



Chemistry MSc

Vrije Universiteit Amsterdam - Faculteit der Exacte Wetenschappen - M Chemistry - 2013-2014

This programme is offered jointly with the Universiteit van Amsterdam (UvA).

Specializations

During the Master's in Chemistry, students can specialize themselves by doing a Major in one of the following disciplines:

- Analytical Sciences
- Molecular Design, Synthesis and Catalysis
- Molecular Simulation and Photonics

Variants

The Master's programme of Chemistry offers three different variants for graduation:

- Research variant (O - variant)
- Society-oriented variant (M - variant)
- Communication-education variant (C / E - variant)

The global composition of each variant is indicated below:

Variant	O	M	C	E
Compulsory courses (Major)	24-42*	18	18	18
Research project (Major)	42	36	36	36
Literature study and colloquium	12	6	6	6
Ethics and Portfolio academic skills	6	-	-	-
M, C or E programme	-	60	60	60
Optional programme, e.g. - deficiency courses - research project extension - scholarship (company, abroad) - advanced courses	18-36*	-	-	-
Total cp	120	120	120	120

Ad *) Depends on the specialization : Molecular Simulation & Photonics requires 30-42 EC compulsory courses with 18-30 EC optional programme, other specializations require 24 EC compulsory courses with 36 EC optional programme.

Students should arrange the composition of their Master's programme in consult with the Master's coordinator. The exam committee formally has to approve the composition and extent of the Master's programme.

[To master guidebook](#)

[To master co-ordinators](#)

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Communication Variant

This specialization is intended for students with a BSc degree in any of the bèta-studies who want to specialize in communication. The programme focuses on science communication theory, research and practice. The programme of the communication (C) specialization is 1 year (60 credits). This specialization may not be combined with the Societal specialization (M) or the Education specialization (E). C-courses are shared with master students from the Faculty of Earth and Life Sciences.

Programme

For a specialization degree it is required to spend 60 credits on Science Communication components. Two courses, one internship and a thesis are compulsory. The rest of the programme can be filled with optional courses. While science communication research is always a component of a students' internship, students have the opportunity to choose for placement at institutes such as newspapers, museums, science centers, companies, etc. to hone their practical as well as academic skills. Students' thesis comprise short (9 credits) literature studies on research questions about aspects of science communication.

To complete his or her entire Master programme (120 credits), the student has to choose 60 credits Chemistry courses.

Before formal enrolment, the students' programme has to be approved by the master coordinator as well as the programme coordinator for the Science Communication.

Opleidingsdelen:

- [Optional courses for Communication Variant](#)
- [Compulsory courses for Communication Variant](#)

Optional courses for Communication Variant

Vakken:

Naam	Periode	Credits	Code
Communication, Organization and Management	Periode 2	6.0	AM_470572
Science in Dialogue	Periode 2	6.0	AM_1002
Science Journalism	Periode 2	6.0	AM_471014
Science Museology	Periode 3	6.0	AM_470590

Compulsory courses for Communication Variant

In addition to the courses below a total of at least 18 EC of track specific courses has to be chosen in consultation with the master coordinator.

Vakken:

Naam	Periode	Credits	Code
Colloquium and Literature Thesis	Ac. Jaar (september)	6.0	X_432578
Internship Communication Specialisation	Ac. Jaar (september)	30.0	AM_471148
Master Research Project Communication Variant	Ac. Jaar (september)	36.0	X_432586
Qualitative and Quantitative Research Methods	Periode 1	6.0	AM_470582
Science and Communication	Periode 1	6.0	AM_470587

Education Variant

The teaching in these variant is mainly in Dutch. Therefore we also give the requirements in Dutch.

Programma

De opleiding voor het behalen van de eerstegraads lesbevoegdheid start twee keer per jaar, in september en in februari. De opleiding wordt aangeboden in twee semesters. Uitgaande van de start in september duurt semester 1 tot en met januari en semester 2 tot juli. De opleiding is sterk praktijkgericht. De helft van de opleiding bestaat uit praktijk door werkervaring of stage (ook wel schoolpracticum genoemd) op een school voor voortgezet onderwijs. Daarnaast kent de opleiding vier componenten: vakdidactiek, algemene didactiek/pedagogiek, praktijkonderzoek en verdiepingsmodulen.

Naast de educatievakken volgt de student 60 sp Chemistry vakken, in overleg met de mastercoördinator van de gekozen specialisatie. Hierbij zijn de twee vakken Literature thesis and Colloquium Chemistry Education Variant en Master Research Project Chemistry-Education Variant verplicht.

Studenten die bij de Communicatie variant de vakken 'interpersoonlijke communicatie' en 'museumologie en buitenschoolse educatie' volgen, krijgen bij de lerarenopleiding een vrijstelling voor verdiepingsmodulen, een deel van het praktijkonderzoek en een deel van algemene didactiek.

Opleidingsdelen:

- [Leraar voorbereidend hoger onderwijs in Scheikunde verplicht](#)
- [Chemistry courses for Education Variant](#)

Leraar voorbereidend hoger onderwijs in Scheikunde verplicht

Vakken:

Naam	Periode	Credits	Code
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Algemene didactiek en Pedagogiek I	Semester 1, Semester 2	6.0	O_MLADEPI
Algemene Didactiek en Pedagogiek II	Semester 1, Semester 2	3.0	O_MLADEPII
Praktijk I	Semester 1, Semester 2	15.0	O_MLPRAKI
Praktijk II	Semester 1, Semester 2	15.0	O_MLPRAKII
Professionele ontwikkeling en onderzoek I	Semester 1, Semester 2	3.0	O_MLVPOOI
Professionele ontwikkeling en onderzoek II	Semester 1, Semester 2	6.0	O_MLVPOOII
Vakdidactiek Scheikunde I	Semester 1, Semester 2	3.0	O_MLVDSKI
Vakdidactiek Scheikunde II	Semester 1, Semester 2	6.0	O_MLVDSKII
Verdieping	Semester 1, Semester 2	3.0	O_MLVERD

Chemistry courses for Education Variant

In addition to the courses below a total of at least 18 EC of track specific courses has to be chosen in consultation with the master coordinator.

Vakken:

Naam	Periode	Credits	Code
Colloquium and Literature Thesis	Ac. Jaar (september)	6.0	X_432579
Master Research Project Chemistry - Education Variant	Ac. Jaar (september)	36.0	X_432587

Research Variant Analytical Sciences

The programme consists of 120 credits.

The research training takes place in one of the 4 research groups. Students must contact the Master coordinator at least two months before they would like to start their research training. The research training (Major) starts with a literature study and ends with a Master thesis, an oral presentation and a poster presentation. The research training (Minor) also starts with a literature study and ends with a written report and an oral presentation.

The program starts with an introductory course in which the basic concepts of analytical chemistry and the different areas where it is used, with their own specific problems, are discussed. Then separation techniques, spectroscopy and statistics will be taught at the master level. After these compulsory topics the program leaves a lot of freedom to go in detail into some of the advanced topics.

Research groups

The Master program Analytical Sciences is a unique combination of five strong analytical groups from the VU University Amsterdam (VU) and the

University of Amsterdam (UvA). As these groups are complementary, a broad range of analytical topics is covered.

- Applied spectroscopy
- Bio-molecular Analysis
- Polymer analysis
- Biosystems Data Analysis
- Environmental analysis

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Master Coordinator:

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Opleidingsdelen:

- [Compulsory Choice Ethics and Portfolio academic Skills](#)
- [Deficiency Courses for HLO Bachelors](#)
- [Research Project](#)
- [Optional Courses](#)
- [Compulsory Courses](#)

Compulsory Choice Ethics and Portfolio academic Skills

Students need to select a total of 6 credits from the following list.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Business and Innovation in Life Science	Periode 1, Periode 3	3.0	X_432539
Business Management in Health and Life Sciences	Periode 2	6.0	AM_470584
Clinical development and clinical trials	Periode 3	6.0	AM_470585
Communication, Organization and Management	Periode 2	6.0	AM_470572
English Academic Course	Periode 2+3, Periode 5+6	3.0	X_437028
Entrepreneurship in Health and Life Sciences	Periode 2	6.0	AM_470575
Ethics and Academic skills	Ac. Jaar (september)	2.0	X_432726
Ethics and Academic skills	Ac. Jaar (september)	1.0	X_432725
Ethics and Academic Skills	Ac. Jaar (september)	6.0	X_437556

Ethics and Academic Skills	Ac. Jaar (september)	3.0	X_432517
Ethics in Life Sciences	Periode 3	3.0	AM_470707
Ethics in Public Health	Ac. Jaar (september), Periode 3	3.0	AM_470805
Managing Science and Technology in Society	Periode 1	6.0	AM_470586
Qualitative and Quantitative Research Methods	Periode 1	6.0	AM_470582
Science and Communication	Periode 1	6.0	AM_470587
Science and Society in a Hist. Persp.	Periode 5	6.0	X_400424
Science in Dialogue	Periode 2	6.0	AM_1002
Science in Perspective	Periode 4+5	6.0	X_437030
Science Journalism	Periode 2	6.0	AM_471014
Scientific Writing in English	Periode 2, Periode 6	3.0	X_400592
Survival Guide for Scientists	Periode 6	3.0	X_428523
Teaching Assistant	Ac. Jaar (september)	3.0	X_432741
Teaching Assistant	Ac. Jaar (september)	6.0	X_432742
Tutoring Students	Periode 2	3.0	X_432625
Wetenschapscommunicatie voor Bèta-onderzoekers	Periode 5	6.0	AB_470185

Deficiency Courses for HLO Bachelors

Keuze van 12 uit 18 in overleg met mastercoordinator (voor HLO bachelor Chemistry)

Vakken:

Naam	Periode	Credits	Code
Organische Chemie voor HLO AS	Periode 1	3.0	X_437587
Thermodynamica	Periode 2+3	3.0	X_430600
Wiskunde voor HLO-instroom	Periode 1+2	6.0	X_432806

Research Project

Compulsory choice of at least 42 credits. Optional extension of 6, 12 or 18 credits.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
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Master Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	42.0	X_432594
Master Research Project Biomol. Analysis and Spectr. ext	Ac. Jaar (september)	18.0	X_432595
Master Research Project Biomol. Analysis and Spectr. ext	Ac. Jaar (september)	12.0	X_432637
Master Research Project Biomol. Analysis and Spectr. ext	Ac. Jaar (september)	6.0	X_432680

Optional Courses

The subject options of 36, 30, 24 or 18 credits can be completed with the possibilities below.

Vakken:

Naam	Periode	Credits	Code
Advanced Spectroscopy	Periode 6	6.0	X_432767
Bio-analysis & Clinical Diagnostics	Periode 1	6.0	X_432765
Biosystems Data Analysis	Periode 3	6.0	X_437001
Capillary Electrophoresis	Periode 3	6.0	X_437002
Chemical Analysis for Forensic Evidence	Periode 2	6.0	X_437003
Environmental Chemistry	Periode 1	6.0	X_437004
High-Throughput Screening	Periode 2	6.0	X_435047
Internship Biomolecular Analysis and Spectroscopy	Ac. Jaar (september)	30.0	X_432525
Internship Biomolecular Analysis and Spectroscopy	Ac. Jaar (september)	18.0	X_432523
Internship Biomolecular Analysis and Spectroscopy	Ac. Jaar (september)	24.0	X_432524
Internship Organic Chemistry	Ac. Jaar (september)	18.0	X_432529
Internship Organic Chemistry	Ac. Jaar (september)	24.0	X_432530
Internship Organic Chemistry	Ac. Jaar (september)	30.0	X_432531
Internship Theoretical Chemistry	Ac. Jaar (september)	18.0	X_432532
Internship Theoretical Chemistry	Ac. Jaar (september)	24.0	X_432533
Internship Theoretical Chemistry	Ac. Jaar (september)	30.0	X_432534

Minor Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	30.0	X_432651
Minor Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	18.0	X_432649
Minor Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	24.0	X_432650
Minor Research Project Organic Chemistry	Ac. Jaar (september)	18.0	X_432640
Minor Research Project Organic Chemistry	Ac. Jaar (september)	24.0	X_432641
Minor Research Project Organic Chemistry	Ac. Jaar (september)	30.0	X_432642
Minor Research Project Theoretical Chemistry	Ac. Jaar (september)	30.0	X_432648
Minor Research Project Theoretical Chemistry	Ac. Jaar (september)	18.0	X_432646
Minor Research Project Theoretical Chemistry	Ac. Jaar (september)	24.0	X_432647
Nuclear Magnetic Resonance	Periode 4	6.0	X_435667
Omics-procedures in molecular clinical Diagnostics	Periode 5	6.0	X_432766
Protein Analysis	Periode 5	6.0	X_435045
The analytical Chemist in Industry	Periode 5	6.0	X_437005

Compulsory Courses

Vakken:

Naam	Periode	Credits	Code
(Bio)Molecular Spectroscopy	Periode 5	6.0	X_435062
Colloquium and Literature Thesis	Ac. Jaar (september)	12.0	X_432581
Fundamentals of Analytical Sciences	Periode 4	6.0	X_435059
Mass Spectrometry	Periode 2	6.0	X_435604
Separation Sciences	Periode 1	6.0	X_435609

Research Variant Molecular Design, Synthesis and Catalysis

The programme consists of 120 credits.

Note: Every programme, including the choice of optional courses, has to

be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Master Coordinator:

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Opleidingsdelen:

- [Compulsory Choice Ethics and Portfolio academic Skills](#)
- [Deficiency Courses for HLO Bachelors](#)
- [Research Project](#)
- [Optional Courses](#)
- [Compulsory Courses](#)

Compulsory Choice Ethics and Portfolio academic Skills

Students need to select a total of 6 credits from the following list.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Business and Innovation in Life Science	Periode 1, Periode 3	3.0	X_432539
Business Management in Health and Life Sciences	Periode 2	6.0	AM_470584
Clinical development and clinical trials	Periode 3	6.0	AM_470585
Communication, Organization and Management	Periode 2	6.0	AM_470572
English Academic Course	Periode 2+3, Periode 5+6	3.0	X_437028
Entrepreneurship in Health and Life Sciences	Periode 2	6.0	AM_470575
Ethics and Academic skills	Ac. Jaar (september)	2.0	X_432726
Ethics and Academic skills	Ac. Jaar (september)	1.0	X_432725
Ethics and Academic Skills	Ac. Jaar (september)	6.0	X_437556
Ethics and Academic Skills	Ac. Jaar (september)	3.0	X_432517
Ethics in Life Sciences	Periode 3	3.0	AM_470707
Ethics in Public Health	Ac. Jaar (september), Periode 3	3.0	AM_470805
Managing Science and Technology in Society	Periode 1	6.0	AM_470586
Qualitative and Quantitative Research Methods	Periode 1	6.0	AM_470582

Science and Communication	Periode 1	6.0	AM_470587
Science and Society in a Hist. Persp.	Periode 5	6.0	X_400424
Science in Dialogue	Periode 2	6.0	AM_1002
Science in Perspective	Periode 4+5	6.0	X_437030
Science Journalism	Periode 2	6.0	AM_471014
Scientific Writing in English	Periode 2, Periode 6	3.0	X_400592
Survival Guide for Scientists	Periode 6	3.0	X_428523
Teaching Assistant	Ac. Jaar (september)	3.0	X_432741
Teaching Assistant	Ac. Jaar (september)	6.0	X_432742
Tutoring Students	Periode 2	3.0	X_432625
Wetenschapscommunicatie voor Bèta-onderzoekers	Periode 5	6.0	AB_470185

Deficiency Courses for HLO Bachelors

Vakken:

Naam	Periode	Credits	Code
Anorganische chemie 2 voor HLO	Periode 2	3.0	X_430520
Organische chemie voor HLO-instroom	Periode 3	3.0	X_430519
Thermodynamica	Periode 2+3	3.0	X_430600
Wiskunde voor HLO-instroom	Periode 1+2	3.0	X_430560

Research Project

Compulsory choice of at least 42 credits. Optional extension of 6, 12 or 18 credits.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Master Research Project Chemistry - Organic Chemistry	Ac. Jaar (september)	42.0	X_432598
Master Research Project Chemistry - Organic Chemistry - Extension	Ac. Jaar (september)	18.0	X_432599

Master Research Project Chemistry - Organic Chemistry - Extension	Ac. Jaar (september)	6.0	X_432618
Master Research Project Chemistry - Organic Chemistry - Extension	Ac. Jaar (september)	12.0	X_432685

Optional Courses

The subject options of 36, 30, 24 or 18 credits can be completed with the possibilities below.

Optional courses also may be taken from the educational program offered by the Holland Research School of Molecular Chemistry (HRSMC). This Graduate School offers a number of inter-university courses and schools on yearly varying subjects. More detailed information can be found on the website <http://www.hrsmc.nl/education.html>.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Advanced Spectroscopy	Periode 6	6.0	X_432767
Bio-analysis & Clinical Diagnostics	Periode 1	6.0	X_432765
Biosystems Data Analysis	Periode 3	6.0	X_437001
Capillary Electrophoresis	Periode 3	6.0	X_437002
Chemical Analysis for Forensic Evidence	Periode 2	6.0	X_437003
Environmental Chemistry	Periode 1	6.0	X_437004
High-Throughput Screening	Periode 2	6.0	X_435047
Internship Biomolecular Analysis and Spectroscopy	Ac. Jaar (september)	30.0	X_432525
Internship Biomolecular Analysis and Spectroscopy	Ac. Jaar (september)	18.0	X_432523
Internship Biomolecular Analysis and Spectroscopy	Ac. Jaar (september)	24.0	X_432524
Internship Organic Chemistry	Ac. Jaar (september)	18.0	X_432529
Internship Organic Chemistry	Ac. Jaar (september)	24.0	X_432530
Internship Organic Chemistry	Ac. Jaar (september)	30.0	X_432531
Internship Theoretical Chemistry	Ac. Jaar (september)	24.0	X_432533
Internship Theoretical Chemistry	Ac. Jaar (september)	18.0	X_432532

Internship Theoretical Chemistry	Ac. Jaar (september)	30.0	X_432534
Minor Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	30.0	X_432651
Minor Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	24.0	X_432650
Minor Research Project Biomol. Analysis and Spectr.	Ac. Jaar (september)	18.0	X_432649
Minor Research Project Organic Chemistry	Ac. Jaar (september)	18.0	X_432640
Minor Research Project Organic Chemistry	Ac. Jaar (september)	24.0	X_432641
Minor Research Project Organic Chemistry	Ac. Jaar (september)	30.0	X_432642
Minor Research Project Theoretical Chemistry	Ac. Jaar (september)	30.0	X_432648
Minor Research Project Theoretical Chemistry	Ac. Jaar (september)	18.0	X_432646
Minor Research Project Theoretical Chemistry	Ac. Jaar (september)	24.0	X_432647
Omics-procedures in molecular clinical Diagnostics	Periode 5	6.0	X_432766
Protein Analysis	Periode 5	6.0	X_435045
The analytical Chemist in Industry	Periode 5	6.0	X_437005

Compulsory Courses

Compulsory Choice 4 out of 8: X_435663, X_435664, X_435665, X_435666, X_435667, X_435668, X_435669, X_435653

Vakken:

Naam	Periode	Credits	Code
Bio-Organic Chemistry	Periode 2	6.0	X_435669
Coordination and Organometallic Chemistry	Periode 2	6.0	X_435664
Homogeneous Catalysis	Periode 5	6.0	X_435668
Literature Thesis and Colloquium Chemistry - Organic Chemistry	Ac. Jaar (september)	12.0	X_432583
Molecular Computational Chemistry	Periode 5	6.0	X_435666
Nuclear Magnetic Resonance	Periode 4	6.0	X_435667
Physical-Organic Chemistry	Periode 1	6.0	X_435663

Supramolecular Chemistry and Nanomaterials	Periode 1	6.0	X_435653
Synthetic Organic Chemistry	Periode 4	6.0	X_435665

Research Variant Molecular Simulation & Photonics

The programme consists of 120 credits.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Master Coordinator:

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Opleidingsdelen:

- [Compulsory Choice Ethics and Portfolio academic Skills](#)
- [Compulsory Optional Course Research project \(Major\) including report](#)
- [Literature Thesis and Colloquim](#)
- [Compulsory Optional Courses](#)
- [Recommended Optional Courses Computational Chemistry](#)
- [Compulsory Courses](#)

Compulsory Choice Ethics and Portfolio academic Skills

Students need to select a total of 6 credits from the following list.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Business and Innovation in Life Science	Periode 1, Periode 3	3.0	X_432539
Business Management in Health and Life Sciences	Periode 2	6.0	AM_470584
Clinical development and clinical trials	Periode 3	6.0	AM_470585
Communication, Organization and Management	Periode 2	6.0	AM_470572
English Academic Course	Periode 2+3, Periode 5+6	3.0	X_437028
Entrepreneurship in Health and Life Sciences	Periode 2	6.0	AM_470575
Ethics and Academic skills	Ac. Jaar (september)	2.0	X_432726
Ethics and Academic skills	Ac. Jaar (september)	1.0	X_432725

Ethics and Academic Skills	Ac. Jaar (september)	6.0	X_437556
Ethics and Academic Skills	Ac. Jaar (september)	3.0	X_432517
Ethics in Life Sciences	Periode 3	3.0	AM_470707
Ethics in Public Health	Ac. Jaar (september), Periode 3	3.0	AM_470805
Managing Science and Technology in Society	Periode 1	6.0	AM_470586
Qualitative and Quantitative Research Methods	Periode 1	6.0	AM_470582
Science and Communication	Periode 1	6.0	AM_470587
Science and Society in a Hist. Persp.	Periode 5	6.0	X_400424
Science in Dialogue	Periode 2	6.0	AM_1002
Science in Perspective	Periode 4+5	6.0	X_437030
Science Journalism	Periode 2	6.0	AM_471014
Scientific Writing in English	Periode 2, Periode 6	3.0	X_400592
Survival Guide for Scientists	Periode 6	3.0	X_428523
Teaching Assistant	Ac. Jaar (september)	3.0	X_432741
Teaching Assistant	Ac. Jaar (september)	6.0	X_432742
Tutoring Students	Periode 2	3.0	X_432625
Wetenschapscommunicatie voor Bèta-onderzoekers	Periode 5	6.0	AB_470185

Compulsory Optional Course Research project (Major) including report

Compulsory choice of at least 42 credits. Optional extension of 6, 12 or 18 credits.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Master Research Project Chemistry - Molecular Simulation and Photonics	Ac. Jaar (september)	42.0	X_432681
Master Research Project Chemistry Molecular Simulation and Photonics - Extension	Ac. Jaar (september)	6.0	X_432682
Master Research Project Chemistry Molecular Simulation and Photonics - Extension	Ac. Jaar (september)	12.0	X_432683

Master Research Project Chemistry Molecular Simulation and Photonics - Extension	Ac. Jaar (september)	18.0	X_432684
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Literature Thesis and Colloquim

Students need to select a total of 12 credits or more from the following list.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Literature Thesis and Colloquium Chemistry - Physical Chemistry	Ac. Jaar (september)	12.0	X_432582
Literature Thesis and Colloquium Chemistry - Theoretical Chemistry	Ac. Jaar (september)	12.0	X_432584
Literature thesis and Colloquium Chemistry Molecular Simulation and Photonics	Ac. Jaar (september)	12.0	X_432679

Compulsory Optional Courses

Choose 2 of 3

Vakken:

Naam	Periode	Credits	Code
Advanced Experimental Techniques	Ac. Jaar (september)	6.0	X_432662
Ultrafast Laser Physics	Periode 5	6.0	X_422556
Understanding Molecular Simulation	Periode 3	6.0	X_432703
Understanding Quantum Chemistry	Periode 2	6.0	X_422557

Recommended Optional Courses Computational Chemistry

The subject options of 36, 30, 24 or 18 credits can be completed with courses in

- Computational Chemistry
- Physical Chemistry
- Physics of Light & Matter
- Physics of Life & Health.

