2-YEAR RESEARCH MASTER

2021-2023

Index

The curriculum

The research master's (MSc) programme is equivalent to 120 European credits. The curriculum includes theoretical courses, colloquia, skills training, workshops, and electives throughout year 1 and the beginning of year 2. These ensure that students acquire a broad foundation before choosing a topic for their research during the remainder of the programme. Core courses form the backbone of each specialisation and acquaint students with the most important current theories, models and methods within each different domain of specialisation. In addition, to increase awareness of the value of interdisciplinary research approaches, interdisciplinary colloquia and grant writing courses address broad but relevant topics from the perspectives of each of the five specialisations (Cognitive Neuroscience, Fundamental Neuroscience, Neuropsychology, Psychopathology, Drug Development and Neurohealth). These intend to stimulate students from all specialisations to put their own research interests into an interdisciplinary perspective and to benefit from cross-fertilisation among the different scientific disciplines. Finally, skills training, electives and workshops endow students with the necessary practical and theoretical knowledge and experience for undertaking research in experimental and applied settings. They also provide students with a sound basis for accomplishing their own master's thesis research and hence a successful scientific or related career following the research master degree.

Core courses
In the core courses, students become acquainted with the most important theories, models, techniques and analytic methods in the domains of Cognitive Neuroscience, Drug Development and Neurohealth, Fundamental Neuroscience. Neuropsychology, and Psychopathology. The courses are given in a Problem-Based Learning (PBL) environment. Under the guidance of an experienced faculty member, students meet in groups for an in-depth discussion of current research issues pertinent to the central theme of the course and based on assigned readings of influential and cutting-edge articles. Course credits (2 to 6.5 credits per course, depending on course length and content) and grades are assigned based on assessments, which may include written papers, presentations or exams.

The two Advanced Statistics core courses (with a total of 6 credits) are shared by all specialisations. These courses consist of a mixture of lectures, hands-on training and student-centred meetings and are designed to acquaint students with the most important advanced methods and widespread research applications. The final grade is based on a multiple-choice exam.

Research Grant Writing Workshop and Course
Grant writing is an integral part of a research career. Therefore, the first year Research Grant Writing Workshop will teach students how to apply for research grants. The students will learn fundamentals of good grant writing, research ethics, general preparation of grant application and how to deal with reviewer comments. During the second-year Research Grant Writing Course, students will apply what they have learned during the workshop and will work together (in groups of max. 5) to write an interdisciplinary research proposal on their selected topic, including original research hypotheses, experimental design and methods. The resulting proposals will be presented during a symposium.

Colloquia
The first-year Colloquium Series comprises twelve lectures (maximally two organised by each six specialisations) presented by senior researchers from the UM faculties or visiting guest lecturers. The colloquia cover a range of topics that go beyond the issues covered in the core curriculum; each lecture will be followed by active discussion, prepared and chaired by the lecturer. Course credit (1 credit in total) is assigned at the end of the first year based on attendance.

Skills Training
Skills training provides the necessary hands-on experience for research in experimental and applied settings. For the Neuropsychology and Psychopathology specialisations, training in basic clinical skills also forms part of the programme. Each training extends over four to eight weeks, depending on the topic. Some of the training courses are given to students of multiple specialisations. Course credits (1 to 2 credits per course) are assigned based on attendance and practical exercises.

Workshops
Methodological and technical workshops provide both the necessary basis for conducting the master's thesis research and the advanced skills for a future scientific career. The teaching format varies depending on the topic of the workshop. Many emphasise hands-on experience and practical aspects. Some workshops are mandatory for all specialisations, some are

shared by two or more specialisations and some are specialisation-specific. Course credits (1 to 3 credits per workshop) are assigned based on attendance and exams, either presentations or practical exercises.

Electives
Electives allow students to acquire theoretical knowledge or practical research experience outside the required curriculum of their specialisations. There are three types of electives: Attending regular courses (RM Elective: Course), writing a review paper (RM Elective: Review) or participating in (parts of) an empirical study (RM Elective: Research). Students from the specialisations of Cognitive Neuroscience or Neuropsychology are required to obtain 3 credits by selecting one of the three types of electives described in the web catalogue and electives manual. Students of the specialisation in Psychopathology are required to obtain 5 credits by selecting a combination of one or more of the three types of electives. Students of the specialisation in Fundamental Neuroscience or Drug Development and Neurohealth are required to obtain 6 credits by selecting a combination of one or more of the three types of electives.

