasitology**

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Doel vak
This course aims to provide students with a wide knowledge and understanding of medical parasitology. The course focuses on:
• Transmission;
• The role of parasites and host(s) on the outcome of disease;
• Immunological aspects;
• (Laboratory) diagnosis of parasites;
• Epidemiology, treatment and prevention of parasitological diseases.

Inhoud vak
This course will focus on Medical Parasitology. The lectures will provide an overview of life cycles, virulence factors, interactions between parasites and their host(s); invasion, survival, immune modulation and underlying molecular mechanisms, diagnosis (development and application), epidemiology, vaccines, control and elimination of parasites that are of medical importance.
The lectures will be interactive and should therefore be prepared by reading the corresponding literature.
Your input in the lectures will be of utmost importance. In addition, some lectures will be given by guest speakers.

Specific teaching goals:
After this course you will have learned the principles of medical parasitology and will be able to:
• Apply these principles to different parasite groups;
• Describe parasite life cycles using correct terminology;
• Identify the role of the host and parasite (virulence factors) on the outcome of an infection and disease;
• Describe the underlying molecular mechanisms involved in parasite infection;
• Describe different diagnostic techniques and able to name the advantages and disadvantages of different diagnostic techniques;
• Describe the principles for treatment- and prevention programmes for parasitological infections of medical importance;
• Analyse literature in the parasitology research field; to discuss and present the literature.

Onderwijsvorm
Students will have (interactive) guest lectures covering all aspects of medical parasitology followed by discussion groups or in-class assignments. In discussion groups students will be expected to demonstrate an in-depth understanding of medically important parasites. They will also have to present selected articles during two sessions and they will have the opportunity to perform a practical in parasite identification.
In the final week students will present a grant application on a parasite of choice during an elevator pitch. At the end of the course
students will have to prepare and actively participate in a debate on a selected parasitological topic. All workgroup-sessions are compulsory. An written examination will take place after week 4.

Lectures: 30 hours
Workgroups:16 hours
Practical parasite identification: 4 hours

Toetsvorm
You will pass the course if you have attended all compulsory sessions, if all assignments are sufficient and the exam is above 5.5 (so not 5.4!). You can earn up to 1 point on top of your final grade if you have an outstanding performance on all assignments (diagnosis- and virulence session, elevator pitch and debate) and the exam is above 5.5.

Literatuur
Reader

Vereiste voorkennis
Immunology, Infectious diseases

Aanbevolen voorkennis
Basic cell biology and basic immunology

Doelgroep
Obligatory course within the MSc Infectious disease specialisation Health Sciences; Optional course within the MSc programmes of Biomedical sciences.

Overige informatie
Several guest lecturers will be invited to teach on Medical Parasitology.

Peergroup fase 1

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<tr>
<td>Coördinator</td>
<td>drs. I. Pauw</td>
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Doel vak
In de peergroup staat de rol als ‘professional’ centraal. Studenten leren de regie te nemen over hun eigen leerproces en hun visie op onderwijs te beschrijven. Ze ontwikkelen een professionele identiteit, waarin ze de eisen die het beroep van docent aan ze stelt verbonden met eigen waarden en motieven. In peergroups reflecteren studenten op hun handelen in de praktijk, leiden daaruit ontwikkelpunten af, formuleren acties en evalueren deze. Verschillende instrumenten en methodes worden
gebruikt (logboek, reflectiecirkel, intervisie, videoreflectie, etc.) om de student in staat te stellen de complexiteit van de onderwijspraktijk te doorgronden en hiervan te leren.

**Peergroup Fase 2**

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**Doel vak**

In de peergroup staat de rol als ‘professional’ centraal. Studenten leren de regie te nemen over hun eigen leerproces en hun visie op onderwijs te beschrijven. Ze ontwikkelen een professionele identiteit, waarin ze de eisen die het beroep van docent aan ze stelt verbinden met eigen waarden en motieven. In peergroups reflecteren studenten op hun handelen in de praktijk, leiden daaruit ontwikkelpunten af, formuleren acties en evalueren deze. Verschillende instrumenten en methodes worden gebruikt (logboek, reflectiecirkel, intervisie, videoreflectie, etc.) om de student in staat te stellen de complexiteit van de onderwijspraktijk te doorgronden en hiervan te leren.

**Policy, Management and Organisation in International Public Health**

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**Doel vak**

To develop a detailed understanding of the health policy process and its outcomes both at national and international level
To acquire insight into the different theoretical concepts on policy design in the field of public health
To understand how policy decisions are translated into programs and projects, and subsequently implemented
To get acquainted with different management practices in health programs
To gain insight into change management
To get acquainted with and acquire skills in international diplomacy, resolution writing, negotiation and the procedures of the United Nations
Inhoud vak
This course contains two parts that will run parallel throughout the course: a theoretical part and a practical, diplomacy, part. In the theoretical part you study different theoretical concepts of policy science in international public health. You study core concepts of public administration in relation to IPH such as power relations, securing public interest, public versus private sector, managing change and the network society. Questions are addressed such as: In what way does the political structure of a country influence health policies; Why do certain topics get on the policy agenda while other topics never make it; Why do policy makers and politicians regularly seem to ignore scientific insights; To what extent do international organisations (such as the World Bank and the World Health Organisation) influence national policies? In the diplomacy part you develop basic diplomatic skills by practicing them in 4 training sessions and a final 1.5 day World Health Organization simulation under Model United Nations rules of procedure (WHO MUN). Model United Nations (informally abbreviated as Model UN or MUN) is an academic simulation of the United Nations that aims to educate you about civics, effective communication, globalization and multilateral diplomacy. In Model UN, you take on roles as foreign diplomats and participate in a simulated session of the WHO.