Below the recommended courses in Computational Chemistry.

Note: Every programme, including the choice of optional courses, has to be discussed and agreed upon with the master coordinator or a personal mentor and approved by the Examination Board.

Vakken:

Naam	Periode	Credits	Code
Ab Initio Molecular Dynamics	Periode 5	6.0	X_435635
Advanced Molecular Quantum Chemistry	Ac. Jaar (september)	6.0	X_432663
Applied Theoretical Chemistry	Ac. Jaar (september)	12.0	X_432501
Applied Theoretical Chemistry	Ac. Jaar (september)	6.0	X_435612
Biomolecular Simulations	Periode 4	6.0	X_437019
Density Functional Theory for Chemists	Ac. Jaar (september)	6.0	X_435111
Density Functional Theory for Chemists	Ac. Jaar (september)	12.0	X_435112
Molecular Photodynamics	Ac. Jaar (september)	3.0	X_432701
Molecular Photodynamics	Ac. Jaar (september)	6.0	X_432702
Numerical Techniques	Periode 4+5	6.0	X_420082
Relativistic Quantum Chemistry	Periode 4	6.0	X_435113
Scientific Computing and Programming	Periode 2	6.0	X_435076
Supramolecular Chemistry and Nanomaterials	Periode 1	6.0	X_435653
Transport Phenomena	Periode 4+5	6.0	X_420075

Compulsory Courses

Students need to follow two courses in period 1 of year 1 and one course in period 1 of year 2.

Vakken:

Naam	Periode	Credits	Code
Lasers and Quantum Optics	Periode 1	6.0	X_422539
Quantum Theory of Molecules and Matter	Periode 1	6.0	X_428517
Statistical Theory of Complex Molecular Systems	Periode 1	6.0	X_428520

Specialization Science, Business & Innovation

The MSc-SBI program outlined below features two thematic lines: (1) life science, with an emphasis on drug development, molecular diagnostics and innovative medical instrumentation, and (2) energy science, with an emphasis on sustainable energy development. This program, combining the natural sciences with innovation skill sets from a business and organizational perspective is spread across a two-year MSc-program. The program is full time and taught in English. To obtain an MSc degree in SBI, students must earn 120 credits (EC) in courses according to the scheme below.

1. Natural sciences 36 EC

a. Science courses 12 EC

b. Science project (incl literature research and research skills)
24 EC

2. Business and Social sciences 24 EC

3. Science, Business and Innovation 42 EC

a. SBI course 6 EC

b. SBI project (internship and master thesis) 36 EC

4. Complementary and/or electives 18 EC

In this program, students will be exposed to mandatory science classes, i.e. life science and/or energy science, to strengthen their background in natural sciences fundamentals. In addition, depending on the background of the students (either SBI BSc or other Bachelor degreed) there will be possibilities to define an appropriate customized MSc program. The chosen core will be complemented with a science project (24 EC) for specialization in an area of interest, in either Life or Energy science and with 24 EC in social and business sciences. The courses in social and business sciences focus on the processes and organizational context of innovation trajectories in business, industry and on institutional settings of inventions in life science and energy science and sustainability. The MSc-SBI is finalized through a final SBI-project of 36 EC (usually an internship at a company or institute) integrating the science, business and social aspects, leading to a Master's Thesis.

Opleidingsdelen:

- [Compulsory Choice of 24 EC science Project](#)
- [Compulsory Choice 1 out of 2](#)
- [Compulsory Choice of 12 ec](#)
- [Compulsory Courses](#)

Compulsory Choice of 24 EC science Project

Vakken:

Naam	Periode	Credits	Code
Science Project Energy	Ac. Jaar (september)	24.0	X_432736

Compulsory Choice 1 out of 2

Vakken:

Naam	Periode	Credits	Code
Business, Innovation and Value Creation in the Life Science Industry	Periode 3	6.0	X_432723
Current Sustainable Energy Technologies	Periode 3	6.0	X_422582

Compulsory Choice of 12 ec

Compulsory Choice of 12 ects from 1 of the following Science courses:

Vakken:

Naam	Periode	Credits	Code
Biomedical Modelling and Simulation	Periode 1	6.0	X_430112
BioSolar Cells	Periode 1	6.0	X_428531
Chemical Biology	Periode 1	6.0	X_432538
Green Chemistry	Periode 1	6.0	X_430557
Innovation in Medical Technology to Improve the Health Care System	Periode 6	6.0	X_430602
Modelling and Simulation for Life Sciences	Periode 4	6.0	X_432732
Photovoltaics	Periode 2	6.0	X_428516
Principles of Pharmaceutical Sciences / Pharmacochimistry	Periode 1	6.0	X_435675
Project Sustainable Future	Periode 6	6.0	X_432784

Compulsory Courses

Vakken:

Naam	Periode	Credits	Code
Expertise and coördination in Knowledge Intensive Firms	Periode 1	6.0	X_432738
Management of Sustainable Innovation	Periode 2	6.0	X_432739
Networked Organizations and Communication	Periode 2	6.0	S_NOC
SBI Project & Master Thesis	Ac. Jaar (september)	36.0	X_432735
Transdisciplinarity and Transition	Periode 2	6.0	X_430604

Specialization Science for Energy and Sustainability

Opleidingsdelen:

- Compulsory Choice of at least 24 ec.
- Compulsory Choice Ethics and Portfolio Academic skills
- Compulsory Courses

Compulsory Choice of at least 24 ec.

Vakken:

Naam	Periode	Credits	Code
Big Issues in Energy Materials	Periode 1	3.0	X_422535
BioSolar Cells	Periode 1	6.0	X_428531
Catalysis for sustainable energy	Periode 4	6.0	X_437027
Environmental Chemistry	Periode 1	6.0	X_437004
Green Chemistry	Periode 1	6.0	X_430557
Heterogeneous Catalysis	Periode 3	6.0	X_428013
Homogeneous Catalysis	Periode 5	6.0	X_435668
Management of Sustainable Innovation	Periode 2	6.0	X_432739
Nuclear Fuels	Periode 4	6.0	X_432787
Photosynthesis and Energy	Periode 5	6.0	X_422553
Photovoltaics	Periode 2	6.0	X_428516

Compulsory Choice Ethics and Portfolio Academic skills

Compulsory choice of at least 6 ec

Vakken:

Naam	Periode	Credits	Code
Communication, Organization and Management	Periode 2	6.0	AM_470572
English Academic Course	Periode 2+3, Periode 5+6	3.0	X_437028
Managing Science and Technology in Society	Periode 1	6.0	AM_470586
Qualitative and Quantitative Research Methods	Periode 1	6.0	AM_470582
Science and Communication	Periode 1	6.0	AM_470587
Science in Dialogue	Periode 2	6.0	AM_1002

Science in Perspective	Periode 4+5	6.0	X_437030
Scientific Writing in English	Periode 2, Periode 6	3.0	X_400592
Survival Guide for Scientists	Periode 6	3.0	X_428523
Tutoring Students	Periode 2	3.0	X_432625
Wetenschapscommunicatie voor Bèta-onderzoekers	Periode 5	6.0	AB_470185

Compulsory Courses

Vakken:

Naam	Periode	Credits	Code
Current Sustainable Energy Technologies	Periode 3	6.0	X_422582
Literature Thesis SES	Ac. Jaar (september)	12.0	X_432785
Project Sustainable Future	Periode 6	6.0	X_432784

Excellence Programme - Sustainability: the Molecular Approach

Opleidingsdelen:

- [Optional Courses \(choose 6 courses\)](#)
- [Compulsory Optional Courses \(choose 3 of 7\)](#)
- [Literature Study and Research Proposal \(12 EC\)](#)
- [Major research Project \(42 ec\)](#)
- [Minor research project \(choose 2\)](#)

Optional Courses (choose 6 courses)

Vakken:

Naam	Periode	Credits	Code
(Bio)Molecular Spectroscopy	Periode 5	6.0	X_435062
Ab Initio Molecular Dynamics	Periode 5	6.0	X_435635
Advanced Molecular Quantum Chemistry	Ac. Jaar (september)	6.0	X_432663
Applied Theoretical Chemistry	Ac. Jaar (september)	6.0	X_435612
Bio-Organic Chemistry	Periode 2	6.0	X_435669
Density Functional Theory for Chemists	Ac. Jaar (september)	6.0	X_435111
Electrochemistry and Bioelectrochemistry	Semester 2	6.0	X_432798
Homogeneous Catalysis	Periode 5	6.0	X_435668

Mass Spectrometry	Periode 2	6.0	X_435604
Modern Quantum Chemistry	Semester 2	6.0	X_432807
Molecular Computational Chemistry	Periode 5	6.0	X_435666
Molecular Photodynamics	Ac. Jaar (september)	6.0	X_432702
Nuclear Magnetic Resonance	Periode 4	6.0	X_435667
Organometallic Chemistry and Homogenous Catalysis	Periode 1	6.0	X_432808
Physical-Organic Chemistry	Periode 1	6.0	X_435663
Quantum Theory of Molecules and Matter	Periode 1	6.0	X_428517
Relativistic Quantum Chemistry	Periode 4	6.0	X_435113
Scientific Computing and Programming	Periode 2	6.0	X_435076
Statistical Theory of Complex Molecular Systems	Periode 1	6.0	X_428520
Supramolecular Chemistry and Nanomaterials	Periode 1	6.0	X_435653
Synthetic Organic Chemistry	Periode 4	6.0	X_435665
Understanding Quantum Chemistry	Periode 2	6.0	X_422557

Compulsory Optional Courses (choose 3 of 7)

Vakken:

Naam	Periode	Credits	Code
(Bio)Molecular Spectroscopy	Periode 5	6.0	X_435062
Homogeneous Catalysis	Periode 5	6.0	X_435668
Molecular Computational Chemistry	Periode 5	6.0	X_435666
Physical-Organic Chemistry	Periode 1	6.0	X_435663
Quantum Theory of Molecules and Matter	Periode 1	6.0	X_428517
Statistical Theory of Complex Molecular Systems	Periode 1	6.0	X_428520
Synthetic Organic Chemistry	Periode 4	6.0	X_435665

Literature Study and Research Proposal (12 EC)

Vakken:

Naam	Periode	Credits	Code
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Literature Study and Research Proposal Chemistry - AS - MSP	Ac. Jaar (september)	12.0	X_432800
Literature Study and Research Proposal Chemistry, MDSC - AS	Ac. Jaar (september)	12.0	X_432801
Literature Study and Research Proposal Chemistry, MDSC - MSP	Ac. Jaar (september)	12.0	X_432802

Major research Project (42 ec)

Vakken:

Naam	Periode	Credits	Code
Major research Project Chemistry, AS - MSP	Ac. Jaar (september)	42.0	X_432803
Major research Project Chemistry, MDSC - AS	Ac. Jaar (september)	42.0	X_432804
Major research Project Chemistry, MDSC - MSP	Ac. Jaar (september)	42.0	X_432805

Minor research project (choose 2)

Vakken:

Naam	Periode	Credits	Code
Minor research project Analytical Sciences	Ac. Jaar (september)	6.0	X_437031
Minor research project Biological Chemistry	Ac. Jaar (september)	6.0	X_437032
Minor research project Design and Synthesis	Ac. Jaar (september)	6.0	X_437033
Minor research project Molecular Simulation and Photonics	Ac. Jaar (september)	6.0	X_437035
Minor research project Physical and Theoretical Chemistry	Ac. Jaar (september)	6.0	X_437036

Society Oriented Variant for Natural and Life Sciences

Due to the growing complexity of technological and medical issues and the interaction with society, organisations working in this sector have a growing and urgent need for academic professionals in the natural and life sciences, who have knowledge of policy management and entrepreneurship. The Society oriented variant offers students with a bachelor degree in the natural and life sciences the chance to combine a

specialization in this field with a specialization in research.

Programme

The programme of the Society oriented variant is equal to the first year of the master programme Management Policy- Analysis and entrepreneurship (MPA). The programme of the Society oriented variant consists of 60 cp (18 cp compulsory courses; 12 cp optional courses and 30 cp internship) The course language is English, unless all students participating in the course speak Dutch, the course language will be Dutch.

Apart from the communication courses, the student has to choose 60 sp Chemistry courses. The student has to discuss the programme with the master coordinator of the chosen specialisation.

Opleidingsdelen:

- [Optional Courses Social Variant](#)
- [Compulsory Courses Social Variant](#)

Optional Courses Social Variant

Compulsory choice of 18 credits

Vakken:

Naam	Periode	Credits	Code
Business Management in Health and Life Sciences	Periode 2	6.0	AM_470584
Clinical development and clinical trials	Periode 3	6.0	AM_470585
Disability and Development	Periode 2	6.0	AM_470588
Entrepreneurship in Health and Life Sciences	Periode 2	6.0	AM_470575
Health, Globalisation and Human Rights	Periode 2	6.0	AM_470818
Policy, Politics and Participation	Periode 2	6.0	AM_470589
Qualitative and Quantitative Research Methods	Periode 1	6.0	AM_470582
Science Museology	Periode 3	6.0	AM_470590

Compulsory Courses Social Variant

In addition to the courses below a total of at least 18 EC of track specific courses has to be chosen in consultation with the master coordinator.

Vakken:

Naam	Periode	Credits	Code
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Analysis of Governmental Policy	Periode 1	6.0	AM_470571
Colloquium and Literature Thesis	Ac. Jaar (september)	6.0	X_432580
Communication, Organization and Management	Periode 2	6.0	AM_470572
Internship Societal Specialisation	Ac. Jaar (september)	30.0	AM_471147
Master Research Project Chemistry - Society Oriented Variant	Ac. Jaar (september)	36.0	X_432588

(Bio)Molecular Spectroscopy

Vakcode	X_435062 (435062)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. G.W. Somsen
Docent(en)	prof. dr. G.W. Somsen
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

Acquiring a deeper knowledge of various frequently applied spectroscopic techniques in (bio)analytical chemistry, viz. UV/Vis, fluorescence, IR- and Raman spectroscopy. Becoming acquainted with other important techniques, such as atomic spectroscopy, surface techniques, phosphorescence, LC-NMR and circular dichroism.

Inhoud vak

The physico-chemical principles of the methods and the interactions between light and atoms/molecules will be discussed. The applicability of the techniques will be demonstrated and important instrumental developments, such as laser excitation and modern detection schemes will also be covered.

Onderwijsvorm

Lectures and tutorials.

Toetsvorm

Written examination.

Literatuur

Book chapters and recent summarizing articles will be provided by the lecturer.

Vereiste voorkennis

Knowledge of the basic principles of molecular orbitals, molecular vibrations, and of absorption, fluorescence, and infrared spectroscopy.

Doelgroep
mCh-AS

Ab Initio Molecular Dynamics

Vakcode	X_435635 (435635)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Inhoud vak

The course description is available on:

<http://studiegids.uva.nl/web/uva/sgs/en/c/215.html>

Doelgroep
mCh-MSP

Overige informatie

Opgave via <https://www.sis.uva.nl> tot 4 weken voor aanvang van het semester is verplicht

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Advanced Experimental Techniques

Vakcode	X_432662 (432662)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. M.H.M. Janssen
Docent(en)	prof. dr. M.H.M. Janssen
Lesmethode(n)	Hoorcollege, Practicum
Niveau	500

Doel vak

To provide a broad overview of advanced experimental techniques, equipment and measurement concepts, and their application in modern research in the physical and life sciences.

Inhoud vak

This course covers both the principles and the building blocks of experimental measurement techniques and their applications in physics, chemistry and life sciences. We will discuss the basics and state-of-the-art implementations of vacuum technology, optical and wavelength dispersing components, electronics and measurement devices, photon and particle detectors, charged particle optics and imaging. This is integrated with measurement and experimental concepts like molecular beams, ionization and fluorescence spectroscopy, sub-Doppler and Cavity-Ring-Down spectroscopy, multidimensional spectroscopy,

coincidence electron and ion imaging, and microscopy. Applications of these advanced measurement techniques in studies of atomic, molecular and (bio)material in physical and life sciences will be reviewed using recent Review Papers.

Onderwijsvorm

A combination of lectures, exercises and assignments, demonstrations; in total 42 hours.

Toetsvorm

To be decided.

Literatuur

Moore, J.H., Davis, C.C., and Coplan, M.A. Building Scientific Apparatus 4th ed. Cambridge University Press, 2009.

Review articles.

Doelgroep

mCH

Advanced Molecular Quantum Chemistry

Vakcode	X_432663 (432663)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. L. Visscher
Niveau	500

Doel vak

Introduce the theoretical framework used in molecular quantum chemistry at a level that allows the student to actively participate in ongoing research.

Inhoud vak

The course builds on the course Understanding Quantum Chemistry by providing a more detailed discussion of modern electron structure methods (in particular second quantization, orbital optimization, basis set techniques and efficient integral evaluation) and their applications.

Onderwijsvorm

Self study and discussion groups (depending on the number of student who participate).

Toetsvorm

Written exam.

Literatuur

Molecular Electronic Structure Theory. Helgaker, Jørgensen, Olsen. Wiley. ISBN-13: 978-0470017609.

Aanbevolen voorkennis

Master course Understanding Quantum Chemistry

Doelgroep

MSc. Chemistry

Overige informatie

Period 5: schedule in consultation with the lecturer.

Advanced Spectroscopy

Vakcode	X_432767 ()
Periode	Periode 6
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. F. Ariese
Docent(en)	dr. F. Ariese
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

To acquire a deeper insight into the basic principles and modern developments of molecular spectroscopy in (bio)analytical chemistry, with emphasis on fluorescence/luminescence and Raman techniques.

To become familiar with recent literature on the use of these techniques in a variety of applications.

To acquire practical skills in modern (laser) spectroscopy.

Inhoud vak

The topics discussed comprise the basic principles of fluorescence/phosphorescence and Raman spectroscopy. Attention will be given to energy transfer mechanisms and the use of fluorescent probes, high-resolution fluorescence at cryogenic temperatures, single-molecule spectroscopy and coupling to analytical separation techniques. Raman spectroscopic topics will include surface-enhanced Raman, resonance Raman, time-resolved Raman and non-linear Raman techniques. Instrumental aspects, such as laser excitation, time-resolved detection, polarization and imaging will also be covered in this course.

Recent examples of the use of these techniques in a chemistry, medical, environmental, industrial, forensic or space research context will be discussed on the basis of literature presentations by the students. The course also includes a set of fluorescence and Raman experiments at VU LaserLaB

Onderwijsvorm

Lectures, tutorials

In small groups the students will carry out a set of experiments, of which the results will be laid down in a report and an oral presentation.

The students will also prepare a presentation on a recent literature article, to be given and discussed in class.

Toetsvorm

The final grade will be determined based on

Experiment report (1/6)

Experiment presentation (1/6)

Literature presentation (1/6)

Written exam (3/6)

Literatuur

Handouts and literature articles will be provided by the lecturer

Aanbevolen voorkennis

Background knowledge of molecular spectroscopic techniques, in particular fluorescence and Raman, is expected (for instance MSc Chem course (bio)molecular spectroscopy or 3MNV/2N course Microscopy and Spectroscopy). When in doubt please contact the lecturer.

Doelgroep

MSc Chemistry, MSc Medical Natural Sciences

Algemene didactiek en Pedagogiek I

Vakcode	O_MLADEPI ()
Periode	Semester 1, Semester 2
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	ir. E.J.F. Scheringa
Docent(en)	drs. W.S. Hoekstra, drs. S. Donszelmann, drs. B. Klein, drs. W. Jongejan, C.L. Geraedts
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

De student kan algemene onderwijskundige en pedagogische inzichten op het terrein van (activerende) didactiek (rol van ontwerper), communicatie in de klas (rol van uitvoerder) en gedrag- en leerproblemen (verdiepende module) vertalen naar de eigen lespraktijk.

Inhoud vak

Deze module kent 4 onderdelen:

- de startweek (1 erts), waarin de student kennis maakt met de opleiding, met het basisinstrumentarium van een docent en de eigen startcompetenties in kaart brengt;
- colleges ten aanzien van de rol van Ontwerper en de rol van Uitvoerder;
- colleges over gedrag- en leerproblemen, waarin problematiek en aanpak van meest gangbare gedrag- en leerproblemen aan bod komen.