Research/Clinical Internship and Master's Thesis
In year 2, from week 9 onwards, students spend most of their time on their research or clinical internship, and their master's thesis (total of 50 credits). In the specialisations Cognitive Neuroscience, Drug Development and Neurohealth, Fundamental Neuroscience, the students will write a research proposal (1 credit), and perform a research internship (35 credits) during which data are collected for a Master's thesis (14 credits).
This same trajectory is also available for Neuropsychology and Psychopathology, but in these two specialisations, students can also choose to combine a research and a (13-week) clinical training. In that case, the students will not only write a research proposal (1 credit) and perform a smaller research internship (19 credits) leading to a Master's thesis, but will also write another research proposal (1 credit) motivating a clinical internship (15 credits) providing material for a Minor's thesis (14 credits). The research and clinical internships can be done in conjunction, or at separate times.
For all specialisations, of the credits devoted to the *research* internship, the equivalent of 10 credits will be graded and will be included in the GPA, whereas the remaining research (and clinical) internship credits will be marked as pass/fail. The purpose of assigning a grade worth 10 credits to the students' research internship is to evaluate the quality of the research process explicitly in addition to grading the quality of the thesis itself.

Mentor
During the first year, Research Master students are assigned a faculty mentor who is also a senior researcher in the student's specialisation. The mentor may support the learning process and the student in career planning as well as in finding solutions to possible study (or personal) problems. When necessary, close monitoring of student performance and progression in monthly meetings will help to ensure that students complete the master's programme on schedule. Students are informed who will be their mentor during the introduction week of the first year. The students are responsible for scheduling the meetings with their mentors, and both the frequency and length of the meetings is based on the needs of the student. In addition to the mentor, faculty student advisors are available for support and guidance.

Overview RM in Cognitive Neuroscience (CN)

	Research Master in Cognitive Neuroscience (CN) Year 1 (2021-2022) **Specialisation Coordinator: Giancarlo Valente**
Period 0	Introduction week: **PSY4958** Introduction in Problem-Based Learning (training for non-UM students*) (- credits): Wladimir van Mansum
Throughout Year 1	**Electives:** **PSY4156** Elective: Course OR **PSY4157** Elective: Review OR **PSY4158** Elective: Research (3 credits each): Vincent van de Ven
Period 1 30-08-2021 22-10-2021	**Core Courses:** **PSY4251** Auditory and Higher Order Language Processing (4 credits): Bernadette Jansma **PSY4252** Perception and Attention (4 credits): Peter De Weerd **PSY4106** Advanced Statistics I (3 credits): Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel Jan Schepers
	Skills Training: **PSY4221** EEG and ERP (2 credits): Fren Smulders
Period 2 25-10-2021 17-12-2021	**Core courses:** **PSY4253** Neuroimaging: Functional MRI (4 credits): Elia Formisano **PSY4254** Sensorimotor Processing (4 credits): Joel Reithler **PSY4106** Advanced Statistics I: Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel Jan Schepers
	Skills Training: **PSY4227** fMRI (2 credits): Elia Formisano, Federico De Martino
Christmas break	
Period 3 03-01-2022 28-01-2022	**Core course:** **PSY4216** Noninvasive Brain Stimulation (NIBS) (4 credits): Alexander Sack, Tom de Graaf
	Skills Training: **PSY4108** Neuroanatomy (1 credit): Jos Prickaerts
	Workshop: **PSY4233** Methods of Deactivation (1 credit): Teresa Schuhmann
	PSY4100 Colloquia (total of 1 credit): Rudy Schreiber
Period 4 31-01-2022 01-04-2022	**Core course:** **PSY4215** Advanced fMRI (4 credits): Rainer Goebel **PSY4255** Brain Connectivity and Connectomics (4 credits): Johannes Franz, Sven Hildebrand **PSY4107** Advanced Statistics II (total of 3 credits): Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	Workshop: **PSY4231** Real-Time fMRI and Neurofeedback (1 credit): Rainer Goebel, Bettina Sorger
	Skills Training: **PSY4228** Diffusion Weighted Imaging and Fibre Tracking (1 credit): Johannes Franz, Sven Hildebrand
	PSY4100 Colloquia: Rudy Schreiber