Onderwijsvorm
Lectures (29 hours), training workshops (14 hours) and simulation (12 hours), self study (102.5 hours), and examination (2.5 hours)

Toetsvorm
Individual exam (70%) and diplomacy assignment (30%). Both grades need to be at least 5.5 to pass the course.

Literatuur


Other reading materials via Canvas

Doelgroep
Compulsory course within the Master specialization International Public Health; optional course for students in other specializations of the Masters Health Sciences and Biomedical Sciences.

Overige informatie
Attendance of training workshops and simulation is compulsory.
For further information and application, please contact Maarten Kok (m.kok@vu.nl)

Policy, Politics and Participation

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</table>
Doel vak
1) To deepen your analytic skills with respect to the investigation of a complex societal problem;
2) To deepen and broaden your knowledge of political theory and policy-making;
3) To acquire further insight into the practice of qualitative social scientific research;
4) To acquire further insight into specific methods and techniques of qualitative social scientific research;
5) To improve skills in data collection and data analysis;
6) To improve your argumentation skills;
7) To improve your communication skills;
8) To improve your skills in working effectively in a project team.

Inhoud vak
In this course you get the chance to gain experience in the practical implementation of a prominent methodology for interactively investigating complex societal problems: focus group research. In a research project aimed at the development of policy recommendations concerning such complex problem, you will both improve your focus group research skills and deepen your understanding of the relevant theoretical concepts in the areas of policy studies, science and technology studies and political theory. In a group of eight to twelve students you will participate in an interactive research project executed at the Athena institute (possibly with a real external client). In this project you will be trained in and practice various skills for data collection (such as focus group design and facilitation) and data analysis (such as qualitative content analysis). Specific attention is paid to your personal interactive research skills. At the end of the course, you present your findings and recommendations orally.

In parallel to the group work for your research project, you will follow lectures, attend and prepare for guest lectures by people active in the field of policy-making, and actively participate in seminars following the so-called "CARQ"-methodology. During these CARQ-seminars literature is studied and discussed via the identification of a Core quotation, an analysis of the Argumentative structure of the paper at issue, the identification and articulation of pertinent Relations the paper has with other material/ issues/ papers/ methodologies/..., and, finally Questions that elicit in-depth discussions of topics pertinent to the course.

Onderwijsvorm
Lectures: 18 hours
Training workshops: 19 hours
CARQ seminars: 24 hours
Project assignment: 80 hours
focus group execution: 6 hours
Final presentations project results: 4 hours
Self study and assignment: remaining hours

Toetsvorm
The course does not have an exam. You will be assessed on the basis of the group assignment, a group presentation, your individual performance during the course and a take-home assignment. More precisely:

Individual grade [45%]:
CARQ facilitation and participation (10%)
Focus group facilitation (10%)
Participation (10%)
Take-home assignment (15%)

Group grade [55%]:
Focus group design and execution (20%)
Presentation (including analysis, policy recommendations and discussion) (35%)

For all group assignments a pass grade (> 5.5) needs to be obtained in order to receive a final mark. For individual assignments a resit can be done.

Literatuur
To be announced on Canvas

Vereiste voorkennis
Basic knowledge of (interactive) policy processes, policy analysis and relevant research skills are required.

Doelgroep
Optional course for Master students Management, Policy Analysis and Entrepreneurship in Health and Life sciences (MPA), Societal differentiation of the Health, Life & Natural Sciences. Mandatory course for MPA students who specialize in Policy.

Intekenprocedure
Registration deadline by VUnet is 4 weeks before the start of the course.

Overige informatie
Attendance is compulsory. (You will spend a great deal of your time on team work.)

Praktijk 1

<table>
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<td>Fac. der Gedrags- en Bewegingswetensch.</td>
</tr>
<tr>
<td>Coördinator</td>
<td>drs. Y.G. Meindersma</td>
</tr>
<tr>
<td>Examinator</td>
<td>drs. Y.G. Meindersma</td>
</tr>
</tbody>
</table>
Op de school wordt de aandacht op dezelfde kernpraktijken gericht als gedurende de instituutsopleiding. De werkplekbegeleider is op de hoogte van de onderwerpen die op de instituutdag gebruikt worden en gebruikt dezelfde rubric als de instituutsopleiders en vakdidactici om de vorderingen van de studenten te beoordelen.

Onderwijsvorm
Onder begeleiding van de werkplekbegeleider nemen de studenten steeds een groter en actiever aandeel in het lesgeven en werken in de school. Studenten met een baan (zij-instromers, onderwijstrainees etc) geven in dit stadium al zelfstandig les. Bij deze studenten is de nadruk bij de begeleiding vanuit de werkplekbegeleider op het niveau van didactische handelen in de les.

Toetsvorm
Op de school geven de studenten een presentatie over hun prestaties in de eerste acht weken. Dat doen ze aan de hand van de relevante rollen (vier van de vijf waarbij uitvoerder, ontwerper en pedagoog de meeste aandacht krijgen bij de reflectie op het lesgeven). De werkplekbegeleider gebruikt de rubric om het functioneren van de studenten in de klas te evalueren.

Praktijk 2

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<td>dr. A. Handelzalts</td>
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<tr>
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<td>drs. Y.G. Meindersma</td>
</tr>
<tr>
<td>Lesmethode(n)</td>
<td>Werkgroep</td>
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<td>Niveau</td>
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</table>
Inhoud vak
Tijdens de praktijkstage werken studenten aan het verder ontwikkelen van de kernpraktijken die in het instituutsdeel aan de orde zijn gekomen. Net als in fase 1 komt de verbinding tussen theorie en praktijk aan de orde. Op de werkplek wordt de aandacht op dezelfde vaardigheden gericht als tijdens de institutusopleiding. Dit betekent dat studenten, samen met hun werkplekbegeleider, gericht werken aan de verschillende thema’s besproken in de (vak)didactiekcolleges van Didactiek 1 en 2.