Onderwijsvorm

Colleges (hoorcolleges en werkgroepen)

Toetsvorm

- beoordeling van het portfolio
- tentamen over de colleges gedrag- en leerproblemen

Literatuur

Een literatuurlijst wordt verstrekt aan het begin van de opleiding

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding

Overige informatie

Voor alle onderdelen (startweek, rollen, verdiepende module) geldt een aanwezigheidsplicht

Algemene Didactiek en Pedagogiek II

Vakcode	O_MLADEPII ()
Periode	Semester 1, Semester 2
Credits	3.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	drs. B. Klein
Docent(en)	drs. H.R. Goudsmit, drs. B. Klein, dr. T. Bosma
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak

De student kan:

1. leerlingen, als individu en als lid van de groep, ondersteunen en stimuleren in hun verdere persoons- en identiteitsontwikkeling;
2. de voorbeeldfunctie ten opzichte van leerlingen vormgeven en daarop reflecteren;
3. leerlingen helpen bij de voorbereiding op hun rol in de samenleving als actief participierend burger;
4. deze en eerdere verworven competenties aantonen in een showcaseportfolio

Inhoud vak

Deze module kent 2 onderdelen:

- colleges ten aanzien van de rol van Pedagoog;
- het werken aan de rol opdrachten voor de rol van uitvoerder, ontwerper en pedagoog voor het showcaseportfolio;

Onderwijsvorm

Colleges (hoorcolleges en werkgroepen) en zelfstudie

Toetsvorm

- een tentamen betreffende de rol van Pedagoog
- beoordeling van het showcase portfolio, waarin de student de verworven competenties ten aanzien van alle rollen aantoont

Literatuur

Een literatuurlijst wordt verstrekt aan het begin van de opleiding, en staat op Blackboard bij de betreffende studieonderdeel

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding

Overige informatie

Voor de colleges geldt een aanwezigheidsplicht. Studenten die dit vooraf met de vakdidacticus/mentor overeengekomen zijn, kunnen in zelfstudie onderdelen afronden.

Analysis of Governmental Policy

Vakcode	AM_470571 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. J.T. de Cock Buning
Docent(en)	prof. dr. J.T. de Cock Buning
Lesmethode(n)	Hoorcollege, Werkgroep, Computerpracticum
Niveau	500

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 further deepen your analytic skills with respect to the critical assessment of a complex societal question or dilemma in the health and life science;
- To learn to integrate science- specific knowledge with the knowledge and skills of other disciplines of the social sciences
- To practice skills in data collection and analysis
- To learn to set up valid lines of argumentation;
- To learn to translate research findings into policy recommendations;
- To get experienced in writing a policy advisory report;
- To improve your communication skills;
- To improve your 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 fulltime course of four weeks (6 ECTS). The most recent course schedule is to be found on Blackboard. 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: 15 hours
- project: 147 hours (within the project: 18x 1 hour coach meeting)
- self study: (within the project, defined in the group)
- examination: 2 hours

Please note that attendance to the project meetings is compulsory. Attendance to the lectures is highly recommended. In our experience, relying on self-study alone is insufficient to pass the exam

Toetsvorm

Written exam (25%) and individual evaluation based on personal performance in the project team (50%), and assessment of various group products (report and presentation (25%)). Exam has to be passed successfully.

Literatuur

Buse, Mays and Walt: "Making Health Policy" McGrawHill/Open University press. (at least 2nd edition 2012).

Aanbevolen voorkennis

The project integrates the learned lessons from the first compulsory MPA courses: Qualitative & Quantitative Methods.\

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.

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 leaders.

Anorganische chemie 2 voor HLO

Vakcode	X_430520 (430520)
Periode	Periode 2
Credits	3.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. A.W. Ehlers
Docent(en)	dr. A.W. Ehlers
Lesmethode(n)	Werkcollege
Niveau	400

Doel vak

Het doel van dit college is het verder uitbreiden van de basiskennis op het gebied van de anorganische chemie opgedaan in het college Anorganische chemie I, in het bijzonder m.b.t. de coördinatiechemie en de organometaalchemie.

Inhoud vak

In het college wordt aandacht besteed aan de volgende onderwerpen:
- coördinatiechemie (structuur en assymetrie van overgangsmetaalcomplexen, binding en electronenstructuur, magnetisme, Jahn-Teller verstoring, reacties van coördinatieverbindingen);
- organometaalchemie (18-electronenregel, carbonylcomplexen, Dewar-Chatt model, metaal-metaalbinding);

Onderwijsvorm

Colleges (hoorcollege, werkcolleges), Zelfstudie.

Toetsvorm

Schriftelijk tentamen. Tot de tentamenstof behoort alle op het college behandelde stof, alsmede de genoemde delen van het studieboek. Herkansing mogelijk mondeling.

Literatuur

Atkins, P. e.a., Shriver & Atkins: Inorganic Chemistry 4th ed. Oxford: Oxford University Press, 2006. i.h.b. hfdst. 7, 8, 18-21, 25..st. 9-16.

Aanvullend materiaal is online beschikbaar via Blackboard.

Doelgroep

HLO-instroom

Overige informatie

Student schrijft zich in voor Anorganische Chemie voor HLO-instroom (X_430520), en volgt het theoretisch gedeelte van Anorganische Chemie 2 (X_430514). Cijfer komt te staan bij Anorganische Chemie voor HLO-instroom (X_430520).

Anorganische chemie voor 2S wordt gedoceerd aan de UvA
Opgave via <https://www.sis.uva.nl> tot 4 weken voor aanvang van het semester is verplicht

Applied Theoretical Chemistry

Vakcode	X_432501 (432501)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. F.M. Bickelhaupt
Niveau	500

Doel vak

Understanding and predicting molecular structure and chemical reactivity.

Inhoud vak

Theoretical Chemistry has become an integral part of modern chemistry. Numerous properties can be computed with chemical accuracy, thus, enabling one to study or predict quantities that are hardly or not at all accessible through experimental techniques. But with this, the potential of theoretical chemistry is still not exhausted. In order to design syntheses, catalysts or pharmacologically active molecules in a more rational fashion (i.e., instead of using a trial-and-error approach), it is of crucial importance to combine accuracy with solid and profound insight into the underlying mechanisms in the electronic structure. This holds true also if such investigations are done in the form of computational chemistry. Such insight can be obtained through detailed analyses of the computed wavefunction and bond energy. The purpose of this course is to acquire the skills that one needs for a minute understanding of the nature of a chemical phenomenon. Here, the molecular orbital (MO) model contained in the so-called Kohn-Sham density functional theory plays a pivotal role.

Onderwijsvorm

The course consists of an intensive theoretical introduction in the first week followed by a research project in which the student participates in one of the research lines of the group.

Toetsvorm

Examination of the course occurs on the basis of a research report.

Literatuur

Parts of: (a) T. A. Albright, J. K. Burdett, M.-H. Whangbo, *Orbital Interactions in Chemistry*, Wiley-Interscience, New York, 1985; (b) F.M. Bickelhaupt, E.J. Baerends, *Kohn-Sham Density Functional Theory: Predicting and Understanding Chemistry*, in: *Rev. Comput. Chem.*; K.B. Lipkowitz, D.B. Boyd, Eds.; Wiley-VCH: New York, Vol. 15.

Aanbevolen voorkennis

BSc Scheikunde of BSc Farmaceutische Wetenschappen

Doelgroep

MSc Chemistry en MSc DDS

Applied Theoretical Chemistry

Vakcode	X_435612 (435612)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. F.M. Bickelhaupt
Niveau	500

Doel vak

Understanding and predicting molecular structure and chemical reactivity.

Inhoud vak

Theoretical Chemistry has become an integral part of modern chemistry. Numerous properties can be computed with chemical accuracy, thus,

enabling one to study or predict quantities that are hardly or not at all accessible through experimental techniques. But with this, the potential of theoretical chemistry is still not exhausted. In order to design syntheses, catalysts or pharmacologically active molecules in a more rational fashion (i.e., instead of using a trial-and-error approach), it is of crucial importance to combine accuracy with solid and profound insight into the underlying mechanisms in the electronic structure. This holds true also if such investigations are done in the form of computational chemistry. Such insight can be obtained through detailed analyses of the computed wavefunction and bond energy. The purpose of this course is to acquire the skills that one needs for a minute understanding of the nature of a chemical phenomenon. Here, the molecular orbital (MO) model contained in the so-called Kohn-Sham density functional theory plays a pivotal role.

Onderwijsvorm

The course consists of an intensive theoretical introduction in the first week followed by a research project in which the student participates in one of the research lines of the group.

Toetsvorm

Examination of the course occurs on the basis of a research report.

Literatuur

Parts of: (a) T. A. Albright, J. K. Burdett, M.-H. Whangbo, *Orbital Interactions in Chemistry*, Wiley-Interscience, New York, 1985; (b) F.M. Bickelhaupt, E.J. Baerends, *Kohn-Sham Density Functional Theory: Predicting and Understanding Chemistry*, in: *Rev. Comput. Chem.*; K.B. Lipkowitz, D.B. Boyd, Eds.; Wiley-VCH: New York, Vol. 15.

Aanbevolen voorkennis

BSc Scheikunde of BSc Farmaceutische Wetenschappen

Doelgroep

mCh, mDDS

Overige informatie

This course exists in two variants. The first variant is worth 6 cp (code 435612) and can be extended to 12 cp (code 432501).

Big Issues in Energy Materials

Vakcode	X_422535 (422535)
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. R.J. Wijngaarden
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/web/uva/sgs/nl/c/11037.html>

Doelgroep

mPhys, mChem, mCh-SES

Overige informatie

Registration via <https://www.sis.uva.nl> is mandatory 4 weeks before the start of the semester

Bio-analysis & Clinical Diagnostics

Vakcode	X_432765 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Docent(en)	dr. H. Lingeman
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

Giving a clear account on the instrumental bio-analytical techniques and strategies in bio-analysis and clinical diagnostics.

Inhoud vak

This basic course on bio-analytical and clinical chemistry is focusing on decision trees (strategic decisions) that can be used during the method development and optimization of analytical procedures to determine both endogenous and exogenous compounds in complex biological samples. Approaches and procedures with respect to sampling, sample preparation, separation, spectroscopy, electrochemistry, as well as immunological and enzymatic procedures will be dealt with. Case studies will be used to clarify the decisions that have to be taken.

Onderwijsvorm

Lectures and tutorials.

Toetsvorm

Written or oral examination.

Literatuur

Hand-outs (electronically available).

Aanbevolen voorkennis

Basic knowledge of biochemistry, chromatography, electrophoresis and mass spectrometry.

Doelgroep

mCH-AS, mDDS, mMNS

Biomedical Modelling and Simulation

Vakcode	X_430112 (430112)
Periode	Periode 1
Credits	6.0
Voertaal	Engels

Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. I.H.M. van Stokkum
Docent(en)	dr. I.H.M. van Stokkum, prof. dr. G.J.M. Stienen, dr. ir. T.J.C. Faes, dr. J.C. de Munck
Lesmethode(n)	Hoorcollege, Werkcollege, Practicum, Werkgroep
Niveau	400

Doel vak

To gain knowledge of the most important theoretical and practical concepts in modelling and simulation of biomedical processes at different scales, ranging from macroscopic organ function, cellular function down to biochemical interactions and signaling pathways within cells.

To gain experience with and to apply MatLab and Mathematica to acquire, analyse and evaluate biomedical signals and to model and simulate biomedical processes.

Inhoud vak

This course will start with a general overview the various types of models used to describe biomedical processes by parametric and non-parametric models using linear and non linear (differential) equations. Basic knowledge of vector and matrix calculations and differential equations is required but will be refreshed.

During the course, attention will be paid to finite element models, spectral analysis, compartment models, algorithms used in image analysis and models to describe molecular structures and their dynamic behaviour.

Examples will concentrate on cardiovascular function: finite element models to describe wall motion, image analysis of PET and Echo data, viscoelastic models of pressure volume relations, compartment models of the interaction between contractile proteins to simulate force and pressure development and a description of an ion pump for instance to import Ca-ions into the cell during an action potential.

The introductory lectures will be combined and followed by practical courses in which, through exercises, experience will be gained of MatLab and Mathematica (4th generation computer languages). Finally students will be offered a choice of 1 out of 5 modelling problems to be solved in groups of 2 or 3 students each, guided by a supervisor. At the end of the course each group will present and discuss their work with all participants and supervisors of the course.

Onderwijsvorm

Lectures, working groups, assignments.

Toetsvorm

Assignments, presentation and final written exam. The overall score will be calculated as the weighed average of the scores for the assignments, presentation and written exam.

Literatuur

Syllabus.

Book (recommended): Gilat, A., MatLab: An Introduction with Applications 4th ed, Wiley.

Doelgroep

mCh-SBI, mMNS-MPs, mMNS-PoL, mMNS-MPy, mPhys-PLH, mPhys-SBI

Biomolecular Simulations

Vakcode	X_437019 (437019)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	500

Inhoud vak

The course description is available at

<http://studiegids.uva.nl/web/uva/sgs/en/c/11008.html>

Doelgroep

mCh

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Bio-Organic Chemistry

Vakcode	X_435669 (435669)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Docent(en)	prof. dr. ir. R.V.A. Orru
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The use of Biotransformations in Synthesis as well as advanced understanding of Natural Product Chemistry.

Inhoud vak

This course gives an overview of the most important classes of biocatalysts. It describes the properties of biocatalysts and their use in biotransformations. The advantages and disadvantages of the use of enzymes will be discussed as well as the basic principles in enzyme-catalyzed asymmetric synthesis. Further, a detailed overview of the fundamental classes of Natural Products is given. Thus, Terpenes and Steroids, Alkaloids, Phenolics, Fatty acids and Prostaglandines, Polyketides will be covered. Not only the basic structural and physical properties but also synthetic aspects and bio-synthesis are a major part of this course.

Onderwijsvorm

Lectures, tutorials, assignments

Toetsvorm

Written examination and assignments

Literatuur

Will be provided by the lecturers.

Vereiste voorkennis

BSc

Aanbevolen voorkennis

BSc Scheikunde

Doelgroep

mCh-MDSC

BioSolar Cells

Vakcode	X_428531 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.P. Dekker
Docent(en)	dr. J.P. Dekker
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

To obtain insight in the three main themes of BioSolar Cells (in short research to improve the efficiency of photosynthesis in plants, research to produce biofuel from algae on a semi-industrial scale and research to convert solar energy directly into a fuel in an artificial leaf with very high efficiency), and to perform a literature study on one of the themes from BioSolar Cells.

Inhoud vak

BioSolar Cells is a Dutch national research programme with the aim to optimize the photosynthesis process in plants, algae and bacteria, and to develop 'artificial leaves' that combine biological and artificial components. The course will start with interactive lectures by experts on each of the three themes from BioSolar Cells. The students will have to read one or two papers before each lecture and formulate research questions, after which the lecturer gives his/her lecture and the questions are discussed. In the second stage of this course, the students choose a research topic, conduct a literature study, prepare a scientific review paper and present their work in a session with all participating students and staff.

Onderwijsvorm

Interactive lectures and literature study.

Toetsvorm

Assessment of scientific review article and of a presentation.

Literatuur

Scientific papers

Doelgroep

mCh-SES, mPhys

Biosystems Data Analysis

Vakcode	X_437001 (437001)
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

The course description is available at

<http://studiegids.uva.nl/web/uva/sgs/en/c/12461.html>

Doelgroep

mBio, mCh

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Business and Innovation in Life Science

Vakcode	X_432539 (432539)
Periode	Periode 1, Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	drs. P. van Hoorn
Docent(en)	prof. dr. I.J.P. de Esch, drs. P. van Hoorn
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

This course positions the field of Biomolecular Sciences in a broader context by sketching out the Pharma-Biotech industrial landscape.

Inhoud vak

The Pharma-Biotech industrial landscape is presented in several ways;

1. business and value chain modeling common in these industries
2. product strategy and life-cycle dynamic in the Pharma and Biotech sector
3. innovation and the position of Genomics and Proteomics in the future

of
Health and Life Sciences

In addition to lectures on the above 3 topics, students will be handed certain texts and articles that illustrate the 'State of the Art' in the Pharma-Biotech industrial sector from both a product development as well as from a business development standpoint.

As a result the student will get insight into the business decisions and dynamic that are linked to basic bioscientific research through product development. The course thus aims to provide a first general overview of how life science and business are interwoven in everyday industrial practice.

Two 'real-life' cases will be discussed and students will get a group assignment in which the cases will have to be analyzed and certain questions will have to be answered. Each group writes a short analysis and subsequently presents this in front of the whole group.

As part of this course, a guest speaker from industry will be giving a lecture.

Onderwijsvorm

Lectures, guest lectures by industrial and Life Science venture capital firm representatives, final presentation. Two harvard case will be used including assignments.

Toetsvorm

In order to receive 3 credits for this course, the following criteria must be met:

- the written exam must be passed with a grade 6 or more (60% of final grade)
- case analysis and presentation in front of the entire class with a grade 6 or more (40%)

Written exam w 4 open questions.

Literatuur

Rydzewski - Real world Drug Discovery , A chemist's guide to Biotech and Pharmaceutical Research (selected chapters)- 2008
Additional literature provided on Blackboard.

Vereiste voorkennis

Bachelor Physics, Chemistry, Mathematics, Biology, Medical Biology
Pharmaceutical Sciences, Medical Natural Science, Bachelor Science
Business and Innovation.

Aanbevolen voorkennis

Completed Bachelor Physics, Chemistry, Mathematics, Biology, Medical
Biology
Pharmaceutical Sciences, Medical Natural Science and Science Business
and Innovation.

Doelgroep

M Bio molecular Sciences, Chem, DDS

Business Management in Health and Life Sciences

Vakcode	AM_470584 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. H.J.H.M. Claassen
Docent(en)	prof. dr. H.J.H.M. Claassen
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	500

Doel vak

To acquire insight in different legal entities in which to organise a company or enterprise

To get acquainted with:

- financial and legal aspects
- patents and alternative valorization methods
- marketing and sales aspects of businesses

To acquire insight in Human Resource Management models

To get acquainted with different models of financing

To learn to think and act in line with economic and sustainability issues for the company

Inhoud vak

Increasingly, health students will be confronted with a corporate way of thinking in health organisations. To function in such an environment it is critical that students have basic knowledge of fiscal and legal entities and organisational forms of corporate structures (including start-ups). Furthermore, they have to understand what motivates decision makers and financial officers in different companies (also geographical differences). This course comprises a theoretical and a practical part. The theoretical part consists of interactive classes with various experts from the field. Topics that will be dealt with in detail include: 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 practical part consists of bringing the knowledge acquired during the classes into practice in an assignment in which you develop a (personal career) businessplan.

Onderwijsvorm

Lectures: 35h

Assignment: 4h

Work on assignment (self study): 40h

Preparing the exam: 81h

Toetsvorm

Written exam: 50%

Personal Business Plan: 50%

Both have to be passed

Literatuur

Will be announced on Blackboard 1 month before the start of the course

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:

- Robert Al, TU Eindhoven
- Tamar Weenen, VU university
- Esther Pronker, VU university
- Patrick de Boer & Jochem Bosschenbroek, Ttopstart BV
- Bart van Weezenbeek
- Bart Bergstein, Forbion Capital partners
- Michael Mellink & Majorie Soeter, Odgersberndtson
- Marga Janse, innovatief LerenLeren BV
- NL Octrooicentrum
- Price Waterhouse Coopers
- AsjesBisseling Belastingadviseurs
- And others to be announced

Business, Innovation and Value Creation in the Life Science Industry

Vakcode	X_432723 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	drs. P. van Hoorn
Docent(en)	prof. dr. I.J.P. de Esch, drs. P. van Hoorn
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

Business Innovation and Value Creation in the Life Sciences Industry aims to provide two distinct goals:

- To provide in depth and comprehensive insight in current business , innovation and entrepreneurship trends, approaches and state-of-the-art practice in the LSI through theory, literature and case analysis.
- To utilize and apply insights and experiences gained under a. in a personal live entrepreneurship case in which each individual student elects a case. And develops a business plan according to a set methodology. Essential parts of this process include: building strategy, business modeling, transactional modelling, building a value proposition, leveraging IP, marketing and commercialization planning.

Inhoud vak

The LSI landscape is shown in several ways:

1. Understanding the Pharma Biotech and Health Care sectors and its primary and secondary drivers, including the contributing sciences
2. Understanding relevant business, value chain and innovation models that are common in these industries and sectors
3. Understanding typical product life-cycle dynamics in the Pharma and Biotech and related Health sectors
4. Understanding the relative contribution and position of Genomics,

Proteomics and other scientific specialization areas in the future of Health and Life Sciences

5. Understanding current product categories and the future of diagnosis, therapy and prevention

In addition to lectures on the above topics, students will be handed certain texts and articles that illustrate the 'State of the Art' in the LSI sector from both a product development as well as from a business development standpoint.

As a result the student will get insight into the business decisions and dynamic that are linked to basic bio-scientific research from inception through to product development and commercialization. The course thus aims to provide a general overview of how life science and business are interwoven in everyday industrial practice.

Two 'real-life' cases will be discussed and students will get a group assignment in which the cases will have to be analyzed and certain questions will have to be answered. Each group writes a short analysis and subsequently presents this in front of the whole group.

Subsequently, each student will engage in a personal assignment as described above. The outputs will consist of a presentation before the whole group. The aim is to provide as real life a setting as is possible.

Onderwijsvorm

A mix of lectures, guest lectures, Pharma sector casework and related assignments. Individual coaching on the business planning exercise. Outputs include report and oral presentations and a final written exam.

Toetsvorm

In order to receive 6 credits for this course, the following criteria must be met:

- the written exam must be passed with a grade 6 or more (60% of final grade)
- the assignment must be completed with a written document and short presentation before the group (40% of final grade)

Literatuur

Selected scientific publications

Harvard Business Cases as posted on blackboard.