Period 5 04-04-2022 03-06-2022	**Core course:** **PSY4257** Translational Neuroscience: Towards Clinical Applications for Disorders of Consciousness (4 credits): Bettina Sorger **PSY4256** Timing Neural Processing with EEG and MEG (4 credits): Fren Smulders **PSY4107** Advanced Statistics II: Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	Workshop: **PSY4237** Basic Mathematical Methods (2 credits): Giancarlo Valente
	Skills Training: **PSY4224** Programming in Matlab Basic Course (2 credits): Giancarlo Valente
	PSY4100 Colloquia: Rudy Schreiber
Period 6 07-06-2022 01-07-2022	**Core course:** **PSY4257** Translational Neuroscience: Towards Clinical Applications for Disorders of Consciousness: Bettina Sorger
	Workshop: **PSY4114** Research Grant Writing Workshop (2 credits): Sebastian Köhler, Ron Handels
	PSY4100 Colloquia: Rudy Schreiber

Students from Erasmus Rotterdam receive an exemption for PBL Training

	Research Master in Cognitive Neuroscience (CN) Year 2 (2022-2023)
Period 1 30-08-2021 22-10-2021	**Core course:** **PSY5112** Research Grant Writing Course (3 credits): Sebastian Köhler, Ron Handels **PSY5213** The Brain's Engram: Memorising Experiences and Experiencing Memory (4 credits): Vincent van de Ven
	Workshop: **PSY5231** Signal Analysis (2 credits): Giancarlo Valente
	Skills Training: **PSY5223** Programming in Matlab Advanced Course (1 credit): Giancarlo Valente
32 weeks	**PSY5107** Research Proposal (1 credit), **PSY5120** Research Internship Graded (10 credits)/**PSY5121** Research Internship Ungraded (25 credits) & **PSY5103** Master's Thesis (14 credits): Gerda Kraag

Specialisation in Cognitive Neuroscience (CN)

The specialisation in Cognitive Neuroscience provides students with a unique combination of in-depth knowledge on human brain function, perception and cognition, paralleled with an extensive and hands-on training for using the most advanced non-invasive brain imaging techniques (including fMRI, real-time fMRI, fNIRS, EEG, MEG, DWI) as well as tools for brain stimulation (TMS, tDCS). The obtained knowledge and skills provide an excellent background to flexibly apply these techniques in fundamental as well as applied and clinical research settings. By discussing current neuroscientific research and theories, the CN curriculum covers a wide range of topics ranging from basic principles of auditory and visual perception and sensory-motor functions, to higher cognitive functions such as attention, language, learning, memory, and (disorders of) consciousness. The CN program is embedded in the international and multidisciplinary environment of the Maastricht Brain Imaging Center (MBIC). This center offers a unique research infrastructure hosting the newest ultra-high field MRI scanning facilities, as well as fully equipped EEG, fNIRS and TMS/tDCS laboratories. Students spend substantial amounts of time in these laboratories and receive extensive hands-on training in all aspects of the experimental cycle, including experimental design, recording and manipulating brain activation as well as advanced data analysis, data presentation and interpretation.

Coordinator Cognitive Neuroscience

Giancarlo Valente, Cognitive Neuroscience (FPN), Phone +31(0)43 38 82469, Oxfordlaan 55, Room 2.011, Email: giancarlo.valente@maastrichtuniversity.nl

Title	**Introduction in Problem-Based Learning**
Period	0
Code	PSY4958
ECTS credits	-
Organisational unit	FPN Education Office
Coordinator	Wladimir van Mansum
Descriptions	The choice for Maastricht as a place to study also means a choice for an educational approach quite different to what is offered elsewhere. In Maastricht, education is based on the Problem-Based Learning (PBL) method. As opposed to other traditional educational approaches, Problem-Based Learning is not centred around the transfer of information from the lecturer to the student, but rather based on the learning process of the student. In small groups approximately 12 students meet once or twice weekly. The students discuss specific problems in depth. These problems are formulated in such a way that students are led to pose all types of explanatory questions; e.g., how did the phenomenon presented come about? Based on this discussion, students formulate the subject matter to be studied. The PBL approach and group discussions stimulate students to acquire relevant knowledge, insight and skills relatively independently. This emphasis on self-motivation is a core feature of Problem-Based Learning. After individually acquiring the relevant knowledge, it is shared with the other group members and discussed. During this course, students will learn and practice the skills needed to be successful in tutorial group meetings. They learn working together as a team and making sure all group members get the opportunity to join the discussion.The students learn how to communicate with each other, taking into account the different backgrounds of all group members. They learn how to lead a discussion as a student discussion leader during these sessions.
Intended Learning Outcomes	Students: - are able to explain the PBL system and are able to implement the approach; - can reflect on the group processes and reflect on their own performance in the tutorial group; - can give examples on how to adapt their performance in a group (teambuilding); - have knowledge of communication skills and leading a group and are able to demonstrate this knowledge in a new situation.
Instruction language	EN
Prerequisites	
Teaching methods	PBL Training Work in subgroups
Assessment methods	Attendance
Key words	PBL, communication skills, feedback, reflection, teambuilding