Onderwijsvorm
Onder begeleiding van de werkplekbegeleider nemen de studenten steeds een groter en actiever aandeel in het lesgeven en werken in de school.

Toetsvorm
De praktijkbeoordeling wordt uitgevoerd door de vakdidacticus/instituutsopleider en de werkplekbegeleider aan de hand van het eerste lesbezoek en de ingevulde rubric.

Overige informatie
Voorwaardelijk voor afronding van Praktijk 2: een voldoende beoordeling van Praktijk 1 en Didactiek 1.

Praktijk 3

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<td>drs. Y.G. Meindersma</td>
</tr>
<tr>
<td>Niveau</td>
<td>400</td>
</tr>
</tbody>
</table>

Inhoud vak
In het verdiepingsdeel gaat de student meer en meer zelf(standig) lesgeven. De voorbereiding en evaluatie wordt samen met de werkplekbegeleider gedaan. Op de werkplek komen dezelfde onderwerpen aan de orde als in het instituut: vakdidactische verdieping van onderwijsconcepten en –strategieën, aandacht voor het afstemmen van onderwijs op de behoeften van individuele leerlingen, diversiteit en excellentie.

Op de werkplek wordt de aandacht op dezelfde vaardigheden gericht als tijdens de institutusopleiding. Dit betekent dat studenten, samen met hun werkplekbegeleider, gericht werken aan de verschillende thema’s besproken in de vakdidactiekdidactiek en de keuze modules. Het instituut biedt hiervoor concrete handreikingen aan in de vorm van een stageplan (gekoppeld aan de rubric).
Onderwijsvorm
Onder begeleiding van de werkplekbegeleider nemen de studenten steeds een groter en actiever aandeel in het lesgeven en werken in de school.

Toetsvorm
Voor de beoordeling van Praktijk 3 maakt de student in blok 6 een afspraak met zijn WPB en SO voor een afrondend lesbezoek. In overleg met de WPB en SO bepaalt de student welke klas hiervoor het meest geschikt is.

Na afloop van het lesbezoek blikken WPB en SO met de student terug op de les. WPB en SO beoordelen de les aan de hand van de checklist (rubric). Gecombineerd met het oordeel van vakdidacticus aan de hand van de tweede lesbezoek wordt een cijfer vastgesteld.

Overige informatie
Voorwaarden voor afronding van Praktijk 3: een voldoende beoordeling van Praktijk 2 en Didactiek 2.

Praktijk 3 voor 2-jarige Master

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</tr>
<tr>
<td>Niveau</td>
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Inhoud vak
In het verdiepingsdeel gaat de student meer en meer zelf(standig) lesgeven. De voorbereiding en evaluatie wordt samen met de werkplekbegeleider gedaan. Op de werkplek komen dezelfde onderwerpen aan de orde als in het instituut: vakdidactische verdieping van onderwijsconcepten en –strategieën, aandacht voor het afstemmen van onderwijs op de behoeften van individuele leerlingen, diversiteit en excellentie.

Op de werkplek wordt de aandacht op dezelfde vaardigheden gericht als tijdens de instituutsopleiding. Dit betekent dat studenten, samen met hun werkplekbegeleider, gericht werken aan de verschillende thema's besproken in de vakdidactiekdidactiek en de keuze modules. Het instituut biedt hiervoor concrete handreikingen aan in de vorm van een stageplan (gekoppeld aan de rubric).

Onderwijsvorm
Onder begeleiding van de werkplekbegeleider nemen de studenten steeds een groter en actiever aandeel in het lesgeven en werken in de school.

Toetsvorm
Voor de beoordeling van Praktijk 3 maakt de student in blok 6 een afspraak met zijn WPB en SO voor een afrondend lesbezoek. In overleg met de WPB en SO bepaalt de student welke klas hiervoor het meest geschikt is.

Na afloop van het lesbezoek blikken WPB en SO met de student terug op de les. WPB en SO beoordelen de les aan de hand van de checklist (rubric). Gecombineerd met het oordeel van vakdidacticus aan de hand van de tweede
lesbezoek wordt een cijfer vastgesteld.

**Overige informatie**

Voorwaarden voor afronding van Praktijk 3: een voldoende beoordeling van Praktijk 2 en Didactiek 2.

### Praktijkonderzoek 1

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<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Niveau</td>
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</tbody>
</table>

**Doel vak**

Tijdens praktijkonderzoek 1 en 2 vullen studenten de tijdens hun master opgedane onderzoeksvaardigheden aan met onderzoeksvaardigheden voor de eigen onderwijspraktijk.

**Inhoud vak**

In praktijkonderzoek 1 richt de opdracht zich primair op het leren herkennen, waarderen en gebruiken van verschillen type bronnen (praktijkbronnen, vakliteratuur en wetenschappelijke literatuur) om praktijkproblemen te analyseren en te duiden. Studenten krijgen handvatten aangereikt om bronnen te zoeken en te beoordelen op kwaliteit en bruikbaarheid voor de (eigen) praktijk.

**Onderwijsvorm**

De begeleiding vindt plaats op het instituut en bestaat uit de volgende vormen: college en werkcolleges.

**Toetsvorm**

Praktijkonderzoek 1 wordt afgesloten met een onderbouwd advies voor de (eigen) praktijk

**Literatuur**

Relevante en actuele artikelen over verschillende kernpraktijken die in fase 1 en 2 aan de orde zijn geweest. De artikelen worden beschikbaar gesteld, en zelf opgezocht.
Overige informatie
Binnen Didactiek 1 en 2 hebben de studenten kennisgemaakt met het toepassen van relevante bronnen, waaronder onderzoeksartikelen, om praktijksituaties te duiden.