New World Drug Development by R Robert M. Rydzewski 2008

Business Model Generation – Osterwalder 2010

Vereiste voorkennis

Completed Bachelor SBI or comparable

Aanbevolen voorkennis

Completed Bachelor SBI or similar

Doelgroep

M Chem -SBI or M Physics - SBI

Capillary Electrophoresis

Vakcode	X_437002 (437002)
Periode	Periode 3
Credits	6.0

Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/en/c/243.html>

Doelgroep

mCh

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Catalysis for sustainable energy

Vakcode	X_437027 ()
Periode	Periode 4
Credits	6.0
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Inhoud vak

<http://studiegids.uva.nl/web/uva/sgs/nl/c/14334.html>

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Chemical Analysis for Forensic Evidence

Vakcode	X_437003 (437003)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	500

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/en/c/8069.html>

Doelgroep

mCh

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Chemical Biology

Vakcode	X_432538 (432538)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. R. Leurs
Docent(en)	prof. dr. R. Leurs
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	400

Doel vak

To get students acquainted with modern chemical biology techniques to modulate DNA, RNA and protein function.

Inhoud vak

In this course emphasis will be given on the interface between Chemistry and Biology. How can one understand biological processes by using small molecules? How can one identify small molecules targeting new biochemical pathways, either by using modern biochemical or cellular assays (e.g. SPR, FRET, BRET, High-content & High resolution analysis), or in silico using the wealth of new information from structural biology. How to detect and modulate DNA, RNA and protein function with chemical probes. Moreover, detection of proteins and their interactions with other molecules will be discussed in detail.

Onderwijsvorm

Lectures, tutorials, and computer practicals.

Toetsvorm

Assignments (100%)

Literatuur

Selected book chapters from Comprehensive Medicinal Chemistry II, 2007, Elsevier, Editors-in-Chief: John B. Taylor and David J. Triggle (available at VU library as e-book) and primary literature.

Vereiste voorkennis

Bachelor Pharmaceutical Sciences, Medical Natural Science, Science, Business and Innovation or Chemistry, Portal course MSc Biomolecular Science, Signal Transduction in Health and Disease, or equivalent

Doelgroep

mBMS-BC, mCh-SBI, mDDS-BCCA, mDDS-CMCT, mDDS-DD&S, mDDS-DDSA, mDDS-DDTF, mDDS-C-var, mDDS-E-var, mDDS-M-var, mPhys-SBI

Clinical development and clinical trials

Vakcode	AM_470585 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	W.S. Konijn MSc

Docent(en)	prof. dr. H.J.H.M. Claassen
Lesmethode(n)	Hoorcollege, Computerpracticum, Werkgroep
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objectives of drug and clinical development process

To acquire knowledge and insight into the clinical pharmacology in drug development, drug interactions, pharmacodynamic and metabolic interactions

To acquire knowledge and insight into clinical study methodology

To acquire knowledge and skills into the regulatory principles

To acquire knowledge of ICH-GCP and quality

To acquire knowledge and insight into clinical trial coordination

To acquire knowledge and skills into the data management and statistics.

To acquire insight into the ethical aspects

To acquire insight into actual use of clinical trials in R&D strategies

To learn to design a clinical study

To acquire insight into the different epidemiologic study designs

To acquire knowledge and skills into how exposure and disease in a population can be measured and how the relationships between them can be assessed (using SPSS)

To acquire knowledge and skills into interpreting and presenting the results of an epidemiologic study

Inhoud vak

The need for rigorous evaluation of components of health care is increasingly recognised worldwide. An important type of evaluation is the clinical trial. The most commonly performed clinical trials evaluate new drugs, medical devices, biologics, or other interventions on patients in strictly scientifically controlled settings, and are required for regulatory authority approval of new therapies. This course aims to provide students with a theoretical and practical understanding of the issues involved in the design, conduct, analysis and interpretation of clinical trials of health interventions. Furthermore classes are provided on which the actual use of clinical trials in day to day R&D strategies within industry and universities is addressed in detail. Classes include: 'Life Cycle of a Clinical Trial', 'Clinical Trial Methodology', 'ICH-GCP Principles', 'The Ethics Committee', 'Safety Considerations in Clinical Trials', 'Quality Control & Quality Assurance', 'Compliance, Misconduct & Fraud'.

An additional week of basic epidemiology will help you to complement the knowledge obtained so far in the course with an understanding of the principles of other types of study designs (cross-sectional, longitudinal, case-control). Issues concerning exposure and disease measurement and exposure-disease relationships will be discussed in detail, and examples will be provided. Together with your colleagues, you will learn how to apply this knowledge first by hand (during the lectures), then to an epidemiologic database (during the computer-based sessions) and how to interpret the results critically.

Onderwijsvorm

Lectures:25h

(Computer) workgroup: 32h

Preparing the exam: 2h

Toetsvorm

Written exam: 100%

Literatuur

Will be announced on Blackboard 1 month before the start of the course

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:

- Eric Klaver
- DOCS
- Others to be announced

Colloquium and Literature Thesis

Vakcode	X_432578 (432578)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the mastercoordinator of your track

Colloquium and Literature Thesis

Vakcode	X_432579 (432579)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the mastercoordinator of your track

Colloquium and Literature Thesis

Vakcode	X_432581 (432581)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen

Coördinator	dr. H. Lingeman
Niveau	600

Doel vak

Literature study on a topic related to biomolecular analysis.

Inhoud vak

The topic will be chosen in close cooperation and with approval of the master coordinator.

Onderwijsvorm

Selfstudy and discussion sessions.

Toetsvorm

Report and presentation.

Doelgroep

mCh-AS

Colloquium and Literature Thesis

Vakcode	X_432580 (432580)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the mastercoordinator of your track

Communication, Organization and Management

Vakcode	AM_470572 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. J. Maas
Docent(en)	dr. H. Wels, prof. dr. F. Scheele, dr. M.B.M. Zweekhorst
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

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 lectures 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. In addition, the students interview managers in health organisations and analyse these interviews using the newly acquired theoretical concepts. 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), self study, training workshops (12 hours), self-study and writing project assignment (approximately 120 hours).

Toetsvorm

Written exam (60%;) and assessment of the interviews, case study analysis, and reports (40%). Grades of both parts must at least be 6 or higher.

Literatuur

To be announced on Blackboard

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, workshops, interviews and discussions is indispensable

Coordination and Organometallic Chemistry

Vakcode	X_435664 (435664)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen

Lesmethode(n)	Hoorcollege
Niveau	400

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/nl/c/208.html>

Overige informatie

Registration via <https://www.sis.uva.nl> is mandatory 4 weeks before the start of the Semester.

Current Sustainable Energy Technologies

Vakcode	X_422582 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.P. Dekker
Docent(en)	dr. J.P. Dekker, dr. R.N. Frese
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak

To obtain a complete overview of the technical, economic and societal feasibilities of all possible forms of sustainable energy, including relevance and positive and negative effects. The students should be able to explain the basic features of these technologies and should also be able to make quantitative predictions for each of these technologies.

Inhoud vak

In week 1, students read all chapters of the book and formulate for each chapter a technological and/or economic/societal question. The question will be accompanied with hypothetical answers or estimations or working hypotheses. Answers must be as quantitative as possible. In week 2, students will present and discuss their questions and hypotheses with their group. Then, participants will be handed specific assignments for further research. In week 3, students will present the results of their further research, and will receive feedback from the other participants in their group. In week 4, students will give their final presentations to all participants of the course and will hand in the final report of their work.

Onderwijsvorm

Introductory lecture in week 1, two discussion per week in weeks 2 and 3 in groups of about 8 students, final meeting with all participants in week 4.

Toetsvorm

Initial questions, hypothetical answers and participation in the discussion result in 50% of the grade. The final document constitutes also 50% of the grade. All documents will be graded by two independent lecturers, their marks will be averaged. Both parts need to have a mark of 6.0 or higher.

Literatuur

David J.C. Mackay (2008) Sustainable energy – without the hot air, available free online at <http://www.withouthotair.com>

Vereiste voorkennis

mCh-SBI

Doelgroep

mCh-SBI, mPhys-SBI, mCh-SES, mPhys-SES

Density Functional Theory for Chemists

Vakcode	X_435111 (435111)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. F.M. Bickelhaupt
Niveau	500

Doel vak

Understanding basic concepts of Density Functional Theory (DFT), in particular, Kohn-Sham DFT, and its application to understanding and predicting chemical bonding, molecular structure, and reactivity.

Inhoud vak

Electron density, Hole functions, Electron density as basic variable instead of the wavefunction, Hohenberg-Kohn theorems, Kohn-Sham approach, Approximate exchange-correlation functionals, Basic machinery of DFT computer programs.

Onderwijsvorm

zelfstudie

Toetsvorm

Oral exam

Literatuur

Parts of: (a) W. Koch en M. C. Holthausen, A Chemist's Guide to Density Functional Theory; Sec. Ed.; Wiley-VCH Verlag: Weinheim, 2000.; (b) F.M. Bickelhaupt, E.J. Baerends, Kohn-Sham Density Functional Theory: Predicting and Understanding Chemistry, in: Rev. Comput. Chem.; K.B. Lipkowitz, D.B. Boyd, Eds.; Wiley-VCH: New York, Vol. 15.

Overige informatie

Period: in consultation with the lecturer

Density Functional Theory for Chemists

Vakcode	X_435112 (435112)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels

Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. F.M. Bickelhaupt
Niveau	500

Doel vak

Understanding basic concepts of Density Functional Theory (DFT), in particular, Kohn-Sham DFT, and its application to understanding and predicting chemical bonding, molecular structure, and reactivity.

Inhoud vak

Part I (6 ECTS): Electron density, Hole functions, Electron density as basic variable instead of the wavefunction, Hohenberg-Kohn theorems, Kohn-Sham approach, Approximate exchange-correlation functionals, Basic machinery of DFT computer programs. Part II (6 ECTS): Molecular structure, Vibrational frequencies, Thermochemistry, Hydrogen bonds, Kohn-Sham molecular orbital (MO) model of the electronic structure and chemical bond, Chemical reactivity.

Onderwijsvorm

zelfstudie

Toetsvorm

Oral examination.

Literatuur

Parts of: (a) W. Koch en M. C. Holthausen, A Chemist's Guide to Density Functional Theory; Sec. Ed.; Wiley-VCH Verlag: Weinheim, 2000.; (b) F.M. Bickelhaupt, E.J. Baerends, Kohn-Sham Density Functional Theory: Predicting and Understanding Chemistry, in: Rev. Comput. Chem.; K.B. Lipkowitz, D.B. Boyd, Eds.; Wiley-VCH: New York, Vol. 15.

Doelgroep

mCh, mPhar

Overige informatie

Period: in consultation with the lecturer

Disability and Development

Vakcode	AM_470588 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. W.H. van Brakel MD
Docent(en)	H.B. Miranda Galarza MSc, F.M. Budge MSc
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

Doel vak

- To develop an understanding of disability and the issues faced by people with disabilities
- To develop knowledge and skills for disability research, policy development and management related to disability, rehabilitation and

development

- To acquire insight into the epidemiology of disability, with separate attention for important determinants like gender, poverty and HIV/AIDS
- To learn how to use relevant models of disability and the conceptual framework of the International Classification of Functioning, Disability and Health (ICF)
- To understand the importance of human rights in relation to disability and to learn to use the UN Convention for the Rights of Persons with Disabilities for advocacy and other rights-based interventions
- To acquire skills and knowledge in measurement and research methods relevant to disability
- To understand the importance of inter-sectoral collaboration
- To gain insight in participatory approaches

Inhoud vak

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. The realisation that the Millennium Development Goals cannot be met without addressing the needs of people with disability has brought a new impetus to the field of disability and development. Another major recent development was the adoption of the UN Convention on the Rights of Persons with Disabilities in December 2006. 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.

This rapidly increasing interest in disability, as a development and human rights issue, means that this emerging field of study will rapidly gain in importance and should become part of any serious higher education programme in social and development studies and in international public health. The course will cover essential knowledge and skills in this subject.

The 4-week 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,
- Measurement of disability,
- Disability-relevant research methods, including survey methods, examples of disability research
- An introduction to community-based rehabilitation.

Onderwijsvorm

Problem-based learning supported by lectures and an article writing assignment

The programme comprises 168 study hours, divided as follows:

- Lectures: 36
- Tutorial groups: 18
- Other events: 12
- Self-study: 102

Toetsvorm

Participation in tutorial groups: 10%

Take-home examination, submitted electronically: 60%

Scientific article: 30%

Literatuur

See e-reader

Vereiste voorkennis

Bachelor-level education; any subject

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

Jacqueline Kool, MA

Lydia la Rivière-Zijdel, MA

Electrochemistry and Bioelectrochemistry

Vakcode	X_432798 ()
Periode	Semester 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	500

Doel vak

voor meer informatie neem contact op met Prof. Lies

Bouwman@lic.leidenuniv.nl

Inhoud vak

<https://masters.lic.leidenuniv.nl/courses/2013-2014/ebe>

English Academic Course

Vakcode	X_437028 ()
Periode	Periode 2+3, Periode 5+6

Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/web/uva/sgs/nl/c/11181.html>

Doelgroep

mCh, mPhys

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Entrepreneurship in Health and Life Sciences

Vakcode	AM_470575 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. E. Masurel
Docent(en)	prof. dr. E. Masurel
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

Doel vak

Students obtain knowledge about and insight in the relevance of entrepreneurship and innovation for their own discipline. Students learn about the processes which are involved in the recognition and exploitation of opportunities, about creating economic and social value and about the nature and role of networks. In addition students gain knowledge of different entrepreneurial processes and the importance of valorisation of (bio)medical findings and business ideas for a knowledge-based economy.

Learning objectives

- Become familiar with an innovation outlook on entrepreneurship.
- Become aware that value-adding opportunities not only contain financial aspects but also social and ecological aspects (sustainable entrepreneurship).
- Gain the ability to write a feasibility plan on how to bring an innovation to the market.
- Obtain knowledge about and insight in the relevance of entrepreneurship and innovation for science disciplines.
- Learn about the processes which are involved in the recognition and exploitation of opportunities, about creating economic and social value and about the nature and role of networks.
- Gain knowledge of different entrepreneurial processes and the importance of valorisation of (bio)medical findings and business ideas for a knowledge-based economy.

Inhoud vak

This course consists of two tracks: a theoretical track and a practical track. These two tracks run simultaneously. In the first track you learn about entrepreneurship. Answers are found on questions such as: What is entrepreneurship? What defines an entrepreneur? What are entrepreneurial opportunities? What is the role of innovation in entrepreneurship? What is corporate social responsibility (CSR)? How can we judge the feasibility of entrepreneurial ambitions? Simultaneously you work on an assignment (second track). In the first week of this course you search for an innovation in your own discipline (product, service, process etc). Your choice must be approved by the lecturers. The first part of the assignment consists of a description of the innovation which you have chosen. Subsequently, you make a SWOT-analysis and a network analysis of the innovation. Also a paragraph on CSR aspect should be added. The final part of the assignment is your own feasibility study: how would you valorize the innovation to the market?

Onderwijsvorm

Lectures, personal meetings. Each week scientific lectures are given (on entrepreneurship, SWOT-analysis, innovation, CSR etc). These lectures are both the basis for the exam and for the assignment. Each week the student has a short meeting with his / her supervisor, in order to discuss the progress of his/her assignment.

Schedule and study time

The total study time is 160 hours.

Tuition methods include lectures, consultancies and self-study.

The different elements have the following study time:

- lectures 18 hours
- consultancies 8 hours
- writing feasibility plan 65 hours
- self study 65 hours
- examination 4 hours

Toetsvorm

You conduct a written exam and an assignment. Both the exam and the assignment determine 50% of the grade. The exam and the assignment must be of sufficient quality.

Literatuur

To be announced on Blackboard

Doelgroep

Optional course for Master students Management, Policy Analysis and Entrepreneurship in Health and Life sciences (MPA), M-differentiation of the Health, Life & Natural Sciences, Biology, Biomedical Sciences.

Overige informatie

Attendance is compulsory. Prior knowledge: Business Management in Health and Life sciences. For information and application:

anna.van.luijn@falw.vu.nl

Environmental Chemistry

Vakcode	X_437004 (437004)
Periode	Periode 1
Credits	6.0

Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/nl/c/14420.html>

Doelgroep

mCh-AS, mCh-MDSC, mCh-SES, mPhys-SES

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Ethics and Academic skills

Vakcode	X_432726 ()
Periode	Ac. Jaar (september)
Credits	2.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	400

Doel vak

In order to plan this course please contact your mastercoordinator for details

Ethics and Academic skills

Vakcode	X_432725 ()
Periode	Ac. Jaar (september)
Credits	1.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	400

Doel vak

In order to plan this course please contact your mastercoordinator for details

Ethics and Academic Skills

Vakcode	X_437556 (437556)
Periode	Ac. Jaar (september)
Credits	6.0
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru

Niveau	400
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Doel vak

In order to plan this course please contact your mastercoordinator for details

Ethics and Academic Skills

Vakcode	X_432517 (432517)
Periode	Ac. Jaar (september)
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	400

Doel vak

In order to plan this course please contact your mastercoordinator for details

Inhoud vak

Period: Variable

Ethics in Life Sciences

Vakcode	AM_470707 ()
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. J.T. de Cock Buning
Docent(en)	prof. dr. J.T. de Cock Buning, dr. J.F.H. Kupper
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak

To provide a toolbox of ethical instruments to analyze properly moral problems related (to one's own) research in the life sciences

- To acquire conceptual knowledge of the central concepts in applied philosophy and professional ethics
- To challenge an ethical reflection on one owns life science specialization and to open it for an impartial and constructive discussion
- To exercise a team based project to enter prepare and execute 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

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 small group training project, an ethical dialogue is prepared and executed together 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
- Presentation : 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%) has to be passed
- written and verbal execution of the ethical dialogue (40%)

Literatuur

Available on Blackboard

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, part of the workgroups are in Dutch. All presentations and plenary discussions in English. Attendance is compulsory.

Ethics in Public Health

Vakcode	AM_470805 ()
Periode	Ac. Jaar (september), Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. M.J.P.A. Janssens
Docent(en)	dr. M.J.P.A. Janssens
Lesmethode(n)	Hoorcollege

Doel vak

Analysing and understanding the ethical aspects of public health research, enabling students to make responsible decisions in research

Inhoud vak

Recent case studies will be analyzed concerning topics as life style enhancement, reproductive technologies, health care research, and preventive health care. Three sessions are dedicated to student presentations which will be discussed in plenary sessions. In three other sessions, the lecturer will introduce and discuss actual developments in the ethics of public health:

reproductive technologies;
prevention and life style enhancement;
medical research involving human subjects. Also, throughout the course, attention will be paid to the practical relevance of fundamental ethical-philosophical questions.

Onderwijsvorm

Lectures, workgroups, assignments

Toetsvorm

Essay and active participation

Doelgroep

Compulsory course for master students in Lifestyle and Chronic Disorders

Expertise and coördination in Knowledge Intensive Firms

Vakcode	X_432738 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Docent(en)	dr. H.C. Bruns
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

This course provides a theoretical framework for understanding how firms coordinate diverse expertise. Students become familiar with the most recent insights and questions in the literature on expertise and coordination. They learn how to recognize and analyze problems of coordination and to design solutions for work across diverse expert domains. They also practice their academic writing and analytical reasoning skills.

Inhoud vak

One of the prime organizational challenges is to coordinate across multiple diverse specializations. In organizations, work is distributed across departments, and employees become specialized in their job. Research is organized in disciplines, and scientists become expert at specific questions. While experts become very efficient in their own domain, they also become entrenched in their viewpoints and more unwilling and unable to reach across disciplinary

and departmental divisions. Yet, we know that breakthrough knowledge and innovation arises at the interface of expert domains. Therefore, organizations have to integrate diverse specializations to fully leverage expertise. This course draws from literature such as expert knowledge, decision-making, and innovation to explore the fundamental coordination problem of the firm.

Onderwijsvorm

This course consists of six interactive seminar sessions and three tutorials. Students have to prepare assigned readings for each session.

Toetsvorm

Class participation (30%) and final written assignment (70%)

Literatuur

selected articles

Vereiste voorkennis

Technology & Innovation (Prof. Bossink)

Doelgroep

mCh-SBI, mPhys-SBI

Overige informatie

Enrollment is capped at 40 students.

Fundamentals of Analytical Sciences

Vakcode	X_435059 (435059)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

To give insight in the procedures used in analytical chemistry, from sampling strategies to method validation and statistical approaches required for data interpretation.

Inhoud vak

In this course the general aspect of analytical methods, techniques and instrumentation will be discussed. The complete analytical procedure, from sampling to data handling and interpretation will be covered. Parameters to describe the quality of analytical methods will be defined. Principles of modern analytical instrumentation and data acquisition techniques will be discussed. Attention will also be given to validation procedures and to quality control in analytical laboratories. An important part of the course is devoted to basic statistical techniques as used routinely in laboratories.

Onderwijsvorm

Lectures, workgroups and PC-use sessions.

Toetsvorm

Written examination.

Literatuur

Hands-outs (electronically available) and course syllabus.

Vereiste voorkennis

Basic knowledge of analytical chemistry.

Doelgroep

mCh-AS

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Green Chemistry

Vakcode	X_430557 (430557)
Periode	Periode 1
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. K. Lammertsma
Lesmethode(n)	Hoorcollege
Niveau	300

Doel vak

Acquiring knowledge of the general ideas of green chemistry and their importance in the development of sustainable chemical technology.

Inhoud vak

Sustainability and green chemistry focuses on 12 principles. Aspects like atom efficiency, chemical waste and manufacturing processes will be highlighted as well as catalysis, solvents, biomass, solar energy, alternative feedstock, energy consumption, and safety, all in the context of chemical sustainability. Important ingredients in the course are student presentations on these topics, assignments on selected topics, and an evaluation of the merits of the biobased economy.

Onderwijsvorm

Lectures, Group/Individual Assignments and Presentations

Toetsvorm

Written/oral examination, assignments, reports

Literatuur

Lancaster, M., Green Chemistry: An Introductory text. Cambridge: RSC (ISBN 0854046208).

The Dutch rapport "Naar groene chemie en groene materialen" - Kennis- en innovatieagenda voor de biobased economy, 2011 – or a similar English rapport.