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☒ No

3a	Is there a resit possibility for every assessment method included?	☐ Yes ☒ No
3b	If the answer to question 3a is "NO" please explain.	Assessment changes from to attendance to written remedial assignment
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☒ No
4b	If the answer to question 4a is "NO" please explain.	Assessment changes from to attendance to written remedial assignment
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Colloquia

PSY4100 Colloquia is offered in all RM specialisations

Title	Colloquia
Period	3-6
Code	PSY4100
ECTS credits	1
Organisational unit	Cognitive Neuroscience (FPN), Department of Economics (SBE), Psychiatry and Neuropsychology (FHML), Neuropsychology and Psychopharmacology (FPN), Clinical Psychological Science (FPN)
Coordinator	Rudy Schreiber
Descriptions	Each specialisation organizes two colloquia, in which senior researchers from Maastricht University or visiting lecturers present their scientific insights. Each colloquium focuses in depth on one of a wide range of topics, with issues transcending the courses and specialisations. Each colloquium lecture will be followed by active discussion, chaired by the lecturer or the host of the guest lecturer. A total of twelve colloquia will be offered.
Intended Learning Outcomes	Students are able to understand: - key research domains from different specialisations; - interdisciplinary research. Students are able to interact with students from different specialisations.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s)
Assessment methods	Attendance
Key words	interdisciplinary knowledge

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No

7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Core courses

Title	**Auditory and Higher Order Language Processing**
Period	1
Code	PSY4251
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Bernadette Jansma
Descriptions	Although the human visual system has been studied extensively in cognitive neuroscience, so far only little is known about the auditory and speech system: How do we segregate the sound of a Ferrari from the background sounds of other running car engines, or the voice of a friend from that of many others in a crowd? How is auditory information integrated with other senses such as vision or touch? In the last few years, cognitive neuroscience research has set a number of milestones in our understanding about how our brain manages these tasks. This knowledge is crucial because hearing and communicating with the environment and with others is one of the most essential human cognitive skills.
	This course aims to develop students' knowledge about the human auditory and speech system. The course starts with basic neural anatomy and considers how this might constrain but also assist auditory processing. Students learn about the basics of speech segregation and perception. Bottom-up and top-down processes are addressed. Finally, the course discusses how the human mind selects relevant auditory, visual and linguistic information in order to communicate.
	Short paper on a topic integrating aspects of PSY4252 with PSY4251. In academic years starting in an even year, the paper counts as an extra exam question in PSY4251. In academic years starting in an odd year, the paper counts as an extra exam question in PSY4252.
Intended Learning Outcomes	Students are able to understand: - anatomy and function of the auditory system, of the speech system (separately for comprehension and production), and of cross modal integration; - methods used in CN to study anatomy and function (in animals, humans: staining, electrophysiology, psychophysics, fMRI, TMS); - relevant aspects of the method to quantify cognition (EEG oscillation, ERP components, fMRI); - experimental design to study open questions in hearing and speech processing (tasks, stimuli); - open issues of how the brains solves problems like Gestalt processing/grouping, figure ground segregation/streaming, comprehension, production, error monitoring, multisensory/cross modal integration. Students are able to: - acquire critical thinking skills of limits of methods, designs, tasks and theories in the context of auditory and language processing; - acquire creative thinking skills to come with new ideas by merging knowledge from different fields (i.e. comprehension and production, or by transferring ideas from one to another field (speech motor integration and its role in production).
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL

Assessment methods	Attendance
	Written exam
	Assignment
Key words	auditory processing, language comprehension, language production, cross modal integration