Praktijkonderzoek 2

<table>
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<tr>
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<tr>
<td>Niveau</td>
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</tbody>
</table>

Doel vak
Tijdens het praktijkonderzoek vullen studenten de tijdens hun master opgedane onderzoeksvaardigheden aan met onderzoeksvaardigheden voor de eigen onderwijspraktijk.

Inhoud vak
In Praktijkonderzoek 2 worden onderzoeksvragen uit de onderwijspraktijk vertaald in empirisch onderzoek. De student analyseert data uit de onderwijspraktijk om een antwoord te vinden op de onderzoeksvraag en rapporteert de bevindingen in een onderzoeksverslag en een presentatie aan de collega’s in de school en aan mede-studenten op het instituut. Er wordt met name aandacht besteed aan de aard en doelen van praktijkonderzoek, en consequenties die dit heeft voor kwaliteitsseisen en de betekenis van praktijkonderzoek voor de beroepspraktijk.

Onderwijsvorm
De begeleiding vindt plaats op school (academische opleidingsschool) en op het instituut en bestaat uit de volgende vormen: colleges, werkcolleges, duo-begeleiding (VO docent/ULO docent).

Toetsvorm
Praktijkonderzoek 2 wordt afgesloten met een verslag en een posterpresentatie over hun bevindingen en ze delen hun bevindingen zowel op het instituut als op school.

Literatuur
- Relevante en actuele artikelen over het onderzoeksonderwerp (via...
Canvas en zelf verzamelen).

**Vereiste voorkennis**
Vereiste voorkennis: Praktijkonderzoek 1 en onderzoekservaring op masterniveau in het eigen domeinvak.

**Reflective Practice Internship Science Communication**

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<td>Coördinator</td>
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**Doel vak**
The internship is a compulsory part of the Master’s programme. The aims of the internship are:
- Learn to independently apply and expand your practical science communication skills in one particular area of the field (writing, multi-media, facilitation, policy and strategy development, content design, etc.).
- Critical self-assessment and reflection on acquired science communication competencies in the field.
- Conduct scientific research independently: assess scientific information, design a research project, apply scientific methods, collect data, report and discuss findings.
- Present and discuss about internship and research outcomes.
- Learn to cooperate with researchers and practitioners of various disciplines.
- Gain an impression of a potential future field of career.

**Inhoud vak**
When you are enrolled in the VU Science Communication specialization or the UvA Major Science Communication you need to conduct one internship (30 ECTS, 5 months). One of the two possible formats is the Reflective Practice Internship (RPI). The complete and up-to-date information about the internship can be found in the SC internship guide line on Canvas (science communication community).

**Onderwijsvorm**
Work-based placement

**Toetsvorm**
Written report and oral presentation.
Within six weeks after the start of the master internship, an interim evaluation will take place to assess whether there is a reasonable chance of the placement being brought to a successful completion. The internship is supervised and assessed by two lecturers. Both lecturers are members of the academic staff at VU University Amsterdam. The day-to-day supervision can be carried out by a trainee research assistant (AIO), postdoc or researcher.

**Doelgroep**
Overige informatie
Participation in this compulsory component is only permitted if the student meets the relevant requirements for admission. These requirements are detailed in the Internship guidelines of Earth science (on Canvas) and in the Academic and Examination Regulations.

The work-based placement is subject to the FALW document: “Student placement (internship) and literature regulations”. These regulations require detailed written agreements between supervisors and student that specify the conditions for the Master research project. This agreement should be sent for approval by the science communication co-ordinator at least two weeks before the planned start of the work-based placement.

If the proposal is of sufficient quality, you can start your internship. If not, you’ll need to adapt your proposal and send it for approval again. You can only start your internship after your research design has been approved.

The placement may be extended by 6 EC, subject to conditions that can be found in the FALW document “Student placement (internship) and literature regulations”. The student must send a request for extension to the Earth science Examination Board.

Information on Master internships is made available on Canvas.

Research Internship Science Communication

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Doel vak
The internship is a compulsory part of the Master’s programme. The aims of the internship are:
- Learn to independently apply and expand your practical science communication skills in one particular area of the field (writing, multi-media, facilitation, policy and strategy development, content design, etc.).
- Critical self-assessment and reflection on acquired science communication competencies in the field.
- Conduct scientific research independently: assess scientific information, design a research project, apply scientific methods, collect data, report and discuss findings.
- Present and discuss about internship and research outcomes.
- Learn to cooperate with researchers and practitioners of various disciplines.
- Gain an impression of a potential future field of career.

Inhoud vak
When you are enrolled in the VU Science Communication specialization or the UvA Major Science Communication you need to conduct one internship (30 ECTS, 5 months). One of the two possible formats is the full Research Internship. The complete and up-to-date information about the
internship can be found in the SC internship guide line on Canvas (science communication community).

**Onderwijsvorm**

Work-baed placement

**Toetsvorm**

Written report and oral presentation.

Within six weeks after the start of the master internship, an interim evaluation will take place to assess whether there is a reasonable chance of the placement being brought to a successful completion. The internship is supervised and assessed by two lecturers. Both lecturers are members of the academic staff at VU University Amsterdam. The day-to-day supervision can be carried out by a trainee research assistant (AiO), postdoc or researcher.

**Doelgroep**

Students Earth science year 2

**Overige informatie**

Participation in this compulsory component is only permitted if the student meets the relevant requirements for admission. These requirements are detailed in the Internship guideline of science communication (on Canvas) and in the Academic and Examination Regulations. The work-based placement is subject to the FALW document: “Student placement (internship) and literature regulations”. These regulations require detailed written agreements between supervisors and student that specify the conditions for the Master research project. This agreement should be sent for approval by the science communication internship or master co-ordinator at least two weeks before the planned start of the work-based placement. If the proposal is of sufficient quality, you can start your internship. If not, you’ll need to adapt your proposal and send it for approval again. You can only start your internship after your research design has been approved.