Doelgroep

mCh-SBI, mPhys-SBI, mCh-SES, mPhys-SES

Health, Globalisation and Human Rights

Vakcode	AM_470818 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. C.W.M. Dedding
Docent(en)	prof. dr. P. Heutink, dr. M.G.B.C. Bertens
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

Doel vak

To acquire knowledge and understanding of the relationship between global public health issues and the global protection of human rights
To analyse how violations of human rights affect health and well-being
To learn methods of human rights assessment in relation to innovations in health technology
To acquire insights into the cultural dimensions of human rights values in relation to public health

Inhoud vak

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: 10 hours

Group project, simulation and exam: 8 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

Doelgroep

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

Overige informatie

Guest lectures and guest organisations (under reservation):

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

Heterogeneous Catalysis

Vakcode	X_428013 ()
Periode	Periode 3
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Doel vak

<http://studiegids.uva.nl/xmlpages/page/2014-2015/zoek-vak/vak/14343>

High-Throughput Screening

Vakcode	X_435047 (435047)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J. Kool
Docent(en)	dr. J. Kool
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

In depth study on the bio-analytical and screening aspects related to target and lead discovery of drugs.

Inhoud vak

During this course the potential of modern analytical, bioassaying and immunological techniques used in target- and lead-discovery will be

discussed. The emphasis will be on the treatment of advanced sample preparation techniques (i.e. automation, high-throughput / combinatorial chemistry, miniaturization), advanced separation methods and bio-specific assays. These techniques will be discussed in relation with pharmacokinetic studies and the applicability of the various techniques within the various stages of ADME. Finally, the biological-effect monitoring, exposure monitoring, pharmacokinetics and plasma/serum analysis will be dealt with.

Onderwijsvorm

Lectures and tutorials.

Toetsvorm

Oral examination, presentation and assignment.

Literatuur

Hand-outs (electronically available).

Vereiste voorkennis

Basic knowledge of biochemistry, separation sciences, spectroscopy and mass spectrometry.

Doelgroep

mCh-AS, mCh-MDSC, mDDS-BCCA, mDDS-DDTF

Homogeneous Catalysis

Vakcode	X_435668 (435668)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	400

Inhoud vak

The course description is available at

<http://studiegids.uva.nl/web/uva/sgs/en/c/205.html>

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Innovation in Medical Technology to Improve the Health Care System

Vakcode	X_430602 ()
Periode	Periode 6
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. ir. T.J.C. Faes
Docent(en)	dr. ir. T.J.C. Faes
Lesmethode(n)	Hoorcollege, Werkcollege

Niveau	500
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Doel vak

In innovative development of medical devices the Dutch Health Care System is the natural environment where medical devices need to demonstrate their quality. The aim of the course is to acquire knowledge of the Dutch Health Care System from the perspective of medical devices.

Inhoud vak

To be successful in innovation of medical devices one needs knowledge of the 1) Dutch Health Care System, 2) use and users of medical devices, 3) standards and legislation for medical devices, 4) measures of quality of medical devices, and 5) best practice in assurance of quality and safety of medical devices.

Onderwijsvorm

Lectures and working groups.

Toetsvorm

Short written report & oral presentation on a specific medical device.

Literatuur

Reader

Internship Biomolecular Analysis and Spectroscopy

Vakcode	X_432525 (432525)
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Internship Biomolecular Analysis and Spectroscopy

Vakcode	X_432523 (432523)
Periode	Ac. Jaar (september)

Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Internship Biomolecular Analysis and Spectroscopy

Vakcode	X_432524 (432524)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex sample using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Internship Communication Specialisation

Vakcode	AM_471148 ()
Periode	Ac. Jaar (september)
Credits	30.0

Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. R.J. van Belle-van den Berg
Niveau	600

Internship Organic Chemistry

Vakcode	X_432529 (432529)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	500

Doel vak

To obtain experience in doing scientific research in an industrial setting.

Inhoud vak

During a traineeship, a student actively participates in a research project within a company

Toetsvorm

presentation, report and practical work

Overige informatie

Period: variable

Internship Organic Chemistry

Vakcode	X_432530 (432530)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	500

Doel vak

To obtain experience in doing scientific research in an industrial setting.

Inhoud vak

during a traineeship, a student actively participates in a research project within a company

Toetsvorm

presentation, report and practical work

Overige informatie

Period: variable

Internship Organic Chemistry

Vakcode	X_432531 (432531)
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	500

Doel vak

during a traineeship, a student actively participates in a research project within a company

Inhoud vak

during a traineeship, a student actively participates in a research project within a company

Toetsvorm

presentation, report and practical work

Overige informatie

Period: variable

Internship Societal Specialisation

Vakcode	AM_471147 ()
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. R.J. van Belle-van den Berg
Niveau	600

Internship Theoretical Chemistry

Vakcode	X_432532 (432532)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	500

Doel vak

To obtain experience in theoretical chemistry techniques and doing scientific research.

Toetsvorm

presentation, report, practical work

Overige informatie

Period: variable

Internship Theoretical Chemistry

Vakcode	X_432533 (432533)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	500

Doel vak

To obtain experience in theoretical chemistry techniques and doing scientific research.

Toetsvorm

presentation, report and practical work

Overige informatie

Period: variable

Internship Theoretical Chemistry

Vakcode	X_432534 (432534)
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	500

Doel vak

To obtain experience in theoretical chemistry techniques and doing scientific research.

Toetsvorm

presentation, report, practical work

Overige informatie

Period: variable

Lasers and Quantum Optics

Vakcode	X_422539 (422539)
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Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. W. Vassen
Docent(en)	dr. W. Vassen
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

To provide insight into the theory of light, light-matter interactions and lasers.

Inhoud vak

- Classical Optics (Maxwell's equations, diffraction and interference)
- Nonlinear Optics
- First- and second order coherence
- Radiative transitions in atoms, Einstein coefficients, transition rates, width of spectral lines
- Lasers
- Photon statistics, shot noise
- Photon antibunching
- Coherent states
- Photon number states
- Atom-photon interactions; density matrix, Rabi oscillations, Bloch sphere
- Laser cooling and trapping

Onderwijsvorm

Lectures, exercises.

Toetsvorm

Written exam.

Literatuur

Mark Fox, Quantum Optics (Oxford university Press 2006).

Doelgroep

mMNS-PoL, mPhys-AMEP, mPhys-PLH, mCh-MSP

Literature Study and Research Proposal Chemistry - AS - MSP

Vakcode	X_432800 ()
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the director of this programme prof Romano VA Orru (r.v.a.orr@vu.nl)

Literature Study and Research Proposal Chemistry, MDSC - AS

Vakcode	X_432801 ()
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the director of this programme prof Romano VA Orru
(r.v.a.orr@vu.nl)

Literature Study and Research Proposal Chemistry, MDSC - MSP

Vakcode	X_432802 ()
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the director of this programme prof Romano VA Orru
(r.v.a.orr@vu.nl)

Literature Thesis and Colloquium Chemistry - Organic Chemistry

Vakcode	X_432583 (432583)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slotweg
Niveau	600

Inhoud vak

the student can choose from a wide variety of topics in main group chemistry, organometallic chemistry and catalysis

Toetsvorm

report and presentation

Doelgroep

mCH-MDSC

Literature Thesis and Colloquium Chemistry - Physical Chemistry

Vakcode	X_432582 (432582)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Contact master coordinator: C.FonsecaGuerra@vu.nl

Literature Thesis and Colloquium Chemistry - Theoretical Chemistry

Vakcode	X_432584 (432584)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Contact master coordinator: C.FonsecaGuerra@vu.nl

Literature thesis and Colloquium Chemistry Molecular Simulation and Photonics

Vakcode	X_432679 (432679)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Period: variable

Contact master coordinator: C.FonsecaGuerra@vu.nl

Literature Thesis SES

Vakcode	X_432785 ()
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slotweg
Niveau	600

Toetsvorm

report and presentation

Doelgroep

mCH-SES, mPhys-SES

Major research Project Chemistry, AS - MSP

Vakcode	X_432803 ()
Periode	Ac. Jaar (september)
Credits	42.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the director of this programme prof Romano VA Orru
(r.v.a.orr@vu.nl)

Major research Project Chemistry, MDSC - AS

Vakcode	X_432804 ()
Periode	Ac. Jaar (september)
Credits	42.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the director of this programme prof Romano VA Orru
(r.v.a.orr@vu.nl)

Major research Project Chemistry, MDSC - MSP

Vakcode	X_432805 ()
Periode	Ac. Jaar (september)
Credits	42.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the director of this programme prof Romano VA Orru
(r.v.a.orr@vu.nl)

Management of Sustainable Innovation

Vakcode	X_432739 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. R.J.A. Klein Woolthuis
Docent(en)	dr. R.J.A. Klein Woolthuis
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

Sustainable innovation is crucial to counter the challenges our societies are facing: energy without CO2 emissions, access to water and food, reliable banks, affordable elderly care, climate resilient cities.

All fields require a structural rethink of existing systems, and introduction of new products, services, and structures to make a sustainable future possible.

This course has the objective to:

1. make students aware of the importance of a deep understanding of sustainable innovations for future business professionals
2. increase the understanding of how companies, public and government are interrelated in addressing and solving sustainability issues
3. explain how sustainable innovation can hence be managed on and across team, company and system levels

This last learning goal has to be made explicit in the assignment of assessing the sustainability reports of companies and making concrete proposals for improving their sustainability performance.

Inhoud vak

A paradigm shift is happening at this moment. Where over the past decades firms were focused on creating shareholder value, the creation of 'shared value' is now gaining terrain: leading management scholars like Peter Senge and Michael Porter are describing how companies from Nike to Tesco create value by including all stakeholders in their firm's strategies. New strategies are centred around respect for the environment, employees, and other stakeholders as to create positive self-reinforcing cycles of value creation. This requires fundamentally different management models in which collaboration with a wide array of stakeholders in key.

Sustainability is hence no longer a story of wishful thinking or environmental activists, it is at the core of corporate strategy and decision making. Moreover, growth in sustainable markets as renewable energy, organic food, and e.g. fair trade products is double digit year after year. Management of sustainable innovation should hence be in the forefront for every business scholar.

The course will start with explaining the importance of sustainability issues and of sustainable innovations.

Second the course will deeply go into theory on

1. why companies should become more sustainable
2. how companies can do so

Students will be required to develop a deep understanding of how changing norms and values in our society, change the way business is done. They will be required to learn to see our economies as systems rooted in belief systems, and that companies have to have a systemic understanding of our economies and their role within them. This leads to a fundamentally different view on the roles of companies in our societies, and an important role for the future managers of sustainable innovation to strive towards this new reality.

Onderwijsvorm

Lectures are given by:

- Rosalinde Klein Woolthuis (Feweb), coordinator
- Bart Bossink (FEW)
- Several guest lecturers

Two Lectures a week will be given.

Lectures on the first day will discuss theory. Prior reading of the literature is a requirement to participate in the classes.

Lectures on the second day will alternate between a guest lecture and discussion of the assignment.

Toetsvorm

Exam (70%), Assignment (30%); Average grade needs to be equal to or higher than 5.5 to pass for the course.

Literatuur

Bossink, B.A.G. (2012) Eco-innovation and Sustainability Management. New York: Routledge, pp. 182.

Senge, Peter M., Bryan Smith, Nina Kruschwitz, Joe Laur, Sara Schley, 2008, The Necessary Revolution: How Individuals and Organizations Are Working Together to Create a Sustainable World, Doubleday.

Several articles which will be placed on Blackboard.

Managing Science and Technology in Society

Vakcode	AM_470586 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. T.J. Schuitmaker-Warnaar
Docent(en)	dr. B.J. Regeer, dr. J.F.H. Kupper, dr. C.W.M. Dedding, dr. T.J. Schuitmaker-Warnaar, prof. dr. J.E.W. Broerse
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	600

Doel vak

In this course, students:

- acquire knowledge and understanding of philosophical and social

science theories on science and technology development.

- gain insight into the mutual shaping of science & technology and society.
- acquire knowledge and understanding of the basic concepts and issues in the field of science and technology studies.
- acquire knowledge and understanding of the approach of constructive technology assessment.
- acquire knowledge and understanding of interactive methods for directing and guiding developments in science and technology.
- gain insight into the need for democratization of science and technology.
- learn to recognize and operate the central STS concepts in their own life worlds.
- learn to communicate verbally and in scientific writing about their knowledge and understanding and to critically reflect on that.

Inhoud vak

The 'Managing Science and Technology in Society' course offers an advanced introduction into the academic field of 'Science Technology & Society Studies'.

As an MPA student you are trained to operate at the interface of your natural science discipline and society, thereby making a contribution to answering the complex social problems arising in these areas. At the dawn of the 21st century, technology and science have an enormous potential for transforming life on earth. At the same time, the dimensions of our human culture shape the directions in which science and technology develop. The production of scientific knowledge and technological artefacts can solve some of our problems, but at the same time they give rise to new problems. During this course you will study the interactions of science and technology with society, and the various ways in which they mutually shape one another. These interactions invoke a lot of questions. Should we embrace genetically modified food? How do new human reproductive technologies interfere with the way we deal with sexuality and social responsibilities?

In this course you will get acquainted with a conceptual framework to critically assess these kinds of questions. It aims at understanding the intertwinement of science, technology and society, and the importance of a broad concern with these interactions, in order to shape our future in the way that we want it.

Onderwijsvorm

'Managing Science and Technology in Society' is a fulltime course of four weeks (6 ECTS). The course schedule is available on blackboard. The total study time is 168 hours. Tuition methods include lectures, work groups, a group project and self-study.

The different elements have the following study time:

- lectures 22 hours
- work groups 12 hours
- group project 32 hours
- self study (including mini-essays) 88 hours
- examination (take-home) 14 hours

Toetsvorm

The examination consists of:

- Mini-essay 1 (20%)
- Mini-essay 2 (20%)
- Final essay (take-home essay exam) (40%)
- SCOB-project (20%)

Literatuur

The literature of this course consists of selected chapters from the book *An introduction to science and technology studies*, Sergio Sismondo 2010, which can be purchased at the VU book shop. Complementary articles are provided for via blackboard, august 2013.

Doelgroep

Compulsory course within the second year of the Master Management, Policy Analysis and Entrepreneurship for the Health and Life Sciences (MPA)

Overige informatie

Guest Lecturers:

- Wouter Mensink (SCP, UvA)
- Harro van Lente (UU)
- Steven Flipse (TU Delft, De Proeffabriek)

More information: T.J.Schuitmaker@vu.nl

Mass Spectrometry

Vakcode	X_435604 (435604)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2014-2015/zoek-vak/vak/229>

Toetsvorm

Written examination.

Vereiste voorkennis

Basic knowledge of mass spectrometry, organic chemistry and biochemistry.

Doelgroep

mCh-AS, mDDS-BCCA, mDDS-DDTF, mDDS-C-var, mDDS-E-var, mDDS-M-var

Overige informatie

Registration via <https://www.sis.uva.nl> is mandatory 4 weeks before the start of the Semester.

Master Research Project Biomol. Analysis and Spectr.

Vakcode	X_432594 (432594)
Periode	Ac. Jaar (september)
Credits	42.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman

Niveau	600
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Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex sample using LC-MS and bio-assay_MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Master Research Project Biomol. Analysis and Spectr. ext

Vakcode	X_432595 (432595)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	600

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh.

Overige informatie

For further information please contact Henk Lingeman.

Master Research Project Biomol. Analysis and Spectr. ext

Vakcode	X_432637 (432637)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	600

Doel vak

To acquire knowledge and insight into the role and objective of drug, bioanalytical and clinical development processes in complex sample using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh.

Overige informatie

For further information please contact Henk Lingeman.

Master Research Project Biomol. Analysis and Spectr. ext

Vakcode	X_432680 (432680)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	600

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS base approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Master Research Project Chemistry - Education Variant

Vakcode	X_432587 (432587)
Periode	Ac. Jaar (september)
Credits	36.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the mastercoordinator of your track

Master Research Project Chemistry - Molecular Simulation and Photonics

Vakcode	X_432681 (432681)
Periode	Ac. Jaar (september)
Credits	42.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Period: variable

Contact master coordinator: C.FonsecaGuerra@vu.nl

Master Research Project Chemistry - Organic Chemistry

Vakcode	X_432598 (432598)
Periode	Ac. Jaar (september)
Credits	42.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	600

Doel vak

To obtain experience in organic chemistry techniques and doing scientific research.

Inhoud vak

the student can choose from a wide variety of research projects in main group chemistry, organometallic chemistry and catalysis

Toetsvorm

presentation, report, practical work

Doelgroep

mCH-MDSC

Master Research Project Chemistry - Organic Chemistry - Extension

Vakcode	X_432599 (432599)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg

Niveau	600
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Doel vak

To obtain experience in organic chemistry techniques and doing scientific research.

Inhoud vak

the student can choose from a wide variety of research projects in main group chemistry, organometallic chemistry and catalysis

Toetsvorm

presentation, report and practical work

Doelgroep

mCH-MDSC

Master Research Project Chemistry - Organic Chemistry - Extension

Vakcode	X_432618 (432618)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	600

Master Research Project Chemistry - Organic Chemistry - Extension

Vakcode	X_432685 (432685)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	600

Overige informatie

Period: variable

Master Research Project Chemistry - Society Oriented Variant

Vakcode	X_432588 (432588)
Periode	Ac. Jaar (september)
Credits	36.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the mastercoordinator of your track

Master Research Project Chemistry Molecular Simulation and Photonics - Extension

Vakcode	X_432682 (432682)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Period: variable

Contact master coordinator: C.FonsecaGuerra@vu.nl

Master Research Project Chemistry Molecular Simulation and Photonics - Extension

Vakcode	X_432683 (432683)
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Period: variable

Contact master coordinator: C.FonsecaGuerra@vu.nl

Master Research Project Chemistry Molecular Simulation and Photonics - Extension

Vakcode	X_432684 (432684)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	600

Overige informatie

Period: variable

Contact master coordinator: C.FonsecaGuerra@vu.nl

Master Research Project Communication Variant

Vakcode	X_432586 (432586)
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Periode	Ac. Jaar (september)
Credits	36.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	600

Doel vak

please contact the mastercoordinator of your track

Minor research project Analytical Sciences

Vakcode	X_437031 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	500

Doel vak

please contact the director of this programme prof Romano VA Orru
r.v.a.orr@vu.nl

Overige informatie

Attendance at HRSCM symposium is obligatory

Minor research project Biological Chemistry

Vakcode	X_437032 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Doel vak

please contact the director of this programme prof Romano VA Orru
r.v.a.orr@vu.nl

Overige informatie

Attendance at HRSCM symposium is obligatory

Minor Research Project Biomol. Analysis and Spectr.

Vakcode	X_432651 (432651)
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels

Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Minor Research Project Biomol. Analysis and Spectr.

Vakcode	X_432649 (432649)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Minor Research Project Biomol. Analysis and Spectr.

Vakcode	X_432650 (432650)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen

Coördinator	dr. H. Lingeman
Niveau	500

Doel vak

To acquire knowledge and insight into the role and objective of drug, bio-analytical and clinical development processes in complex samples using LC-MS and bio-assay-MS based approaches.

Inhoud vak

This project aims to provide the student with a theoretical and practical understanding of the issues involved in the design, conduct, analyses and interpretation of complex analytical studies.

Doelgroep

mCh

Overige informatie

For further information please contact Henk Lingeman.

Minor research project Design and Synthesis

Vakcode	X_437033 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Doel vak

please contact the director of this programme prof Romano VA Orru (r.v.a.orr@vu.nl)

Overige informatie

Attendance at HRSCM symposium is obligatory

Minor research project Molecular Simulation and Photonics

Vakcode	X_437035 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	500

Doel vak

please contact the director of this programme prof Romano VA Orru (r.v.a.orr@vu.nl)

Overige informatie

Attendance at HRSCM symposium is obligatory

Minor Research Project Organic Chemistry

Vakcode	X_432640 (432640)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	500

Doel vak

To obtain experience in organic chemistry techniques and doing scientific research.

Inhoud vak

the student can choose from a wide variety of research projects in main group chemistry, organometallic chemistry and catalysis

Toetsvorm

presentation, report and practical work

Minor Research Project Organic Chemistry

Vakcode	X_432641 (432641)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	500

Doel vak

To obtain experience in organic chemistry techniques and doing scientific research.

Inhoud vak

the student can choose from a wide variety of research projects in main group chemistry, organometallic chemistry and catalysis

Toetsvorm

presentation, report and practical work

Minor Research Project Organic Chemistry

Vakcode	X_432642 (432642)
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg

Niveau	500
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Doel vak

To obtain experience in organic chemistry techniques and doing scientific research.

Minor research project Physical and Theoretical Chemistry

Vakcode	X_437036 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Doel vak

voor informatie neem contact op met Prof. Lies Bouwman@lic.leidenuniv.nl

Overige informatie

Attendance at HRSCM symposium is obligatory

Minor Research Project Theoretical Chemistry

Vakcode	X_432648 (432648)
Periode	Ac. Jaar (september)
Credits	30.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	500

Aanbevolen voorkennis

Computational (Pharmaco) Chemistry

Doelgroep

mCH

Overige informatie

Period: variable

Minor Research Project Theoretical Chemistry

Vakcode	X_432646 (432646)
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	500

Aanbevolen voorkennis

Computational (Pharmaco) Chemistry

Doelgroep

Master Chemistry and DDS

Overige informatie

Period: variable

Minor Research Project Theoretical Chemistry

Vakcode	X_432647 (432647)
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. C. Fonseca Guerra
Niveau	500

Aanbevolen voorkennis

Computational (Pharmaco) Chemistry

Doelgroep

mCH

Overige informatie

Period: variable

Modelling and Simulation for Life Sciences

Vakcode	X_432732 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. I.J.P. de Esch
Docent(en)	prof. dr. I.J.P. de Esch, dr. C. de Graaf
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

To gain insight in the iterative aspects of (rational) drug design that enable efficient development of new medicines.