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☒ Other: additional paper assignment in every even year, alternating with Psy4252
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	x☐ Yes ☐ No If it is an even academic year (e.g., as in 2022-2023), then in the first exam, the score for the paper has the same weight as each of the open questions (i.e. a single open question per Task leading to 5 scores, plus 1 score for the paper, with each score counting for 10% of the points). For the resit of that year, the P/F status of paper and rest of the exam are treated independently. So, a resit may consist of a resubmission of another paper on a new topic, a re-examination on 5 open questions, or a combination of both. Open questions per Task (and the paper if applicable) get the same weight in the final score.
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Perception and Attention**
Period	1
Code	PSY4252
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Peter De Weerd
Descriptions	The objective of the course is to present the groundwork based on which students will be able to understand current neuro-cognitive theories and experimental methods in the field of visual perception and attention. This will be achieved via discussion of a set of core papers in this field.
	Vision is a complex cognitive process, which provides us with a richer stream of information than any other sense. The primate visual cortex is composed of a network of at least 30 highly interconnected functionally specialized regions. The regions where visual information first enters the cortex are called early visual areas. Neurons in these areas have relatively simple properties, and their small receptive fields are arranged to form retinotopic maps of the environment on the cortex. Higher level visual processing occurs in a ventral and dorsal stream, which are respectively contributing to object perception and the perception of motion.
	The network contributing to visual perception can adapt to the task that the organism is faced with. This is the case, for example, when looking for someone in a crowd and attending to one face at a time. There are many kinds of attention, but attention can be generally described as involving some type of information selection.
	In this course, neural mechanisms underlying prototypical examples of low and high level perception will be studied, as well as neural mechanisms underlying selective attention. The course will discuss both historically important papers, as well as more recent research in visual perception and attention, involving different empirical methods including psychophysics, neurophysiology, and functional brain imaging but with an emphasis on animal neurophysiology.
	Short paper on a topic integrating aspects of PSY4252 with PSY4251. In academic years starting in an even year, the paper counts as an extra exam question in PSY4251. In academic years starting in an odd year, the paper counts as an extra exam question in PSY4252.
Intended Learning Outcomes	Students will: - gain knowledge and understanding of the human and non-human primate visual system (structure and function), in terms of low-level and high-level visual perception as well as visual attention; - gain knowledge regarding acquisition and analysis of data in the methodological fields of neurophysiology and psychophysics; - acquire the capability of detailed, in-depth reading of scientific papers, which involves (I) the understanding and evaluation of methods, (II) the understanding/contrasting of (quantitative) theories and models and the evaluation of their fit with the data, and (III) the critical evaluation of interpretations of presented data by the article's authors; - improve their ability to use scientific terminology while verbalizing and discussing insights and questions raised by the readings; - be able to apply the acquired scientific reading and evaluation skills to papers outside the field of visual perception and attention;

	- generally improve their ability of theorizing, hypothesis formation, and experimental design.	
Instruction language	EN	
Prerequisites		
Teaching methods	Lecture(s) PBL	
Assessment methods	Attendance Written exam Assignment	
Key words	visual system, illusions, perception, attention, neurophysiology, monkey	

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☒ Other: additional Paper Assignment in odd years (alternating with PSY4251 in even years)
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	x☐ Yes ☐ No If it is an odd academic year (e.g., as in 2021-2022), then in the first exam, the score for the paper has the same weight as each of the open questions (i.e. a single open question per Task leading to 9 scores, plus 1 score for the paper, with each score counting for 10% of the points). For the resit of that year, the P/F status of paper and rest of the exam are treated independently. So, a resit may consist of a resubmission of another paper on a new topic, a re-examination on the 9 Tasks with 9 open questions, or a combination of both. Open questions per Task (and the paper if applicable) get the same weight in the final score.
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No

7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

PSY4106 Advanced Statistics I is offered in all RM specialisations

Title	Advanced Statistics I
Period	1-2
Code	PSY4106
ECTS credits	3
Organisational unit	Methodology and Statistics
Coordinator	Jan Schepers
Descriptions	The course consists of six units. In the first four units, participants will be given an in-depth training in the following standard statistical methods: factorial ANOVA for between-subject designs, analysis of covariance (ANCOVA), multivariate ANOVA (MANOVA), discriminant analysis and multiple linear regression. Students are assumed to have background knowledge of balanced two-way factorial ANOVA and multiple regression. These methods will be briefly reviewed. The following advanced topics will then be covered: unbalanced factorial designs, contrast analysis, interaction, simple slope analysis, dummy coding, centring covariates, different coding schemes, collinearity and residuals checks and data transformation. The distinction between confounders and mediators in regression and ANCOVA is also discussed, forming a bridge from regression to structural equations modelling (SEM). The latter is an advanced multivariate method that is gaining importance in psychology but still requires special software (such as Lisrel, EQS, AMOS or Mplus). SEM is introduced in two units, starting with causal modelling and mediation analysis in cross-sectional research and then extending to longitudinal research and latent variables (factors). Special attention is given to identifying models, model equivalence, global and local goodness of fit indices, parsimony, model modification and cross-validation. Some concepts from matrix algebra are needed for SEM, and these will be briefly discussed without going into technical detail. The corresponding practical for this course is: SPSS I and Lisrel
Intended Learning Outcomes	Students are able to understand: oneway analysis of variance, contrast analysis, unbalanced designs, multivariate analysis of variance, discriminant analysis, linear regression with interaction terms, linear regression with dummy variables, data transformations, simple slope analysis, analysis of covariance, path analysis, structural equation modeling, confirmatory factor analysis, structural models with latent variables.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Training(s)
Assessment methods	Attendance Written exam
Key words	univariate analysis of variance, multivariatie analysis of variance, regression analysis, structural equation modeling