The placement may be extended by 6 EC, subject to conditions that can be found in the FALW document “Student placement (internship) and literature regulations”. The student must send a request for extension to the earth science Examination Board. Information on Master internships is made available on Canvas.

### Research methods for analyzing complex problems

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<tr>
<td>Docent(en)</td>
<td>J.W. Schuijer, drs. ir. A. Fraaije, A.E. Bunders MSc, drs. ir. F. Vogels</td>
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Doel vak
The objectives of this course are:

- To understand the differences between beta- and gamma research;
- To acquire insight in and understanding of a real world research process, including knowledge of the character of complex societal issues and the needs, advantages and disadvantages of real world research;
- To acquire insight relevant research methods (both quantitative and qualitative) to address complex societal problems, their underlying theoretical concepts and their relative strengths and weaknesses;
- Being able to apply these various research methods in a specific societal context;
- To interpret quantitative and qualitative findings;
- Being able to create an adequate research design for the investigation of a specific complex societal problem.

Inhoud vak
Contemporary societies increasingly face complex social problems, such as climate change, HIV/AIDS or ethnic and religious diversity. These complex problems involve a variety of social actors: policy-makers, professionals, NGOs, industries, science and, of course, the public at large. Addressing these complex issues demands an approach that investigates, analyzes and integrates the positions and knowledge of different actors.

This course offers an (advanced) introduction to various research methods used in real world research, including questionnaires, surveys, semi-structured interviews, and focus groups. These methods are commonly used in research into complex problem contexts, communication and opportunities for intervention. Strengths and weaknesses of each research method and technique will be discussed, as well as its possibility to be applied in different societal contexts.

Onderwijsvorm
Research Methods for Analyzing Complex Problems is a parttime course of eight weeks (6 ECTS). The total study time is 160 hours. Tuition methods include lectures, workgroups, workshops, group project work and self-study.

The different elements have the following study time:
- lectures 20 hours
- workgroups and training 36 hours
- examination 3 hours
- project work & reading (self-study) Remaining hours

Please note that attendance to the workgroup sessions is compulsory. If you miss one workgroup, with a good reason, you will receive an additional assignment. If you miss more than one workgroup session it is no longer possible to pass the project part of the course.

Attendance to the lectures is highly recommended. In our experience, relying on self-study alone is insufficient to apply the theory of the lectures in the assignments of the workgroups, and to pass the exam.
**Toetsvorm**
The course grade is based on the group assignment ‘research design’ and the exam. Both aspects need to be graded 6.0 or higher.
Exam 50% of total grade
Group assignment ‘research design’ 50% of total grade

**Literatuur**
The literature of this course consists of selected scientific articles that are provided on Canvas, and the books:

An overview of the literature per lecture will be provided on Canvas.

**Doelgroep**
The course ‘Research Methods for Analyzing Complex Problems’ is a compulsory course for first year master students ‘Management, Policy Analysis and Entrepreneurship in Health and Life Sciences’. This course is also a compulsory course within the Science communication- and Societal differentiations of Health, Life and Natural Sciences Master programmes. It is an optional course for other Life Sciences Master program students at the VU University.

**Intekenprocedure**
VUnet

**Overige informatie**
Lectures are in English, part of the workgroups are in Dutch. The assignments are written in English.

Please note that attendance to the workgroup sessions is compulsory. If you miss one workgroup, with a good reason, you will receive an additional assignment. If you miss more than one workgroup session it is no longer possible to pass the project part of the course.

Attendance to the lectures is highly recommended. In our experience, relying on self-study alone is insufficient to apply the theory of the lectures in the assignments of the workgroups, and to pass the exam.

Contact:
Durwin Lynch (d.lynch@vu.nl)

**Research Methods for Need Assessments**

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<td>Coördinator</td>
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Doel vak

- Het algemene doel is om inzicht, vaardigheden en attitude te behalen in verschillende kwantitatieve en kwalitatieve onderzoeksmethoden die gebruikt worden voor behoefteschatten, analysen van internationaal gezondheidsproblemen, epidemiologische onderzoeken, veldonderzoeken om te sterkten publieke gezondheidssurveillance en te begrijpen de relatieve sterken en zwakheden van de verschillende onderzoeksmethoden.
- Om een adequaat onderzoek ontwerp te maken voor de analyse van een specifiek gezondheidsprobleem (theorie, concepten en ontwerp)
- Om kennis en vaardigheden te verwerven in onderhoudstechnieken, vragenlijstontwerp en focusgroepen (gegevensverzamelings)
- Om inzicht te verwerven in manieren om medewerkers en patiënten te betrekken om hun mening te includeren en gezamenlijk te beslissen over de behoeften en prioriteiten. Dit ligt in de interdisciplinaire benadering, zoals focusgroepen, diagrammen, kaarten en andere visualisatietechnieken (participatieve gegevensverzamelings)
- Om te weten hoe te interpreteren kwantitatieve en kwalitatieve bevindingen in het context van internationaal gezondheids (gegevensanalyse)

Inhoud vak

Dit cursus richt zich op kennis, vaardigheden en attitude nodig is om onderzoek te ontwerpen en uit te voeren in het veld van internationaal gezondheids, met een bepaalde nadruk op behoefteschattingen. Voordat een gezondheidsinterventie wordt gepland, moet een uitgebreide epidemiologische, gedraglijk en sociale analyse van kwaliteit van leven, gezondheidsproblemen, gezondheidsgerelateerd gedrag, hun oorzaken en bijdragefactoren worden uitgevoerd. De sociale context, omgevingsfactoren en gemeenschapscapaciteit moeten worden onderzocht. Om resultaten te bereiken, is het nodig voor gezondheidsmedewerkers (1) samen te werken met andere sectoren in een zogeheten intersectorale benadering, en (2) samen te werken met de gemeenschap, want gemeenschappen hebben relevant kennis wat de kwaliteit van de interventies en eigendomschap van de implementatieproces verhoogt. In andere woorden, een interdisciplinaire benadering is vereist.