Inhoud vak

In the post-genome era, an unprecedented understanding of the processes that are involved in health and disease are becoming available. At the same time, an overwhelming amount of data describing the molecular characteristics of individual drug targets is becoming available. For example, the structure of many proteins is being determined using X-ray analysis and NMR techniques. These developments allow for the more

efficient development of better and safer medicines. In this project, several techniques that can help to translate this data into novel ligands will be discussed and applied. Specific topics include crystal structure analysis, the building of homology models, docking of ligands, calculating binding free energy and affinity of ligands for the protein, de novo structure generation, and pharmacophore modeling. These techniques generate ideas for novel compounds. Because a design that cannot be synthesized is by definition a useless design, the synthetic feasibility is a key and integral part of the design process. Therefore, it is important to be able to define a synthetic pathway for the preparation of the designed compounds. An online retrosynthetic demonstration with a search engine sets the stage for a case study. For a specific design, a versatile and robust synthesis route has to be defined, and if needed, the design will be fine-tuned. This illustrates an iterative cycle between different disciplines that is very common throughout the drug development process. Students will learn to appreciate the opportunities and difficulties in early drug discovery.

Onderwijsvorm

Project basis: including lectures, tutorials, self study, assignments and group-work on a case-study.

Toetsvorm

Written examination, preparation of a report.

Vereiste voorkennis

Bachelor SBI, Bachelor Pharmaceutical Sciences, Medical Natural Science, Chemistry, Portal course MSc Biomolecular Science, Signal Transduction in Health and Disease, or equivalent

Doelgroep

mCh-SBI, mPhys-SBI

Modern Quantum Chemistry

Vakcode	X_432807 ()
Periode	Semester 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	500

Doel vak

For information please contact Prof. Lies Bouwman@lic.leidenuniv.nl

Inhoud vak

https://studiegids.leidenuniv.nl/courses/show/35225/modern_quantum_chemistry

Molecular Computational Chemistry

Vakcode	X_435666 (435666)
Periode	Periode 5

Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. F.M. Bickelhaupt
Docent(en)	prof. dr. F.M. Bickelhaupt, dr. C. Fonseca Guerra
Lesmethode(n)	Hoorcollege, Practicum
Niveau	400

Doel vak

To learn the background of modern computational methods and in particular their application in computer-assisted solving of chemical problems.

Inhoud vak

Computational chemistry plays a central role in modern chemical research. Various molecular properties can be computed with chemical accuracy. In this way, information can be obtained about quantities that are experimentally inaccessible yet indispensable for molecular design and synthesis. One of the main objectives of this course is to learn current state-of-the-art quantum chemical methods and computer software. This course deals with ab initio theory (among others, Hartree-Fock and Møller-Plesset theory) and modern density functional theory (DFT).

These methods are applied in a computer lab in order to get acquainted with important modeling skills, such as, geometry optimization (molecular structure, stability, and thermochemistry) and the exploration of potential energy surfaces (kinetics, reaction mechanism).

A second main objective is to develop skills for casting an (experimental) chemical problem into a computational approach leading to a practical solution. Furthermore, the course provides an introduction into creating physical models that help interpreting experimental as well as computational data. An important issue in this course is the unifying power of computational chemistry: the same theoretical models serve as tools for solving very diverse problems from all branches of chemistry, ranging from organic chemistry and catalysis via biochemistry till pharmaceutical sciences.

Onderwijsvorm

Theory classes and hands-on computer lab as well as short research project.

Toetsvorm

Presentation of research project for peers and supervisors.

Literatuur

Cramer, C.J. Essentials of Computational Chemistry: Theories and Models, 2nd Ed., Chichester: Wiley, 2004.

Aanbevolen voorkennis

BSc Scheikunde of BSc Farmaceutische Wetenschappen

Doelgroep

mCh, mDDS

Molecular Photodynamics

Vakcode	X_432701 (432701)
Periode	Ac. Jaar (september)
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. M.H.M. Janssen
Niveau	500

Doel vak

The objective of this course is to make students familiar with detailed chemical dynamics in chemical processes. In particular the importance of photochemical bondbreaking and atmospheric (troposphere and stratosphere) photochemistry will be presented. The role of fundamental physical forces that determine the dynamics and energetics of chemical bondbreaking will be discussed. The students will learn about the latest state-of-the-art experimental technology to follow a chemical reaction in real time. In particular lasers and their phenomenal potential in chemical research will be discussed.

Inhoud vak

We will discuss the role of forces and the Born-Oppenheimer potential in chemical bondbreaking. Photochemistry, energetics and angular properties of molecules and chemical reactions will be presented. Photons, light, lasers and their potential for the study of chemical reactions and applications in various areas of chemistry will be discussed. Laser spectroscopy, atmospheric chemistry, global warming and the role of greenhouse gasses will be discussed. State-of-the-art developments in physical chemistry like the mass-spectrometric detection of chiral molecules by femtosecond laser technology and three-dimensional particle imaging will be presented.

Toetsvorm

To be determined in consultation with the student.

Literatuur

To be determined in consultation with the lecturer.

Doelgroep

Students interested in state-of-the-art developments in physical chemistry and laser spectroscopy.

Overige informatie

Period: in consultation with the lecturer.

Molecular Photodynamics

Vakcode	X_432702 (432702)
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. M.H.M. Janssen
Niveau	500

Doel vak

The objective of this course is to make students familiar with detailed chemical dynamics in chemical processes. In particular the importance of photochemical bondbreaking and atmospheric (troposphere and stratosphere) photochemistry will be presented. The role of fundamental physical forces that determine the dynamics and energetics of chemical bondbreaking will be discussed. The students will learn about the latest state-of-the-art experimental technology to follow a chemical reaction in real time. In particular lasers and their phenomenal potential in chemical research will be discussed.

Inhoud vak

We will discuss the role of forces and the Born-Oppenheimer potential in chemical bondbreaking. Photochemistry, energetics and angular properties of molecules and chemical reactions will be presented. Photons, light, lasers and their potential for the study of chemical reactions and applications in various areas of chemistry will be discussed. Laser spectroscopy, atmospheric chemistry, global warming and the role of greenhouse gasses will be discussed. State-of-the-art developments in physical chemistry like the mass-spectrometric detection of chiral molecules by femtosecond laser technology and three-dimensional particle imaging will be presented.

Toetsvorm

To be determined in consultation with the student.

Literatuur

To be determined in consultation with the lecturer.

Doelgroep

Students interested in state-of-the-art developments in physical chemistry and laser spectroscopy.

Overige informatie

Period: in consultation with the lecturer

Networked Organizations and Communication

Vakcode	S_NOC ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Sociale Wetenschappen
Lesmethode(n)	Hoorcollege, Practicum, Werkgroep
Niveau	500

Doel vak

Students who have completed the seminar will be able to critically approach, interpret, and compare theories and literature on social networks, semantic networks, and networked organizations. They can write a literature review or essay about the developing field of networked organizations and communication. Moreover, they can carry out a small-scale research project (in groups) using two different network analysis methods.

Inhoud vak

The seminar Networked Organizations and Communication aims at gaining in-depth insight into the antecedents and consequences of interpersonal-, interunit-, and interorganizational networks. The seminar begins with an introduction to network theory, general terms, and concepts. On the basis of recent network literature, the seminar then focuses on how organizations and organizational members become more connected to each other (e.g., through actor similarity, communication patterns, etc.) and how this affects various outcomes (e.g., job satisfaction, innovation activities, spread of hypes, firm survival, etc.). A particular focus will thus be on gaining insights into social and semantic networks and on two software programs with which one can analyze and visualize social or semantic networks.

Onderwijsvorm

Lectures combined with workshops about two different network analysis methods. Active participation in the lectures and workshops is required.

Toetsvorm

Possibly small tests during class, individual literature review or essay, group assignment (research project), and group presentations.

Literatuur

Series of articles to be announced on Blackboard

Vereiste voorkennis

Participation in Organization Sciences (S_OS).

Aanbevolen voorkennis

All students are recommended to study chapters 1, 2, 3, 7, and 10 of Kadushi, C., 2012: Understanding social networks. Oxford University Press: New York.

Non-BCO student who cannot participate in Organization Sciences (S_OS) are strongly recommended to study the literature of this course.

Doelgroep

MSc BCO track Strategie en identiteit, exchange students, and students SBI.

Nuclear Fuels

Vakcode	X_432787 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. L. Visscher
Examinator	prof. dr. L. Visscher
Docent(en)	prof. dr. L. Visscher
Lesmethode(n)	Hoorcollege

Doel vak

Introduce the principles of nuclear reactions relevant for energy production. Discuss the long-term perspectives of using nuclear fission

and fusion as an energy source.

Inhoud vak

The course starts by introducing the basic principles of nuclear fission and fusion. The implementation into an working experimental fusion reactor will be discussed with particular attention to the interaction of the fusion plasma and the material wall of the device. For fission reactors we look at their current operation and the chemical aspects of the energy production: mining and (re)processing fissionable material and the possibilities for long-term storage of spent fuel. In the project part you will review the research in these fields.

Onderwijsvorm

Lectures, exercise classes and project (literature study).

Toetsvorm

Written exam, project report and presentation.

Literatuur

McCracken, G. and P. Stott, Fusion, the energy of the universe. Complementary Science Series. 2005, London: Elsevier Academic Press. 186.

Hand-outs.

Doelgroep

mChem-MSP, mPhys

Nuclear Magnetic Resonance

Vakcode	X_435667 (435667)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	500

Inhoud vak

<http://studiegids.uva.nl/xmlpages/page/2014-2015/zoek-vak/vak/8235>

Toetsvorm

Written examination.

Literatuur

Friebolin, H., Basic One- and Two-Dimensional NMR Spectroscopy 4th ed. Wiley-VCH, 2004.

Hand-outs.

Vereiste voorkennis

BSc

Doelgroep

mCh

Numerical Techniques

Vakcode	X_420082 (420082)
Periode	Periode 4+5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	I.P.H. Dubbeldam MA
Lesmethode(n)	Hoorcollege
Niveau	400

Inhoud vak

The course description is available on <http://studiegids.uva.nl/web/uva/sgs/nl/c/220.html>

Doelgroep

mCh-MSP

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Omics-procedures in molecular clinical Diagnostics

Vakcode	X_432766 ()
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Docent(en)	dr. H. Lingeman
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The primary objective of this course is highlighting the various omics-approaches that are used in drug- and biomarker discovery.

Inhoud vak

Omic-approaches involve the comparison of metabolomes, proteomes and genomes between control and test groups to find differences in their profiles. Those differences may be correlated to the disease being studied in clinical biomarker discovery or changes in the metabolic output in toxicology studies. During the course the fundamentals and applications of omic-based techniques will be discussed. The focus will be on the separation (e.g. chromatography, electrophoresis), detection/identification (e.g. MS, NMR, Spectroscopic) and chemometric procedures to unravel complex biological and clinical samples

Onderwijsvorm

Lectures and projects

Literatuur

Hands-outs (electronically available)

Doelgroep

mCH-AS, mDDS, mMNS

Overige informatie

X_432733 vervalt en is vervangen door X_432766

Organische Chemie voor HLO AS

Vakcode	X_437587 ()
Periode	Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/web/uva/sgs/nl/c/14347.html>

Overige informatie

Opgave via <https://www.sis.uva.nl> tot 4 weken voor aanvang van het semester is verplicht

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Organische chemie voor HLO-instroom

Vakcode	X_430519 (430519)
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. E. Ruijter
Docent(en)	dr. E. Ruijter
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

Het doel van het college is - in nauwe aansluiting met het voorafgaande college Algemene en het erop volgende college Organische Chemie 1 - nader in te gaan op de quantummechanische beschrijving van moleculen en de basis te leggen voor de beantwoording van de vraag waarom, wanneer en hoe chemische reacties plaatsvinden. Veel aandacht wordt besteed aan zuur-base relaties en nucleofiele reacties met vooral de carbonyl groep. Het college zal grote overeenkomst vertonen met het BSc Scheikunde college Structuur & Reactiviteit van (Bio)Moleculen.

Inhoud vak

Structuren en functionele groepen; molecular orbitals, delocalisatie en conjugatie van organische moleculen; zuren, basen en pKa's; chemische evenwichten, reactiesnelheden en

mechanismes; nucleofiele addities en substituties aan de carbonyl groep; mogelijk ook stereochemie.

Onderwijsvorm

Gecombineerd hoorcollege en verplichte werkcollege met huiswerkopdrachten.

Toetsvorm

schriftelijk tentamen, herkansing alleen schriftelijk op de daarvoor geldende dag.

Literatuur

Claydon, J., Greeves, N., Warren, S.
Organic Chemistry - 2nd edition
Oxford University Press, 2012 (ISBN 978-0-19-927029-3)

Doelgroep

HLO-instroom in MSc-Chemistry tracks:
Analytical Sciences;
Molecular Design Synthesis & Catalysis

Overige informatie

De studenten van dit vak sluiten aan bij THEORETISCH GEDEELTE VAN ORGANISCHE CHEMIE VOOR 2S

Organometallic Chemistry and Homogenous Catalysis

Vakcode	X_432808 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	500

Doel vak

voor meer informatie neem contact op met Prof. Lies
Bouwman@lic.leidenuniv.nl

<https://masters.lic.leidenuniv.nl/courses/2013-2014/mhc>

Inhoud vak

Universiteit Leiden

Photosynthesis and Energy

Vakcode	X_422553 (422553)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. R. van Grondelle

Docent(en)	prof. dr. R. van Grondelle
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

Introduce the fundamental aspects of photosynthesis and photosynthetic energy conversion.

Inhoud vak

Photosynthesis: an overview of the biological process
 The relevant structures: pigments, proteins, the photosynthetic membrane
 Excitation energy transfer and excitons
 Disorder
 Charge separation by the reaction center and electron transfer
 Charge stabilisation
 Proton coupled electron transfer
 The energetics of photosynthesis
 Artificial photosynthesis

Onderwijsvorm

Lectures, literature study, presentations

Toetsvorm

Scriptie plus presentation of subject related to photosynthesis.

Literatuur

Blankenship, R.E., Molecular Mechanisms of Photosynthesis. Blackwell 2002.

Doelgroep

mPhys-PLH, mPhys-AMEP, mCH-SES, mPhys-SES

Photovoltaics

Vakcode	X_428516 (428516)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. G.J.L. Wuite
Niveau	400

Inhoud vak

The course description is available on
<http://studiegids.uva.nl/web/uva/sgs/en/c/11041.html>

Doelgroep

mPhys-PPAPP, mPhys-TP, mPhys-AMEP

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Physical-Organic Chemistry

Vakcode	X_435663 (435663)
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Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

Survey of structural features, reaction mechanisms, and physical organic concepts needed in organic chemistry.

Inhoud vak

Advanced organic chemistry course centered around chemical bonding, stereochemical principles, conformational and stereo-electronic effects, isotope effects, reaction mechanisms, nucleophilic substitutions, eliminations, aromaticity, carbocations, carbanions, radicals, pericyclic reactions, and acid-base catalysis. These structural and mechanistic concepts are essential in organic synthesis.

Onderwijsvorm

Lectures and tutorials with homework

Toetsvorm

Written or oral examination and assignments.

Literatuur

Anslyn, E.V., and Doggerty, D.A., Modern Physical Organic Chemistry. University Science Books, 2006.

Vereiste voorkennis

BSc

Aanbevolen voorkennis

BSc S, BSc F

Doelgroep

mCh, mF

Policy, Politics and Participation

Vakcode	AM_470589 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. J.T. de Cock Buning
Docent(en)	dr. B.J. Regeer, dr. J.F.H. Kupper, prof. dr. J.E.W. Broerse
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

Doel vak

To further deepen your analytic skills with respect to the assessment of a specific societal problem;

To acquire further insight into the practice of interactive research;

To acquire further insights into specific methods and techniques of interactive research;

To strengthen the skills to design an interactive research project

To practice skills in data collection and analysis;

To learn to set up valid lines of argumentation;

To improve your communication skills;

To improve your skills in working effectively in a project team, through team building, team analysis and feedback.

Inhoud vak

In this course you get the chance to gain experience in the practical implementation of methodologies for interactive research. In a four week policy project 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 democracy theory. In a group of about ten students you will participate in a real interactive research project which is executed at the Athena institute. 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

prepare a policy report to present your findings. In an oral

presentation your team will highlight the main results of your analysis

and defend the recommendations you propose.

Onderwijsvorm

Lectures, training workshops, project assignment

Toetsvorm

Individual evaluation based on personal performance in the project group and assessment of various group products (report and presentation). All parts need to be passed.

Literatuur

To be announced on Blackboard

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

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

Attendance is compulsory.

Praktijk I

Vakcode	O_MLPRAKI ()
Periode	Semester 1, Semester 2
Credits	15.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek

Niveau	500
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Doel vak

De student maakt kennis met het onderwijs in de praktijk, verzorgt lessen en is betrokken bij andere leerlinggerichte activiteiten. Hij kan binnen de context van de school theoretische inzichten praktisch vormgeven en weet de praktijkomgeving te benutten om aan eigen ontwikkelpunten te werken.

De student werkt samen met anderen binnen en buiten de school en kan zijn functioneren als teamlid beschrijven en toelichten.

Inhoud vak

Het totale aantal klassencontacturen dat een student moet maken tijdens Praktijk 1 en 2, bedraagt tenminste 250. Tijdens deze uren observeert of verzorgt de student lessen en neemt deel aan andere leerlinggerichte activiteiten. Hij/zij geeft tenminste 120 lessen, waarvan minimaal 40 lesuren in de bovenbouw havo/vwo.

De verdeling en fasering van dit aantal uren over Praktijk 1 en 2 wordt in overleg met de begeleider op school bepaald. In Praktijk 1 ligt de nadruk op het observeren en het onder begeleiding voorbereiden, uitvoeren en evalueren van lessen.

Dit opleidingsonderdeel loopt parallel aan vakdidactiek 1 en algemene didactiek en pedagogiek 1, waardoor een goede wisselwerking mogelijk is tussen theorie en praktijk.

Toetsvorm

Praktijk 1 wordt door de schoolbegeleider beoordeeld aan de hand van een checklist. De schoolbegeleider doet daarbij een voorstel dat door de instituutsbegeleider moet worden onderschreven.

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding

Praktijk II

Vakcode	O_MLPRAKII ()
Periode	Semester 1, Semester 2
Credits	15.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Niveau	500

Doel vak

De student kan, als docent-in-opleiding, verantwoordelijkheid dragen voor het zelfstandig voorbereiden, uitvoeren en evalueren van lessen in de onder- en bovenbouw van het Havo/VWO. Hij kan tevens een bijdrage leveren aan schoolbrede activiteiten. Hij kan binnen de context van de school theoretische inzichten praktisch vormgeven en weet de praktijkomgeving te benutten om aan eigen ontwikkelpunten te werken. Hij kan reflecteren op opgedane ervaringen en verworven inzichten en deze op dusdanige manier beschrijven dat zij inzichtelijk worden voor anderen. De student toont zich professioneel in de samenwerking met anderen

binnen en buiten de school en kan zijn functioneren als teamlid beschrijven en toelichten.

Inhoud vak

Het totale aantal klassencontacturen dat een student moet maken tijdens Praktijk 1 en 2, bedraagt tenminste 250. Tijdens deze uren observeert of verzorgt de student lessen en neemt deel aan andere leerlinggerichte activiteiten. Hij/zij geeft tenminste 120 lessen, waarvan minimaal 40 lesuren in de bovenbouw havo/vwo.

De verdeling en fasering van dit aantal uren over Praktijk 1 en 2 wordt in overleg met de begeleider op school bepaald. Tijdens Praktijk 2 draagt de student verantwoordelijkheid voor een of meer klassen. Hij bereidt het onderwijs voor, voert het uit en evalueert het. Hij werkt hierbij nadrukkelijk samen met sectiegenoten en andere collega's binnen de school en is zich bewust van de context waarin zijn lessen plaatsvinden. In het portfolio doet hij verslag van zijn functioneren als teamlid en collega in de school.

Dit opleidingsonderdeel loopt parallel aan vakdidactiek 2 en algemene didactiek en pedagogiek 2, waardoor een goede wisselwerking mogelijk is tussen theorie en praktijk.

Toetsvorm

Praktijk 2 wordt door de schoolbegeleider beoordeeld aan de hand van een checklist waarop het eindcijfer voor de praktijk wordt gebaseerd. De schoolbegeleider doet daarbij een voorstel dat door de instituutsbegeleider moet worden onderschreven.

Tevens beoordeelt schoolbegeleider het functioneren van de student als teamlid en collega op basis van de door de student uitgevoerde portfolio-opdrachten.

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding.

Principles of Pharmaceutical Sciences / Pharmacology

Vakcode	X_435675 (435675)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. I.J.P. de Esch
Docent(en)	prof. dr. N.P.E. Vermeulen, prof. dr. I.J.P. de Esch
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

General introduction into and deepening of knowledge of concepts, mechanisms and recent developments in pharmaceutical sciences and the

pharmaceutical and biotech industry.

Inhoud vak

This course is designed for students with an interest in life sciences and the biotech/pharmaceutical industry but without prior education in this field. A general introduction will be given to the process of drug discovery, drug design and synthesis, drug development and drug safety assessment. Subsequently, potential drug targets, mechanisms of drug actions (including drug-receptor/enzyme) Using various drug classes, relationships between chemical structures and biological activities will be derived and illustrated. Finally, various modern developments and tools will be illustrated by recent applications in the field of drug research, medicinal chemistry and toxicology.

Onderwijsvorm

Lectures and tutorials.

Toetsvorm

Written examination, case studies and Blackboard assignments.

Literatuur

Patrick, G., An Introduction to Medicinal Chemistry 5th ed.
Oxford: Oxford University Press. 2009, ISBN: 978-0-19-969739-7

Doelgroep

3S, 3MNW, mCh, mPhys. The course is optional for mDDS students that did not follow the VU University BSc pharmaceutical sciences and these mDDS students should contact the mDDS coordinator before enrolling.

Professionele ontwikkeling en onderzoek I

Vakcode	O_MLVPOOI ()
Periode	Semester 1, Semester 2
Credits	3.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	ir. E.J.F. Scheringa
Docent(en)	drs. Y.G. Meindersma, dr. H.B. Westbroek, drs. H.R. Goudsmit, drs. I. Pauw, drs. S. Attema-Noordewier
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak

De student kan systematische reflecteren op het eigen handelen in de onderwijspraktijk en daardoor richting geven aan de eigen professionele ontwikkeling.

De student kan een onderzoeksvraag formuleren voor een onderzoek aan zijn/haar eigen onderwijspraktijk, deze vraag inbedden in een theoretisch kader en een opzet maken voor de uitvoering van het onderzoek.