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☒ Multiple choice ☐ Open ended questions ☐ Other:

2	Are all ILO's being assessed with the selected assessment methods?	☒ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☒ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☒ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	Linked to a PASS for attendance on the SPSS practical PSY4119

The practical training associated with PSY4106 Advanced Statistics I is PSY4119. Practical Training: SPSS I and Lisrel is offered in all RM specialisations.

Title	Practical Training: SPSS I and Lisrel
Period	1-2
Code	PSY4119
ECTS credits	-
Organisational unit	Methodology and Statistics
Coordinator	Jan Schepers
Descriptions	In order to make practical use of the statistical models that form the topic of the Advanced Statistics course, researchers must make use of statistical software. This course will utilise the traditional SPSS program, but also the specialised LISREL software. LISREL is a statistical program that allows structural equations models to be tested.
Intended Learning Outcomes	Students are able to understand: - defining contrasts; - building regression models; - doing multivariate analyses; - transforming data; - testing simple slopes; - creating and testing SEM models.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Training(s)
Assessment methods	Attendance
Key words	SPSS, LISREL, statistical software

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☒ No
4b	**If the answer to question 4a is "NO" please explain.**	Failed attendance is compensated by a catch-up assignment
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No

7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Neuroimaging: Functional MRI**
Period	2
Code	PSY4253
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Elia Formisano
Descriptions	The investigation of human brain functions using a range of imaging methods (such as electro- and magneto- encephalography, Positron Emission Tomography and Magnetic Resonance Imaging) represents the most influential development in Cognitive Neuroscience in the last years. In this course, students will learn about the essential facts of functional Magnetic Resonance Imaging (fMRI). FMRI presents clear advantages over the other methods, particularly in terms of increased spatial resolution. Since its invention in 1992, fMRI has led to major advances in understanding the neural mechanisms that underlie higher levels of human mental activity and has established a strong link between cognitive psychology and neuroscientific research. The other Cognitive Neuroimaging programmes confront student with several applications of fMRI in specific cognitive domains (visual perception and attention, sensorimotor integration, auditory perception). In this course, however, students will gain a deeper knowledge of fundamental and methodological aspects of fMRI. The tasks will address questions such as: How can the fMRI signal be related to neural activity? How are functional images obtained with an MRI scanner? What do I need for performing a good fMRI measurement? How are "activation maps" created? How can resting state fMRI data be analyzed? Some of the tasks are directly linked to a practical part of the course and are intended to provide the necessary theoretical framework for the design, analysis, measurement and interpretation of results in fMRI investigations. Practical sessions on acquisition and analysis of fMRI data of cognitive functions such as auditory and visual processing will be integrated in to the group meetings.
Intended Learning Outcomes	Students will gain knowledge and understanding of : - physical principles of Nuclear Magnetic Resonance and Magnetic Resonance Imaging; - physiological basis of functional MRIand the relation between the blood oxygenation level dependent contrast and neural activity; - general rules for designing fMRI experiments, advantages and disadvantages of block and event related designs; - pre-processing of fMRI data, including motion correction, spatial and temporal filtering; - fMRI statistics, including univariate statistics, general linear models, single-subject statistics, multi-subject statistics, correction for multiple comparisons, false discovery rate; - data driven analyses, independent component analysis; - methods for brain comparison and normalisation, Talairach transformation.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Written exam Assignment

	Key words	functional neuroimaging, Magnetic Resonance Imaging, experimental design, analysis methods