Vele kwantitatieve en kwalitatieve methoden kunnen worden gebruikt. Tijdens deze cursus worden de meest essentiële onderzoeksmethoden besproken en geapplyceerd: vragenlijsten, enquêtes en epidemiologische statistieken, semi-structurerde in-diepte interviews, evenals enkele interactieve en participatieve methoden, zoals focus groep gesprekken, diagrammen, kaarten en andere visualisatietechnieken. Sterrekken en zwakheden van elke onderzoeksmethode en techniek zullen worden besproken, evenals de mogelijkheid om ze te gebruiken in resourcerijke regio’s en verschillende gemeenschappen. 

Bij het voltooien van de cursus, studenten zullen het aangeleverde theoretische kennis gebruiken door onderzoek te doen en hun eigen mini-studie te presenteren in kleine groepen.

Onderwijsvorm

‘Research methods for needs assessments’ is een volledige cursus van vier weken (6 ECTS). De totale studie duurt 160 uren. De middelen omvat lessen, training workshops, en zelfstudie.
The different elements have the following study time:
- lectures 18.5 hours
- workshops and training 31.5 hours
- (project) self study 107 hours
- examination 3 hours
Attendance to the workshops and training is compulsory

Toetsvorm
The course grade is based on the study design and the exam. Both aspects have to be concluded with the grade of 5.5 or higher.
Exam : 50% of total grade
Study-Design: 50% of total grade

Literatuur

Vereiste voorkennis
Knowledge of epidemiology and SPSS is a prerequisite to gain access to this course.
For further information please contact b.j.regeer@vu.nl.

Doelgroep
Compulsory course within the Master specialization International Public Health of the Master programmes Health Sciences and Biomedical Sciences. Optional course within the Master specialization Infectious Diseases (master programme Biomedical Sciences). In any other circumstances admission should be requested from the course coordinator.

Science and Communication

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Doel vak
a) Gain theoretical insight in the nature of science,
b) Gain theoretical insight in the nature of communication,
c) Gain theoretical insight in the relationship between science and society,
d) Gain insight in the role of science communication in this relationship,
e) Acquire knowledge of different theories and models of science
f) Acquire knowledge of different strategies, media and activities for science communication,
g) Learn how to practically apply theoretical concepts from the field of science communication in communicating science,
h) Develop practical skills for science communication (especially writing and giving oral presentations).
i) Reflect on your own knowledge and competencies pertinent to your projected (ideal) role as science communicator.

**Inhoud vak**

Science is all around us and shapes our lives in many different ways. From the vaccines you need to get when traveling abroad to the smartphone you use on a daily basis, and from the public transportation you use to get to the university to the ingredients of your toothpaste: scientific knowledge is elemental to all of these. Simultaneously, society shapes the ways in which science and technology develop too. Science, technology and society influence each other continuously—or, to put it differently, they ‘communicate’.

Students of the Science Communication specialization are expected to become experts in understanding and designing interactions between science and society. In order to make this interaction fruitful and valuable for both science and society, it is first of all important to gain theoretical knowledge about science, about communication and about science communication. Science and Communication provides students with the theoretical and conceptual foundations of the discipline of science communication. Thus, you will develop an in-depth understanding of communication processes at the core of several interfaces, including those between scientists from different disciplines, between different sciences and their stakeholders, and between science and the public.

**Onderwijsvorm**

Lectures (18 h)
Workgroups (15 h)
Home-study for group assignments (12 h)
Home-study for individual assignments/exam (100 h)

**Toetsvorm**

a) Participation. (10%)
This consists of the following:
- (small) individual assignments,
- a pitch presentation and
- a "job application".
All these are assessed as pass or fail. If you pass all of them, you have earned the first 10% of your final mark. For each one you fail, you have to do an alternative assignment.
Nota bene: if you fail your participation, this cannot be compensated with an alternative assignment!
b) A group assignment in which you develop a label to an exhibit at a science museum and write an accompanying essay. (10%)
c) A review of a science communication effort of your own choosing (an exhibit at a science center or museum, a public lecture, a (popular) science book, et cetera...). (10%)
d) "TED-talk" in which you present the research you did (e.g. for your Bsc thesis or (first) Msc internship). (20%)
e) Exam. (50%)

To pass, your grades for assignments (a), (b) and (e) have to be 6 or
Assignments (b), (c) and (d) are all mandatory, but grades for these individual components can be compensated by other grades.

Resit:
In case your weighed average of (a) to (e) (with sufficient grades for (a), (b) and (e)!) is not sufficient, you have to take a resit. This can either consist of a second attempt at (c) or (d), or a re-exam.

Literatuur
Academic articles. Direct links to articles will be provided on Canvas.

Doelgroep
The course Science and Communication is a compulsory course for students of the Master specialisation Science Communication (Wetenschapscommunicatie) and is a prerequisite for the internship. Science and Communication is an optional course for students from other master programs in the health and life sciences.

Science in Dialogue

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Doel vak
To gain knowledge of and insight into:
- the basic concepts and issues in the understanding of science-society interactions, both from a science and technology studies and communication science perspective
- the nature and course of interpersonal and group communication processes relevant to the formal and informal dialogue between science and society
- the nature and form of dialogical science communication, aimed at reflective learning and mutual understanding

To acquire or improve:
- individual skills for effective interpersonal communication
- individual skills for the design and facilitation of the science-society dialogue

Inhoud vak
This course examines the public character of scientific controversy and focuses on the communicative aspects of a fruitful science-society dialogue. At the dawn of the 21st century, science, and particularly fields that combine science and engineering such as nanotechnology and synthetic biology, holds a great promise for the progress of our societies. At the same time, these developments are controversial. They lead to a variety of concerns related to risks, benefits and wider moral
issues. Nanotechnology creates materials with novel characteristics that help us, but may also contain risks for health and environment. Synthetic biology develops new biological systems that may be very useful, but radically change the nature and meaning of life. Clearly, advances in science do not always match the needs, desires and expectations of society. On the other hand, parts of society might not always appreciate the nature and scope of scientific findings. For a fruitful relationship between science and society, a constructive science-society dialogue is necessary.