Inhoud vak

Dit vak bestaat uit twee delen: een reflectiedeel en een onderzoeksdeel. Het reflectiedeel krijgt vorm en inhoud in zogenaamde peergroepbijeenkomsten. Hierin reflecteert de studenten samen met

anderen op zijn/haar handelen in de praktijk en leert daaruit ontwikkelpunten af te leiden, acties te formuleren en deze te evalueren. Verschillende instrumenten en methodes worden gebruikt (logboek, reflectiekring, intervisie,...) om de student in staat te stellen de complexiteit van de onderwijspraktijk te doorgronden en hiervan te leren.

In het onderzoeksdeel wordt een opzet gemaakt van een praktijkonderzoek. In dit onderzoek diept de student één of meer vraagstukken uit de (eigen) onderwijspraktijk uit, waarbij een onderzoeksvraag ingebed wordt in een theoretisch kader en op één of enkele scholen empirisch materiaal wordt verzameld. In plenaire bijeenkomsten komen onderwerpen aan de orde als het formuleren van de probleemstelling en de onderzoeksvraag, het verkennen van de literatuur en het verzamelen van de data. Daarnaast kan de student beroep doen op individuele begeleiding rondom zijn/haar onderzoek. Dit alles mondt uit in een eerste onderzoeksformat voor het praktijkonderzoek dat vervolgens in het vak Professionele Ontwikkeling en Onderzoek 2 uitgevoerd, gepresenteerd en geëvalueerd wordt.

Onderwijsvorm

colleges, werkgroepbijeenkomsten en individuele begeleiding van het onderzoek door instituutsbegeleiders.

Toetsvorm

Uitvoeren van opdrachten.

Literatuur

Een literatuurlijst wordt verstrekt aan het begin van de opleiding.

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding.

Overige informatie

Voor alle onderdelen geldt een aanwezigheidsplicht.

Professionele ontwikkeling en onderzoek II

Vakcode	O_MLVPOOII ()
Periode	Semester 1, Semester 2
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	dr. H.B. Westbroek
Docent(en)	dr. C.P. van Velzen, prof. dr. J.J. Beishuizen, drs. W. Jongejan, dr. H.B. Westbroek, dr. E. van den Berg, dr. J.J.M. van Eersel, W. Maas, drs. Y.G. Meindersma, drs. S. Attema-Noordewier, dr. T. Bosma, dr. A.A. Kaal
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak

De student kan een praktijkonderzoek opzetten, uitvoeren en hierover rapporteren.

Inhoud vak

In het praktijkonderzoek diept de student één of meer vraagstukken uit de (eigen) onderwijspraktijk uit. Hij of zij doet dat door het opzetten, uitvoeren en evalueren van een op de eigen onderwijspraktijk gericht onderzoek waarbij op één of enkele scholen empirisch materiaal wordt verzameld. Aan de hand van de opzet die gemaakt is tijdens de module Professionele Ontwikkeling en Onderzoek 1 ontwerpt de student onderzoeksinstrumenten om empirisch gegevens te verzamelen voor het beantwoorden van de onderzoeksvraag en voert hij/zij het onderzoek uit. In een artikel voor een vaktijdschrift voor leraren rapporteert hij/zij over het onderzoek waarin aan de orde komen vraagstelling, relevantie, verankering in bestaande theorie, gebruikte instrumenten, data, conclusie en discussie. De student presenteert ook zijn/haar onderzoek tijdens de Onderwijsresearchdag.

Onderwijsvorm

Onderzoek, verplichte deelname aan colleges praktijkonderzoek, werkgroepbijeenkomsten, individuele begeleiding door instituutsbegeleiders.

Toetsvorm

De rapportage van het praktijkonderzoek vindt plaats in de vorm van een posterpresentatie en een artikel voor een vaktijdschrift voor leraren.

Het artikel wordt gezamenlijk beoordeeld door de eerste begeleider en tweede lezer, die wordt aangezocht door de eerste begeleider. De presentatie van het onderzoek op de Onderwijsresearchdag wordt meegenomen in de eindbeoordeling. Ook de mate van zelfstandigheid in het opzetten, uitvoeren en rapporteren van het onderzoek wordt beoordeeld

Literatuur

Een literatuurlijst wordt verstrekt aan het begin van de opleiding.

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding.

Om dit vak te volgen moet het vak Professionele Ontwikkeling en Onderzoek 1 met goed gevolg zijn afgelegd.

Overige informatie

Voor alle onderdelen geldt een aanwezigheidsplicht.

Project Sustainable Future

Vakcode	X_432784 ()
Periode	Periode 6
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.T.M. Kennis
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Inhoud vak

Human civilization finds itself at a pivotal point in history. As a result of the growing world population as well as extensive industrial and societal developments that have taken place over the last 150 years, humanity has exploited earth's natural resources up to a point that further developing or even maintaining current levels of prosperity cannot be sustained. In addition, it has become very clear that current fossil fuel based energy technologies have a dramatic adverse effect on the global climate. These issues become even more urgent when considering the anticipated elevated prosperity levels in the developing world.

These developments lie at the basis of the concept of 'sustainability': the future has to be radically different from past and present in the sense that human activities must be carried out in such a way that they can be sustained for many generations. To achieve this, many aspects of human activity have to be changed: different technologies for energy production and resource utilization will have to be developed. Choices will have to be made as to which of these new technologies are considered most favorable for society. Such technologies will have to be implemented at large scale, which requires involvement of decisive societal forces, such as governments, markets, producers and consumers. Only if clear, rational and appealing visions are developed can such societal forces be activated and the required changes be realized.

In this course, we will consider a number of acute sustainability themes that humanity faces today. The students' mission of this course will be to define under which conditions new technologies can make a meaningful contribution to a sustainable future of our society in a specific case study. The project will be divided in 4 discrete steps:

1. We will analyze the scientific basis of the issue under consideration. We will analyze the potential, but also the limitations of each technology.
2. We will analyze what 'sustainability' actually means. The term is often used in a loose and informal way. But 'sustainability' only becomes meaningful when it is made quantitative! We will apply these concepts to the chosen theme, and define the conditions that are required to make the new technologies deserve the label 'sustainable'.
3. To assess and potentially quantify the uncertainties and risks with regard to the different technology solutions, how these could affect society now and in the future (through applying scenario planning techniques).
4. We will integrate the knowledge and insights obtained from the above three approaches, to understand how they are interconnected and how they influence one another.

Onderwijsvorm

lectures, guest lectures, werkcolleges, group work, self study

Toetsvorm

written exam
project report
presentation of project report
literature exercise

Vereiste voorkennis

mCh-SES, mPhys-SES, mSBI

Doelgroep

Protein Analysis

Vakcode	X_435045 (435045)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Docent(en)	dr. H. Lingeman
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

Providing a clear overview on the principles and techniques that can be used for the qualitative and quantitative determination of protein-type of compounds.

Inhoud vak

The qualitative and quantitative determination of protein frequently is performed by a combination of chromatographic /electrophoretic and mass spectrometric techniques. The principles of these techniques will be discussed as well as their applications. Special attention will be given to sample treatment procedures and affinity-based separation techniques. With respect to the identification of unknown biological macromolecules, the power of hyphenated techniques in combination with the various modes of mass spectrometry will be highlighted.

Onderwijsvorm

Lectures and tutorials

Toetsvorm

Oral examination.

Literatuur

Hand-outs (electronically available).

Vereiste voorkennis

Basic knowledge of biochemistry, separation sciences, spectroscopy and mass spectrometry.

Doelgroep

mCh, mDDS

Qualitative and Quantitative Research Methods

Vakcode	AM_470582 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. J.F.H. Kupper

Docent(en)	dr. H. Wels, dr. B.J. Regeer, dr. J.F.H. Kupper, dr. ir. R. Hoopman
Lesmethode(n)	Hoorcollege, Werkgroep, Computerpracticum
Niveau	400

Doel vak

Understanding the differences between beta- and gamma research
 To acquire insight and understanding of a transdisciplinary research process. This includes knowledge of the character of and need for transdisciplinary approaches, and their advantages and disadvantages
 To acquire insight into various quantitative and qualitative research methods and their underlying theoretical concepts
 To understand the relative strengths and weaknesses of the various research methods
 To know how to interpret quantitative and qualitative findings
 To acquire insight and understanding of the possibilities to integrate quantitative and qualitative research information
 To be able to make an adequate transdisciplinary research design for the investigation of a specific problem.

Inhoud vak

Contemporary societies increasingly face complex social problems, like climate change, HIV/ AIDS or ethnic and religious diversity . These complex problems involve a variety of social actors: policy-makers, professionals, NGOs, industry, science and of course the public at large. Addressing such complex issues demands a transdisciplinary 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 transdisciplinary research: questionnaires, systematic observations using all the senses, surveys and statistics, semi-structured in-depth interviews, as well as several interactive and participatory methods. These methods are commonly used in transdisciplinary 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. Throughout the course, you will apply theoretical knowledge about the various research methodologies in the training of different qualitative and quantitative methods, and in making a research design. In small groups, students are trained in: (1) qualitative research methods such as semi structured interviews and observation techniques, (2) quantitative research methods such as questionnaires, 3) analysis of the data, and (4) writing a transdisciplinary research design.

Onderwijsvorm

Lecture (20h), Training workshops (30h), Self-study (107h), Examination (3h).

Toetsvorm

Group assignment (50%) and exam (50%). Both parts need to be passed (6).

Literatuur

Announced on blackboard one month before course starts

Doelgroep

Compulsory course in the Master programme Management, Policy Analysis and Entrepreneurship for the Health and Life Sciences (MPA) and

compulsory course within the Science communication- and Societal differentiations of Health, Life and Natural Sciences Masters programmes.

Overige informatie

Attendance of training workshops is compulsory. For further information please contact harry.wels@falw.vu.nl.

Quantum Theory of Molecules and Matter

Vakcode	X_428517 (428517)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

The course description is available on <http://studiegids.uva.nl/web/uva/sgs/en/c/10910.html>

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Relativistic Quantum Chemistry

Vakcode	X_435113 (435113)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. L. Visscher
Docent(en)	prof. dr. L. Visscher
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak

Relativistic Quantum Chemistry is an advanced master course that discusses relativistic effects in molecules and the techniques used to calculate them.

Inhoud vak

Calculations of chemical and spectroscopic properties of heavy elements need to be based on the relativistic equation of Dirac in order to obtain reliable results. In this course you will learn why relativity influences the chemistry of heavy elements and how modern quantumchemical methods take this into account. The course will start with a short introduction to relativistic quantum mechanics that is followed by an overview of approximations that are used to make calculations computationally feasible. Throughout the course we will discuss consequences of the effects encountered on the chemistry and spectroscopy of (in particular) heavy elements.

Onderwijsvorm

Self study, exercises and computer exercises. Discussion sessions (depending on the number of student who participate).

Toetsvorm

Written exam.

Literatuur

Dyall, K.G. and Faegri, K., Relativistic Quantum Chemistry. Oxford: Oxford University Press, 2007.

Aanbevolen voorkennis

Mastercourse Understanding Quantum Chemistry.

Doelgroep

mCh

Overige informatie

The course is offered in period 4. The precise schedule depends on the number of participating students.

SBI Project & Master Thesis

Vakcode	X_432735 ()
Periode	Ac. Jaar (september)
Credits	36.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. B.A.G. Bossink
Lesmethode(n)	Hoorcollege
Niveau	600

Science and Communication

Vakcode	AM_470587 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. B.J. Regeer
Docent(en)	dr. B.J. Regeer, dr. J.F.H. Kupper, T. de Lange MSc, B.M. Tielemans
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

Doel vak

- Gain theoretical insight in the relationship between science and society,
- Gain insight in the role of science communication in this

relationship,

- Acquire knowledge of different theories and models of science communication,
- Acquire knowledge of different strategies, media and activities for science communication,
- Learn how to apply theoretical concepts to real-life examples,
- Development of practical skills for science communication (e.g. writing, discussing).

Inhoud vak

Science is all around us and shapes our lives in many different ways. From the vaccines you need for travelling abroad, to the technological devices you use on a daily basis. At the same time, society shapes the development of science and technology. Science and society influence each other continuously; they communicate. Students of Science Communication are expected to become experts in understanding and designing interaction between science and society. In order for this interaction to be fruitful and valuable for both science and society, it is important to gain in-depth knowledge about the theoretical basis of the field of science communication and understand communication processes at the core of several interfaces; e.g. the communication between scientists from different disciplines, between different sciences and their stakeholders, and between science and the public. This course provides a broad basis in the field of science communication by addressing the main areas of science communication and by discussing and challenging several core concepts within this field. Students are invited to explore some issues in greater depth and active participation in lectures and workgroups is required.

Onderwijsvorm

Lectures (22 h)

Workgroups (18 h)

Home-study for group assignments (8 h)

Home-study for individual assignments/exam (90h)

Toetsvorm

Individual assignments (30%), group assignment (10%), examination (60%).

For all parts a pass grade needs to be obtained.

Literatuur

Academic articles. Direct links to articles will be provided on BlackBoard one month before the beginning of the course.

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.

Overige informatie

Guest lecturers amongst others:

A. van der Plas (TNO)

F. van Dam (CSG, Centre for Society and the Life Sciences)

Science and Society in a Hist. Persp.

Vakcode	X_400424 (400424)
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Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. D.J. Beckers
Docent(en)	dr. D.J. Beckers
Lesmethode(n)	Hoorcollege, Werkcollege

Doel vak

To increase understanding of the various interactions between mathematics, chemistry, physics, (medical) biology, computer and earth sciences (in general: science) and society during the last two centuries.

Inhoud vak

In the last two centuries science has become one of the prime agents in the shaping of modern society. In turn social and political concerns have been equally instrumental in the shaping of the modern scientific enterprise. In this course we will study the changing relationship between science and society in this period in various case studies and from several points of view. We will use literature and source material, most notably (journal and film) advertisements, and the cartoon journal Punch to illustrate these cases. The following themes are addressed: professionalization, science and the public (e.g. the public understanding and appreciation of science); Science as product and agent of modernity (e.g. quantification and standardization as applied to nature and society); Science and politics (e.g. science policies, military and commercial interests, science and ideology), science and education.

Onderwijsvorm

seminar.

Toetsvorm

Active participation during the seminar, essay and presentation and a short exam on the topics addressed during the classes.

Literatuur

available via blackboard.

Vereiste voorkennis

introduction history of science

Aanbevolen voorkennis

in possession of a Bachelor degree

Doelgroep

mFEW, mFALW, history

Overige informatie

More information with the course coordinator: Afdeling Algemene Vorming, De Boelelaan 1081, kamer U252, d.j.beckers@vu.nl

Science in Dialogue

Vakcode	AM_1002 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. J.F.H. Kupper
Docent(en)	dr. J.F.H. Kupper
Lesmethode(n)	Werkgroep, Hoorcollege
Niveau	500

Doel vak

To gain knowledge and insight into:

- the basic concepts and issues in the understanding of science-society interactions, both from a philosophical 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 mutual understanding and learning

To acquire or improve:

- the individual student's skills for effective interpersonal communication
- the individual student's 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 monitored by means of a personal development plan. The course is completed with an individual essay assignment about the sense and nonsense of the science-society dialogue.

Onderwijsvorm

Lectures (14h), Workgroups (28h), Training workshops (24h), Selfstudy, (82h), Dialogue presentations (12h)

Toetsvorm

Group assignment (50%), Take home exam (30%), Mini portfolio (20%)

Literatuur

Is announced on blackboard 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 indispensable.

Science in Perspective

Vakcode	X_437030 ()
Periode	Periode 4+5
Credits	6.0
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

<http://studiegids.uva.nl/web/uva/sgs/nl/c/9061.html>

Doelgroep

mCh, mPhys

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Science Journalism

Vakcode	AM_471014 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. J.F.H. Kupper
Docent(en)	dr. J.F.H. Kupper, W.J. Breukers MSc, dr. M.J.W. Bos
Lesmethode(n)	Hoorcollege, Werkgroep, Computerpracticum
Niveau	500

Doel vak

To acquire knowledge and insight into:

- the popularization of natural scientific knowledge and the use of different media
- the criteria for effective science journalism with respect to diverse media

- the role of science journalists in the debate about knowledge in society

To acquire skills in:

- writing popular scientific texts for different genres such as news, background and interview
- 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 defensible 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, 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 (16h).

Toetsvorm

Individual exam (20%), Individual Assignments (50%, Small Group Assignments (30%)

Literatuur

Announced on Blackboard 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-differentiation 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 co-ordinator (Frank Kupper) before enrolment.

Overige informatie

Course is taught in Dutch. More information: f.kupper@vu.nl.

Science Museology

Vakcode	AM_470590 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen

Coördinator	dr. B.J. Regeer
Docent(en)	dr. B.J. Regeer, drs. ir. M.G. van der Meij, T. de Lange MSc
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	500

Doel vak

- Gain insight in the role of museum exhibits in the field of science communication.
- Apply theoretical notions of science communication and science education, to conduct science communication research in museum settings.
- Apply qualitative and quantitative research methods to design, conduct, and report on a research project in museum settings.
- Apply theoretical notions of science communication, science education and exhibit design to advise on adjustments and/or development of exhibitions.

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 and informal science education in museum setting, and will be introduced to different educational methods as well as styles of communication, different approaches to exhibit design & development, and different methods of research and evaluation of exhibitions.

Guest speakers give insight into their profession (1) as science communicators in museums and science centers, (2) as researchers in the field of museology, and/or (3) as professionals in developing informal science & technology learning programs.

Through several assignments you are encouraged to combine theory and practice, working step-by-step towards (part of) an exhibition (re-) design. The assignments come from museums and science centers, such as NEMO, Museum, Naturalis, Delft Science Centre, and Artis.

Onderwijsvorm

Lectures (14 h)

Workgroups (40 h)

Home-study for group assignments (64 h)

Home-study for individual assignments (32 h)

Toetsvorm

Group assignment (40%), presentations (poster and oral) (10%), and exams (take-home and written) (50%). For all the assignment, presentations and all exams a pass-grade must be obtained.

Literatuur

Academic articles. Direct links to articles will be provided on Blackboard one month before the beginning of the course.

Vereiste voorkennis

Bachelor in any of the Beta Sciences

Doelgroep

Optional course in the C-differentiations (Science Communication) 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.

Overige informatie

Guest lecturers:

E. Hamstra (Northernlight)

C. Vermeulen (Artis)

M. van der Meer (Delft Science Centre)

I. van Zeeland (Naturalis)

And possibly additional guest lecturers from NEMO, Boijmans van Beuningen, Museon, Van Gogh Museum, etc.

Science Project Energy

Vakcode	X_432736 ()
Periode	Ac. Jaar (september)
Credits	24.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. J.C. Slootweg
Niveau	400

Doel vak

The MSc SBI students will follow the science project energy or the science project life to strengthen their background knowledge in natural sciences in order to be able to talk the language of the specialists and to scan and interpret new developments and inventions in the field of life sciences and energy and sustainability.

Inhoud vak

The science projects energy are based on a Life Cycle Analysis, in this case of current or future energy technologies, with focus on the technological and environmental aspects. In order to assess if a certain energy technology can be regarded as durable, reliable and scientifically justified estimations are needed of aspects like yield and net CO₂ release. Both the Chemistry and Physics perspective are essential in these projects. The students will be guided through the following aspects of a certain energy technology to come to a critical assessment:

- Literature search
- Defining gaps
- Defining experiments to clear gaps
- Defining required research skills
- Execution of experiments
- Interpretation and conclusion
- Reporting and/or publishing

Toetsvorm

Research project.

Literatuur

Depending on the project.

Vereiste voorkennis

BSc-SBI courses Materialen/Duurzame Chemie, Duurzame Energie, Innovatieproject Energie, Innovatieproject Alternatieve Brandstoffen

Aanbevolen voorkennis

BSc-SBI courses Materialen/Duurzame Chemie, Duurzame Energie, Innovatieproject Energie, Innovatieproject Alternatieve Brandstoffen.

Doelgroep

mCh-SBI, mPhys-SBI

Scientific Computing and Programming

Vakcode	X_435076 (435076)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. L. Visscher
Examinator	prof. dr. L. Visscher
Docent(en)	prof. dr. L. Visscher
Lesmethode(n)	Hoorcollege, Practicum
Niveau	500

Doel vak

To instill a broad understanding of how computers are utilized in scientific research, and impart practical skills in scientific programming and scripting.

Inhoud vak

This course is a collaborative effort involving the VU, UvA and UL. It includes a total of six modules of which a minimum of four need to be chosen.

The 'Introduction to Unix/Linux Systems' is compulsory, as is either 'Scientific Software Development in Fortran' or 'Introduction to C Programming'.

The modules 'Introduction to Unix/Linux Systems' and 'Introduction to C Programming' are given at the UvA, while the modules 'Scientific Scripting with Python' and 'Scientific Software Development in Fortran' are given at the VU University. The optional courses 'High-Performance Computing' and 'A Crash Course in Basic Numerical Methods' are held in Leiden (UL).

The full list of modules is as follows:

1) Introduction to Unix/Linux Systems

Includes logging in; directories and files; grep and regular expressions; editing with vi; sed and awk; shells and shell programming.

2) Scientific Software Development in Fortran

Includes flavors of Fortran; compiling; variables and data types; procedures; reading/writing data; arrays; control statements; modules; user-defined types; structured programming with abstract data types (ADTs); introduction to concepts in software design.

3) Introduction to C Programming

Includes compiling with gcc; variables; control structures (e.g. loops); data types and functions; input/output; pointers; basic algorithms.

4) Scientific Scripting with Python

Includes introduction to scripting and automation; introduction to Python; running scripts; loading modules; variables; functions; opening/closing files; reading data; extracting data from strings; writing data; running external programs; working with structured data (eg XML, SQL databases); classes and object-oriented programming.

5) High-Performance Computing

Includes introduction to High-Performance Computing (HPC) systems; use of batch systems and queue managers; C/C++ and fortran compilers; introduction to computer architecture; introduction to parallelization with MPI and OpenMP.

6) A Crash Course in Basic Numerical Methods

Includes introduction to numerical techniques; floating-point numbers; finite-difference algorithms for differentiation; numerical integration; interpolation; data fitting.