This course offers advanced lectures on the basic concepts and issues of dialogical science communication: communication, learning, dialogue, understanding, controversy, democracy. A series of workshops and small group assignments presents communicative tools and spaces such as discussion games, science theatre and multimedia platforms that can be used to design and facilitate science-society interactions. Training workshops will focus on improving the students’ individual communication and facilitation skills. The students’ individual learning curve as a science communicator and facilitator is self-evaluated by means of a reflection report. Every course week is completed with a mini-exam.

**Onderwijsvorm**
Lectures (14h), Workgroups (28h), Training workshops (24h), Dialogue presentations (12h), Selfstudy (remaining hours)

**Toetsvorm**
Group assignment (50%), Take home exam (30%), Reflection report (20%). All assignments must be passed (grade > 6).

**Literatuur**
Is announced on Canvas one month before start of the course

**Doelgroep**
Optional course in the MSc specialization Science Communication

**Overige informatie**
Independence and a cooperative attitude is expected. Attendance to training workshops is mandatory.

### Science Journalism

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Doel vak
To acquire knowledge of and insight into:
- the concepts, models and issues of science journalism according to contemporary scientific literature
- the criteria for effective science journalism with respect to diverse media
- the representation of science in the media
- the role of science journalism in the use of scientific knowledge in society

To acquire skills in:
- writing popular scientific texts for different genres such as news, background and interview
- science reporting using videos
- designing science communication for different media such as newspaper, radio and internet

Orientation to the professional practice of science journalism

Inhoud vak
This course teaches the basic principles of science journalism. A series of interactive lectures reviews both the practical as well as the theoretical aspects of science journalism. Topics that are discussed are the translation of science to a language that is both compelling and understandable, the role of journalism in the interaction between science and society, images of science in the media and the ethics of science journalism. The interactive lectures invite you to take your own defendable position with regard to these issues.

Guest lectures provide insight into the professional practice of science journalists. The guest speakers work as freelancer, editor or producer at diverse science media, such as newspapers (NRC, Volkskrant), magazines (NWT), internet (Noorderlicht) and radio (Labyrint). Finally, the course trains specific skills that you need as a science journalist, such as popular writing, popular science videos, interviewing, conceptual analysis and program design.

Onderwijsvorm
Lectures and seminars on theory and practice of science journalism and writing skill training (36h). Considerable time is set aside for performing science journalism in assignments (108h). The assignments are assessed by lecturers and fellow students (peer-review process). Self study (remaining hours).

Toetsvorm
Several individual assignments (60%), several small group assignments (40%). All assignments must be passed (grade > 6).

Literatuur
Announced on Canvas one month before start of the course

Doelgroep
All Master students with a Beta-Bachelor degree. Students taking this course as part of their C-specialisation within FALW or FEW will have precedence over other students. Students from other faculties and or universities need to get formal consent from the course coördinator (Frank Kupper) before enrolment.
Overige informatie
Course is taught in Dutch. More information: f.kupper@vu.nl.

Science Museology

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Doel vak
- Analyze and understand the role of museum exhibits in the field of science communication.
- Analyze and understand the role of science communication concepts in the context of science museums.
- Synthesize theoretical notions of science communication and exhibit design into ideas for an exhibit experience and exhibit content.
- Create and conduct a qualitative user research method in science museum settings.
- Integrate the user research outcomes into the exhibit experience and exhibit content.
- Reflect on working for an external commissioner.

Inhoud vak
This course is about the role of science museums/centers, zoos and natural history museums in science communication. You will get familiar with theories of science communication in museum settings, and will be introduced to different styles of communication, different approaches to exhibit design & development, and different methods of research and evaluation of exhibitions.

Lecturers give insight into the role and work of (1) science communicators in museums and science centers, (2) researchers in the field of museology, and/or (3) professionals in informal science & technology learning environments.

Through individual and group assignments you are encouraged to combine theory and practice, working step-by-step towards an exhibit design. The group assignments are commissioned by museums and science centers, such as NEMO, Museon, Naturalis, Delft Science Centre, or Artis.

Onderwijsvorm
Lectures
Workgroups
Workshops
Home-study for group assignments
Home-study for individual assignments
Field work

Toetsvorm
Group assignments (45%), final presentation (15%), and individual assessment(s) (40%). For all assignments and assessments a pass-grade must be obtained.

Literatuur
Academic articles. Direct links to articles will be provided on Canvas before the beginning of the course.

Vereiste voorkennis
It is possible to follow the course as an elective course outside of one of the science communication master specialisations of FALW/FEW. In that case, additional reading may be asked from students, depending on the student's educational background.

Aanbevolen voorkennis
We recommend to follow this course, at least, after having done the course Science & Communication. We ask non-SC students to read Van Dam, F., De Bakker, L, & Dijkstra, A.M. (2014). Wetenschapscommunicatie, een kennisbasis. Boom Lemma uitgevers. ISBN: 978-94-6236-424-0. Chapters: 1, 2, 3, 4, 5 en 6. For English introduction literature, please contact the teaching staff.

Doelgroep
Optional course in the Science Communication master specialisation of most of the two-year master programs of the FALW and FEW faculties. Master students from other universities in any scientific field are welcome as well. Additional reading may be required.

Overige informatie
Guest lectures from and excursions to for instance NEMO, Artis, Naturalis, NorthernLight, or Museon, etc.

Scientific Writing in Engl (AM_BMED)

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Doel vak
The aim of this course is to provide Master’s students with the essential linguistic know-how for writing a scientific article in English that is well organized idiomatically and stylistically appropriate and grammatically correct.
At the end of the course students
- know how to structure a scientific article;
- know what the information elements are in parts of their scientific article;
- know how to produce clear and well-structured texts on complex subjects;
- know how to cite sources effectively;
- know how to write well-structured and coherent paragraphs;
- know how to construct effective sentences;
- know what collocations are and how to use them appropriately;
- know how to adopt the right style (formal style, cohesive style, conciseness, hedging)
- know how to avoid the pitfalls of English grammar;
- know how to use punctuation marks correctly;
- know what their own strengths and weaknesses are in writing;
- know how to give effective peer feedback.

Final texts may contain occasional spelling, grammatical or word choice errors, but these will not distract from the general effectiveness of the text.

**Inhoud vak**
The course will start with a general introduction to scientific writing in English. Taking a top-down approach, we will then analyse the structure of a scientific article in more detail. As we examine each section of an article, we will peel back the layers and discover how paragraphs are structured, what tools are available to ensure coherence within and among paragraphs, how to write effective and grammatically correct sentences and how to choose words carefully and use them effectively.

Topics addressed during the course include the following:
- Structuring a scientific article
- Considering reading strategies: who is your readership? How do they read your text? What do they expect? How does that affect your writing?
- Writing well-structured and coherent paragraphs
- Composing effective sentences (sophisticated word order, information distribution).
- Arguing convincingly – avoiding logical fallacies
- Academic tone and style: hedging – why, how, where?
- Using the passive effectively
- Understanding grammar (tenses, word order, etc.)
- Understanding punctuation
- Referring to sources: summarising, paraphrasing, quoting (how and when?)
- Avoiding plagiarism
- Vocabulary development: using appropriate vocabulary and collocations

**Onderwijsvorm**
Scientific Writing in English is an eight-week course and consists of 4 contact hours during the first week and 2 contact hours a week for the rest of the course. Students are required to spend at least 6 to 8 hours of homework per week. They will work through a phased series of exercises that conclude with the requirement to write several text parts (Introduction, Methods or Results section, Discussion and Abstract). Feedback on the writing assignments is given by the course teacher and by peers.

**Toetsvorm**
Students will receive the three course credits when they meet the following requirements:
Students hand in three writing assignments (Introduction, Methods, Discussion)
Students get a pass mark for all writing assignments;
Students provide elaborate peer feedback (Introduction, Methods, Discussion, Abstract);
Students attend at least 7 out of 8 sessions;
Students are well prepared for each session (i.e. do all homework assignments);
Students participate actively in class;
Students do not plagiarise or self-plagiarise.

Writing assignments:
1. If students have a BSc thesis in a traditional thesis form (e.g., 20+ pages) and written in English, they may use this for the writing assignments.
2. If students have a BSc thesis in a traditional form (e.g., 20+ pages) written in another language than English, they may use this for the writing assignments.
3. If students have written a paper or report in English that’s not already in article form, they may use this for the writing assignment.
4. If students are working on their MSc thesis or internship report when taking Scientific Writing in English, they may use this for the writing assignments. They will have to notify their supervisor to make sure that they won’t be accused of self-plagiarism.
5. If students cannot or do not wish to use any of the above-mentioned texts for the writing assignments (1-4), they are expected to do a limited Literature Review on a topic in their field of research, using at least 5 articles.

Students are not allowed to use the following texts for the writing assignments:
1. A BSc thesis written in English that's already in article form.
2. A MSc thesis written in English that's already in article form (and that has already been marked).
3. An internship report written in English that's already in article form (and that has already been marked).
4. A paper or report written in English that's already in article form.

**Literatuur**

**Vereiste voorkennis**
In order to start this course the student is required to already have found an internship which has been approved and administered.

**Doelgroep**
This course is only open to students of the two-year Master's programmes of the Faculty of Earth and Life Sciences. These students are only eligible to the course if they have already conducted scientific research (e.g. for their Bachelor’s thesis) or if they will be working on a research project when taking Scientific Writing in English.

**Intekenprocedure**
Important: each group has a minimum of 18 and maximum of 24 participants, so students should register on time through VUnet to ensure a place in one of the (designated) groups. If you have registered for a group in VUnet, you are expected to attend all sessions (eight). If you decide to withdraw from the course, please do so in time. This
all will avoid a ‘fail’ on your grade list for not taking part in this
course and allows other students to fill in a possible very wanted group
spot.

Each semester, one or more open/general groups also take place (with a
minimum of 18 participants), for which students may register
instead of the designated group for their master programme. Students are
advised to consult their schedule carefully, since overlap may occur.
For more information, please check course code AM_471023.

**Overige informatie**

- To do well, students are expected to attend all lessons. Group
  schedules are to be found at rooster.vu.nl and on Canvas.
- A VUnet registration for this course automatically gives access
to the corresponding Canvas site. Group registration only takes
place via Canvas (general groups: registration by students following
FALW programmes offering this course; groups assigned to specific
studies: registration through programme and course coordinator).
- Make sure Scientific Writing in English does not overlap with
  another course.
- If you have registered for a group in Canvas, you are
  expected to attend all sessions (eight). If you decide to withdraw from
  the course, do so in time in VUnet. This will avoid a ‘fail’ on your
  grade list for not taking part in this course and allows other students
to fill in a possible very wanted group spot.
- For specific Canvas matters concerning this course, please
  contact canvas.beta@vu.nl.
- Full time students with their main registration at VU will be given
  preferential treatment for placement in this course. For secondary
  students proof of enrollment is not a guarantee of placement.