Onderwijsvorm

Lectures, exercise sessions and self study.

Toetsvorm

Each module will be assessed separately.

Assessment requires completion of assignments for each module taken.

Literatuur

Course notes will be provided. Some online resources will be used.

Aanbevolen voorkennis

None.

Doelgroep

Master students that would like to automate the generation and/or processing of scientific data. This need not be restricted to students in theoretical fields: experimentalists can also benefit from computing skills, especially for the analysis and processing of experimental data.

Scientific Writing in English

Vakcode	X_400592 (400592)
Periode	Periode 2, Periode 6
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	M. van den Hoorn
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

The aim of this course is to provide the writing student with the essential linguistic means for producing English academic texts which are effective, idiomatically and stylistically appropriate and grammatically correct.

Inhoud vak

The initial focus in the course lies on the form of scientific texts in the Exact Sciences:

- Abstract (or summary)
- Introduction
- Methods
- Results
- Discussion

General course outline

Introducing the topics

- Academic and technical writing in English
- The characteristics of different kinds of scientific texts
- How scientific writing is judged and assessed
- Where do you find your information and how do you present it?
- How to avoid committing plagiarism

Who am I writing for? What do I want to say?

- Your readership
- Key parts of an academic article: title, abstract, introduction, methods, results and discussion

Writing the actual article

- Paragraph and sentence construction: how do I link paragraphs together?
- Writing simple and complex sentences. Active and passive sentences.
- Argumentation : how do I put an argument? How do I frame my own opinion?

Should I use "I" or "we"?

Writing correct English

- Use of apostrophes and colons
- Word order, verb tenses, time and tense
- Avoiding mistakes typically made by Dutch writers
- Common spelling mistakes

You will be making considerable use of peer assessment: examining fellow students' written work and giving them feedback. This method provides useful insights into how a text might be improved. The process of providing someone else with feedback on their text is something that you will find very instructive.

Onderwijsvorm

The course is focused on self-tuition. The plenary sessions concentrate on the process of writing and the product of writing. Homework is part of the course. With each topic, participants work through a phased series of exercises that usually conclude with the requirement to write a short piece of text. The instructor will append extensive written remarks to this text.

Toetsvorm

There will be no examination. However, students will receive their credits only when they have participated in all classes (presence is obligatory) and also when they have handed in the assignments satisfactorily. Students will receive a 'pass' when they have finished the course.

Literatuur

For this course you need the book *Effective Scientific Writing: an advanced learner's guide to better English* (A. Bolt & W. Bruins, ISBN 978 90 8659 6171). This book can be obtained at the VU bookstore, which

is located in the VU main building. The costs are € 27,95 per book. For questions contact the Taalcentrum-VU at 020 - 598 9804.

Vereiste voorkennis

Bachelor Exact Sciences

Doelgroep

Optional for mAI, mCS, mIS, mBIO, mPDCS, mCh, mDDS, mPhys.

Separation Sciences

Vakcode	X_435609 (435609)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. H. Lingeman
Docent(en)	dr. H. Lingeman
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

Getting acquainted with the theory and practice of the main techniques in modern analytical separation science.

Inhoud vak

The topics discussed comprise the fundamentals, theory and practice of gas chromatography, the various modes of liquid chromatography, capillary-based electrophoretic approaches as well as the hyphenation of the various separation systems with mass spectrometry and other sensitive and selective detection devices.

Onderwijsvorm

Lectures and tutorials. Students have to summarize and present an (assigned) recent article on separation science.

Toetsvorm

Written examination and a mark for the article presentation.

Literatuur

Hands-outs (electronically available).

Vereiste voorkennis

Basic knowledge of biochemistry, chromatography, electrophoresis and mass spectrometry.

Aanbevolen voorkennis

Basic knowledge of biochemistry, chromatography, electrophoresis and mass spectrometry.

Doelgroep

mCh-AS

Statistical Theory of Complex Molecular Systems

Vakcode	X_428520 (428520)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

The course description is available on
<http://studiegids.uva.nl/web/uva/sgs/nl/c/10917.html>

Doelgroep

mMNS-PoL, mPhys-LSBP, mPhys-PLH, mCh-MSP

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Supramolecular Chemistry and Nanomaterials

Vakcode	X_435653 (435653)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	400

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/en/c/211.html>

Doelgroep

mCh-MDSC, mCh-MSP, mDDS-CMCT, mDDS-DDSA, mDDS-DDTF

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Survival Guide for Scientists

Vakcode	X_428523 (428523)
Periode	Periode 6
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	400

Inhoud vak

The course description is; available on
<http://studiegids.uva.nl/web/uva/sgs/en/c/11058.html>

Doelgroep

mPhys, mCH

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Synthetic Organic Chemistry

Vakcode	X_435665 (435665)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/en/c/207.html>

Doelgroep

mCh-MDSC

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Teaching Assistant

Vakcode	X_432741 ()
Periode	Ac. Jaar (september)
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	D.M. Vredenburg-Maasdijk MSc
Niveau	400

Teaching Assistant

Vakcode	X_432742 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	D.M. Vredenburg-Maasdijk MSc
Niveau	400

The analytical Chemist in Industry

Vakcode	X_437005 (437005)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. ir. R.V.A. Orru
Niveau	400

Inhoud vak

The course description is available at
<http://studiegids.uva.nl/web/uva/sgs/en/c/218.html>

Doelgroep

mCh

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Thermodynamica

Vakcode	X_430600 ()
Periode	Periode 2+3
Credits	3.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

<http://studiegids.uva.nl/xmlpages/page/2014-2015/zoek-vak/vak/12646>

Transdisciplinarity and Transition

Vakcode	X_430604 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. J.T. de Cock Buning
Docent(en)	prof. dr. J.T. de Cock Buning
Lesmethode(n)	Hoorcollege, Werkcollege, Deeltoets extra zaalcapaciteit
Niveau	400

Doel vak

- You can reproduce the essence of the current transition theories, e.g., Multi level perspective theories.
- You can design a tailor made transdisciplinary approach to identify and cope with hurdles in an innovation trajectory, e.g., Interactive Learning and Action approach,
- You are able to make an in-depth semi-structured interview guide.
- You are able to execute and transcribe/analyze/summarize an interview
- You are able to apply analytical tools (causal analysis, actor analysis, fact-value framing), SWOT.
- You are able to integrate multidisciplinary knowledge and multi-stakeholder interests into a management advice for a transition processes

Inhoud vak

Innovation often implies a troublesome and risky process starting with a bright idea, via a small niche innovation towards a competitive position. This course will focus on the analytical skills necessary to guide or advise a niche innovation.

Guiding and advising implies that you are aware of the social forces prohibiting a breakthrough and how to identify tailor made solutions to deal with these forces. Therefore, this course introduces you into the current theories related to innovation and societal forces, the so called multi level theories, and we will offer you training with a toolbox of various analytical methods to explore the specific hurdles of a given project, in order to design a tailor made advice.

Little by little academic research reveals the complexity of societal mechanisms behind transitions, e.g., cultural aspects, psychological aspects, structures of states, institutions and multinationals. Transdisciplinary is an emerging discipline in which research approaches and analytical methods are developed to connect relevant parts of different disciplines to solve complex processes such as transitions. Complex because: there are different stakeholders involved from industry, academia, consumers and NGO's; within academia there are beta disciplines and gamma disciplines involved who do not share a same vocabulary and methodologies, nor visions what is "best" for society..

On the base with our in house experiences with large innovative consortia (Genomic Initiative/ ecological genomics, Sustainable innovation/brain imaging, Be-basic/synthetic biology) you will learn all about the do's and don'ts of Interactive learning approach, actor analysis to delineate you allies and enemies, the semi-structured interviews to deepen your understanding of reasons for problems to meet, causal analysis to understand the complexity of the problems you face, and SWOT analysis to arrive at strategic priorities.

Parallel to the lectures you will work with a team on an advice regarding an innovation, scheduling interviews with key players and analyze the complexity of interests

Onderwijsvorm

Lectures, self-study, response lectures and case study. In the case study, you'll practice integrating theories and tools, and applying the toolbox

Toetsvorm

Exam (30%)

Essay containing a summary of the relevant elements of the Literature (30%).

Attitude and skills assessment (20%).

Case study 20%

Exam must be pasted

Literatuur

Book: Biotechnology and Food (sold at the start)

Doelgroep

Optional course for students SBI track (mCh)

Overige informatie

Proven knowledge of organizations and management and business is required

Transport Phenomena

Vakcode	X_420075 (420075)
Periode	Periode 4+5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	500

Inhoud vak

The course description is available on

<http://studiegids.uva.nl/web/uva/sgs/en/c/221.html>**Doelgroep**

mCh-MSP

Overige informatieCourse registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Tutoring Students

Vakcode	X_432625 (432625)
Periode	Periode 2
Credits	3.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. M. Wijtmans
Examinator	dr. M. Wijtmans
Docent(en)	dr. E.M.M. van Rens
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

This course aims to prepare students for coaching tasks in tutorials and practical courses. Students will encounter aspects of teacher-student interaction, including several models that are involved in the coaching process.

Inhoud vak

The course contains various topics and activities. Students make an analysis of various learning aims as well as prepare, conduct and reflect on a presentation of a pre and post discussion regarding tutorials and practical courses. They will observe and interpret the application of problem solving and coaching models in tutorials and practical courses. Attention will be paid to strengths and weaknesses in models of teacher-student interaction. An important constituent is the student's analysis of his/her own pattern of communication. Topics on safety and lab journal procedures in practical courses as well as on the grading of lab reports are also included.

Onderwijsvorm

4 consecutive hours per week (seven weeks long):

- Lectures
- Simulations
- Self-study
- Group work

Toetsvorm

- An essay on the strengths and weaknesses in a model of teacher-student interaction.
- A learning report on presentations concerning predict, observe, explain in practical work.
- A written analysis on grading lab reports.
- A written feedback on the planning of and enactment in tutorials.

Literatuur

Will be provided.

Doelgroep

mCh-AS, mCh-MDSC, mCh-MSP, mCh-SES, mDDS-BCCA, mDDS-CMCT, mDDS-DD&S, mDDS-DDSA, mDDS-DDTF

Intekenprocedure

VUnet

Overige informatie

This course is compulsory for MSc students who become assistants in practical courses and tutorials in the department of Chemistry and Pharmaceutical Sciences. Moreover, the course is recommendable to any MSc student who has a general interest in educational coaching strategies and models.

Number of participants is limited to 24 (first-come, first-serve basis).

Priority is given to MSc students. If any of the 24 seats are left, the course may also be accessible to 3rd year BSc students FAR en SK with a strong interest in educational aspects (first-come, first-serve basis). Interested BSc students should first contact Maikel Wijtmans (m.wijtmans@vu.nl).

Ultrafast Laser Physics

Vakcode	X_422556 (422556)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. K.S.E. Eikema
Docent(en)	prof. dr. K.S.E. Eikema
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

To provide a broad overview of both the ultrafast techniques and phenomena in physics and chemistry.

Inhoud vak

This course covers both the principles behind ultrafast optical pulse generation and control, and its applications in physics and chemistry. After a review of basic femtosecond laser techniques, the interaction of light with matter in the linear and nonlinear regime will be discussed. This includes the concepts of dispersion (in 1st and higher order) and pulse propagation effects, nonlinear processes such as second-harmonic generation, parametric amplification, stimulated Raman scattering, photon echos. Also pump-probe and transient spectroscopy will be discussed. Other topics that will be covered are pulse measurement techniques such as FROG and SPIDER, femtosecond frequency combs, spectrum extension methods such as continuum, THz and X-ray generation, attosecond physics, spectral and temporal shaping of pulses, including applications such as coherent control. These concepts will be illustrated using applications in physics and chemistry.

Onderwijsvorm

Lectures with excersices and demonstrations (excursions to the lab).

Toetsvorm

Written exam.

Literatuur

Book "Ultrashort Laser Pulse Phenomena" by J-C Diels and W. Rudolph, 2nd edition (2005), ISBN 978-0-12-215493-5, and possibly lecture notes.

Aanbevolen voorkennis

Some background in optics and electrodynamics is required.

Doelgroep

Master students physics.

Understanding Molecular Simulation

Vakcode	X_432703 (432703)
Periode	Periode 3
Credits	6.0

Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

The course description is available on <http://studiegids.uva.nl/web/uva/sgs/en/c/11006.html>

Doelgroep

mPhys-AMEP, mPhys-LSBP, mCh-MSP

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Understanding Quantum Chemistry

Vakcode	X_422557 (422557)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. L. Visscher
Docent(en)	prof. dr. L. Visscher
Lesmethode(n)	Hoorcollege, Practicum
Niveau	400

Doel vak

Introduce the electronic structure methods commonly employed in computational chemistry and physics.

Inhoud vak

The course starts with the introduction of the independent particle model and the consequences of the Pauli principle. The Hartree-Fock approach is introduced and the Slater-Condon rules are derived to treat multideterminant wave functions. This forms the basis for discussion of the more sophisticated wave functions used in Configuration Interaction, Møller-Plesset perturbation theory and Coupled Cluster expansions. The alternative way to deal with electron correlation, Density Functional Theory, is subsequently discussed in detail. These methods are combined and applied in a short project in which the students learn to apply modern electronic structure software. The projects focus either on the calculation of molecular properties, or on the calculation of molecular reactivity. Interpretation of results in a qualitative MO model and assessment of the reliability of calculations forms an integral part of these projects.

Onderwijsvorm

The course comprises sessions of lecture-exercises-lecture that are scheduled twice a week. These sessions serve to cover the theory that is to be mastered by all students. In the remaining sessions students will work on the short projects during which the theory is applied to an actual research problem.

Toetsvorm

Written exam and project report.

Literatuur

Atkins and Friedman, Molecular Quantum Mechanics 4th ed. or later, Oxford University Press.
Jensen, F., Introduction to Computational Chemistry 2nd ed. or later Wiley, 2007.
Hand-outs.

Doelgroep

mPhys-LSBP, mCh-MSP

Overige informatie

Optional course (2 out of 4 choice) in the Master of Chemistry / Molecular Simulation and Photonics track.

Vakdidactiek Scheikunde I

Vakcode	O_MLVDSKI ()
Periode	Semester 1, Semester 2
Credits	3.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	dr. H.B. Westbroek
Docent(en)	dr. H.B. Westbroek
Lesmethode(n)	Werkcollege
Niveau	500

Doel vak

De student kan vakinhoudelijke en vakdidactische kennis, vaardigheden en inzichten vertalen naar de eigen vaklessen.

Inhoud vak

Tijdens de vakdidactiekcolleges maakt de student kennis met de inhoud en didactiek van het schoolvak en leert deze inzichten in de praktijk vorm te geven. Er is aandacht voor vakspecifieke kennis en vaardigheden en de voor het schoolvak relevante ICT-toepassingen. In het vakdidactiekprogramma vindt eveneens een vertaling plaats van algemeen didactische thema's naar het vak. De leservaringen op school spelen hierbij een belangrijke rol.

Onderwijsvorm

Werkcolleges

Toetsvorm

Beoordeling van het portfolio

Literatuur

Een literatuurlijst wordt verstrekt aan het begin van de opleiding

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding

Overige informatie

Er geldt een aanwezigheidsplicht

Vakdidactiek Scheikunde II

Vakcode	O_MLVDSKII ()
Periode	Semester 1, Semester 2
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	dr. H.B. Westbroek
Docent(en)	dr. H.B. Westbroek
Lesmethode(n)	Werkcollege
Niveau	500

Inhoud vak

De tijdens Vakdidactiek 1 opgedane kennis en vaardigheden worden in Vakdidactiek 2 verder uitgebreid en verdiept. In dit semester ligt het accent op het zelfstandig vormgeven van een samenhangende lessenserie gericht op de bovenbouw van het Voortgezet Onderwijs, die inhoudelijk en vakdidactisch verantwoord moet worden.

Onderwijsvorm

Werkcolleges

Toetsvorm

Beoordeling van het portfolio

Literatuur

Een literatuurlijst wordt verstrekt aan het begin van de opleiding

Vereiste voorkennis

Dit vak is alleen te volgen als onderdeel van de universitaire lerarenopleiding

Reguliere studenten dienen eerst Vakdidactiek 1 afgerond te hebben alvorens aan Vakdidactiek 2 kan worden deelgenomen. Voor instromers (studenten met een tweedegraads bevoegdheid en een master in het Schoolvak) geldt deze verplichting niet.

Overige informatie

Er geldt een aanwezigheidsplicht

Verdieping

Vakcode	O_MLVERD ()
Periode	Semester 1, Semester 2
Credits	3.0
Voertaal	Nederlands

Faculteit	Faculteit der Psychologie en Pedagogiek
Coördinator	dr. J.J.M. van Eersel
Docent(en)	drs. H.R. Goudsmit, dr. J.J.M. van Eersel
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	500

Doel vak

De student verdiept zich op een onderdeel binnen zijn schoolvak of cluster.

De student is zich bewust van zijn rol als docent in een multiculturele samenleving.

De student kan de verschillende aspecten van diversiteit en multiculturaliteit in het onderwijs benoemen en aangeven hoeverre deze aspecten in zijn of haar eigen schoolpraktijk een rol spelen.

Inhoud vak

Binnen de clusters en vakken worden (verplichte) verdiepingsmodulen aangeboden. Daarnaast volgt elke student het onderdeel multiculturaliteit, waarin een aantal aspecten van onderwijs voor een multiculturele samenleving aan de orde komen:

1. Wat betekent identiteitontwikkeling in het kader van een multiculturele samenleving?
2. Wat is de zin en onzin van intercultureel onderwijs?
3. Wat zijn de verschillende thematieken van diversiteit en multiculturaliteit in de klas?
4. Wat is er bekend uit onderzoek over diversiteit, cultuur, etniciteit in de onderwijspraktijk?

Onderwijsvorm

Hoorcollege, werkcollege.

Toetsvorm

Bespreking van een casus.

Literatuur

Syllabus met artikelen wordt verstrekt.

Wetenschapscommunicatie voor Bèta-onderzoekers

Vakcode	AB_470185 ()
Periode	Periode 5
Credits	6.0
Voertaal	Nederlands
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. J.F.H. Kupper
Docent(en)	dr. B.J. Regeer, dr. J.F.H. Kupper, C.A.C.M. Pittens MSc, drs. ir. M.G. van der Meij, R.C. van Koten MSc
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	200

Doel vak

- Introductie in het vakgebied wetenschapscommunicatie
- Verwerven van kennis en inzicht in de dynamische relatie tussen

wetenschap en maatschappij

- Verwerven van inzicht in verschillende belangen en perspectieven van betrokken partijen in wetenschapscommunicatie
- Verwerven van inzicht in de rol van wetenschapscommunicatie in de relatie tussen wetenschap en maatschappij
- Verwerven van inzicht in communicatiestrategieën, doelgroepen en media in wetenschapscommunicatie
- Ontwikkeling van praktische vaardigheden voor wetenschapscommunicatie (schrijven, presenteren, discussiëren)
- Het opdoen van ervaring in een multidisciplinaire groep.

Inhoud vak

Wetenschap heeft verstrekkende gevolgen voor de maatschappij (bv. biotechnologie, neurowetenschappen, farmaceutische industrie). Maar hoe kijkt de maatschappij eigenlijk naar wetenschappelijke ontwikkelingen? Wat vindt de industrie van nieuwe wetenschappelijke inzichten? Hoe reageren maatschappelijke organisaties of het brede publiek? Deze maatschappelijke visies hebben een grote invloed op de richting die het onderzoek in de nabije toekomst gaat nemen. Daarom is communicatie over wetenschap van cruciaal belang.

In deze cursus raak je vertrouwt met een aantal modellen van wetenschapscommunicatie, het herkennen van hun toepassingen in de praktijk en de verschillende soorten publiek die men ermee kan aanspreken (populariseren voor leken, informatieoverdracht voor de industrie, faciliteren van interdisciplinair onderzoek in de wetenschap, participatie van burgers en patiënten in onderzoek). Door middel van opdrachten raak je bekend met de praktische kant van wetenschapscommunicatie, bijvoorbeeld wetenschapsjournalistiek, voorlichting, dialogen en debatten, etc. De opdrachten worden deels individueel uitgevoerd en deels in een groep.

Onderwijsvorm

Colleges 15 uur
Zelfstudie en tentamen 70 uur
Werkcolleges 15 uur
Opdrachten 60 uur

Toetsvorm

Individuele toetsing bestaat uit:

- Schriftelijk tentamen (50%)
- groepsopdrachten (25%)
- individuele opdrachten (25%)

Literatuur

Literatuur wordt aangeboden via Blackboard en een maand voor de cursus bekendgemaakt.

Doelgroep

Keuzecursus voor tweedejaars en derdejaars BSc Biomedische Wetenschappen en Biologie en BSc. Gezondheid en Leven. Ook te volgen voor de Bsc binnen Aardwetenschappen en Exacte Wetenschappen. Speciaal aanbevolen voor studenten die overwegen de C-variant (wetenschapscommunicatie) of M-variant (beleid en management) in hun masterprogramma op te nemen.

Overige informatie

We werken met enkele gastsprekers die een maand voor de cursus bekend zullen zijn.

Wiskunde voor HLO-instroom

Vakcode	X_432806 ()
Periode	Periode 1+2
Credits	6.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Doel vak

<http://studiegids.uva.nl/web/uva/sgs/nl/c/12647.html>

Doelgroep

HLO instroom mCH-AS

Overige informatie

Course registration at the UVA is compulsory at least 4 weeks before the start of the semester via <https://www.sis.uva.nl>

Wiskunde voor HLO-instroom

Vakcode	X_430560 ()
Periode	Periode 1+2
Credits	3.0
Voertaal	Nederlands
Faculteit	Faculteit der Exacte Wetenschappen
Niveau	400

Inhoud vak

Studenten sluiten aan bij het vak Wiskunde en Natuurkunde voor chemici

1:

<http://studiegids.uva.nl/web/uva/sgs/nl/c/10369.html>

Doelgroep

HLO-instroom mCh-MDSC

Overige informatie

Opgave via <https://www.sis.uva.nl> tot 4 weken voor aanvang van het semester is verplicht