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Sensorimotor Processing**
Period	2
Code	PSY4254
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Joel Reithler
Descriptions	Every day activities such as riding a bicycle, typing a summary and drinking a cup of coffee require the continuous interaction of brain systems that serve sensory perception and systems that control the body's muscles. In other words, most of the things people do require sensorimotor integration. Since sensory perception (visual as well as auditory) is covered extensively in other courses, the main focus here will be on the somatosensory and motor system as well as on the transformation and processing of sensory information for motor control. Initially, basic processes are covered such as the representations used by primary and secondary somatosensory and motor areas (which parameters are represented, e.g., muscle contractions, joint angles or whole movements?), types of motor control (since processing perceptual feedback takes time, how should individuals use past information to control future actions?) and coordinate transformations (how to get from incoming visual information, coded with respect to our current eye position, to motor commands, coded with respect to our current body posture?). Later in the course, the focus will shift to higher level issues such as motor learning, action selection and decision making, and predicting the actions of others. All topics will be discussed in the context of cognitive neuroscience research so that students learn how these topics can be investigated using a range of different techniques from behavioural experiments to electrophysiological recordings and brain imaging methods.
Intended Learning Outcomes	- describe and explain the neural mechanisms underlying sensorimotor processing (internal models, coordinate transformations, action selection); - critically assess opposing views, the supporting experimental data and the research methods used to obtain them; - explain the neuro-behavioural correlates of motor learning and decision making, and the role of mirror neurons in action understanding.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Written exam
Key words	neural correlates of motor control, somatosensory perception, sensorimotor coordination, reference frames, coordinate transformations, motor learning, action selection, mirror neuron system

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Noninvasive Brain Stimulation (NIBS)**
Period	3
Code	PSY4216
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Tom de Graaf, Alexander Sack
Descriptions	This course will provide students with an in-depth knowledge of; noninvasive brain stimulation techniques, including transcranial magnetic stimulation (TMS) and transcranial electrical stimulation (TES). Students will learn about the mechanisms of action; the physical-physiological principles; various application protocols; functional brain stimulation paradigms and approaches for combining brain stimulation with brain imaging techniques both within and between experimental session(s). Since the very beginning of experimental brain research, neuroscientists have dreamed about not only observing the brain at work, but actually changing and modulating the neuronal activity in the brain without causing harm to patients or subjects. With the development of noninvasive brain stimulation (NIBS) it is now possible to reach into the skull of a patient or healthy subject and to temporarily alter brain activity at a specific location. This possibility opens the door to a wide range of experimental and clinical applications. New protocols and technologies allow researchers to modulate not only the level, but also the type of brain processes that occur. For instance, brain oscillations can be entrained to an external stimulation frequency. NIBS enables the researcher or clinician to change neuronal activity in the task-related brain area and reveal behavioural changes in actual task performance. This enables identification of those brain areas, or brain mechanisms, that are functionally relevant to a particular function. In a clinical context, NIBS has also been used to treat neurological, psychiatric, and psychological disorders that are accompanied by a pathologically increased or decreased activity, or pathological changes in brain oscillations, in a specific brain region or network. Since NIBS offers the possibility to change neuronal activity beyond the stimulation period itself, it is increasingly applied as a therapeutic tool, for instance to treat diseases like depression.
Intended Learning Outcomes	Students are able to understand: - physics and mechanisms of action of NIBS; - physiological effects of NIBS; - NIBS protocols and application paradigms; - NIBS in human cognitive neuroscience; - combining NIBS with functional imaging; - clinical applications of NIBS.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Work in subgroups PBL
Assessment methods	Attendance Presentation Written exam
Key words	non-invasive brain stimulation, functional magnetic brain interference, multi-modal imaging

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Brain Connectivity and Connectomics**
Period	4
Code	PSY4255
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Johannes Franz, Sven Hildebrand
Descriptions	This course introduces the fields of human brain connectivity and connectomics. The human brain is one of the largest and most complex biological networks known to exist. It contains about 85 billion neurons each making on average *ten thousand* connections with other neurons. Today, the map or annotated graph of all connections in the brain is called the connectome and the emerging field of connectomics endeavours to measure and understand the connectome. It has become increasingly clear over a century of neuroscience endeavours since Ramon y Cajal that the particular organisation of brain *connectivity* plays a crucial role in enabling human abilities. Two general principles of this organisation became clear early on and remain important to this day: i) the multi-scale organization of brain connectivity (from macroscale white matter organization to microscale cortical circuits) and ii) the interplay between structure and function (with structure determining function and function driving structural plasticity). With recent advances in methods, neuroimaging investigations of human perception and cognition are increasingly interpreted in terms of connectivity, inter-areal interactions and cortical circuit computations. This course will discuss both structural connectivity and functional interactions, with an emphasis on the human brain, and how these can be measured and analysed in cognitive neuroscience experiments. The different spatial and temporal scales at which connectivity is organized will be treated in depth, with an emphasis on neuroanatomy of layered cortical circuits and the large scale organization of white matter fiber tracts.
Intended Learning Outcomes	Students are able to understand: Structural connectivity, Functional connectivity, Effective connectivity, Resting state experiments and networks, Layers in the neocortex, Cytoarchitecture, Myeloarchitecture, Receptor architecture, Canonical cortical microcircuits, Cortical computation, Realistic neural network models, Diffusion MRI tractography and connectomics, Graph analysis, Connectivity analyses in fMRI and M/EEG, Independent Component Analysis , Granger causality, Dynamic Causal Modeling, Histology and microscopy, Tracer studies, Polarized Light Imaging, White matter organization, Myelination, White matter plasticity.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Paper(s) Presentation(s)
Assessment methods	Attendance Written exam
Key words	brain connectivity, connectomics, functional connectivity, effective connectivity, cortical microcircuits, white matter organisation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:

2	Are all ILO's being assessed with the selected assessment methods?	☐ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Advanced fMRI**
Period	4
Code	PSY4215
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Rainer Goebel
Descriptions	Building on the course "Neuroimaging: Functional MRI", this course will examine advanced topics of fMRI methodology and applications. It will be discussed how knowledge about vascular effects on the MRI signal may help to detect BOLD artefacts. Furthermore, principles of real-time fMRI will be presented. This is followed by an overview of fMRI neurofeedback studies and a discussion of its use as a new therapeutic tool. In addition, machine learning techniques for the real-time decoding of mental states and the application of these techniques in brain-computer interfaces will be discussed. Subsequently, advanced cortical mapping techniques are examined, including estimation of population receptive fields for visual and cognitive topographic maps. Furthermore, deep neural networks will be discussed in the context of modeling responses along the visual hierarchy. Finally, the possibilities of "mesoscopic" ultra-high field brain imaging will be discussed enabling new possibilities to understand brain activity at the level of cortical columns and cortical layers.
Intended Learning Outcomes	Students are able to understand: - effects of vascular system on the interpretability of the BOLD fMRI signal; - real time fMRI data analysis during ongoing experiments; - possibilities and limitations of fMRI-based brain-computer interfaces (BCIs); - fMRI neurofeedback training as a new therapeutic tool; - real-time decoding of mental states; - encoding and decoding representations using population receptive field mapping; - multivariate representational spaces analyzed using representational similarity analysis (RSA); - principles of convolutional deep neural networks as models of brain function; - opportunities and challenges of high-resolution fMRI at ultra-high magnetic field strengths to investigate the cortex at the columnar and laminar level.
Instruction language	EN
Prerequisites	Research master course 'Neuroimaging: Functional MRI'.
Teaching methods	Paper(s) PBL Presentation(s)
Assessment methods	Attendance Presentation Written exam
Key words	neurovascular coupling, real-time fMRI, neurofeedback, BCI, population receptive field (pRF) mapping, representational similarity analysis (RSA), ultra-high magnetic field fMRI, columnar-level imaging, cortical layers, convolutional deep neural networks

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions

		☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Advanced Statistics II
Period	4-5
Code	PSY4107
ECTS credits	3
Organisational unit	Methodology and Statistics
Coordinator	Gerard van Breukelen
Descriptions	The course consists of seven units. The first three units cover classical repeated measures ANOVA for the one- and two-way within-subject design and the split-plot (between x within) design. Special attention is given to: a) the choice between multivariate and univariate data formats and method of analysis, and the sphericity assumption; b) the distinction between the within-subjects and between-subjects part of a split-plot ANOVA, and how to obtain both using regression analysis; c) the surprising consequences of including covariates into repeated measures ANOVA; and d) the choice between different methods of analysis for randomised versus non-randomised group comparisons. Subsequently, a further three units are devoted to mixed (multilevel) regression for nested designs and longitudinal studies. This mixed regression starts with a unit on marginal models for repeated measures as an alternative to repeated measures ANOVA in cases of missing data or within-subject covariates. Students are shown the pros and cons of various models for the correlational structure of repeated measures, such as compound symmetry and AR1. The second unit covers the random intercept model for repeated measures as a method to include individual effects in marginal models for longitudinal data (growth curves) or single trial analyses of lab data (response times, ERP, fMRI). Students learn how this can be combined with e.g. ARMA modelling to distinguish between interpersonal and intrapersonal outcome variation. The random intercept model will also be applied to a cluster randomised trial, i.e. an RCT where organisations like schools or companies instead of individuals are randomised. The third and last unit on mixed regression covers random slope models for longitudinal data (individual differences in change over time), single trial analysis (individual differences in stimulus effects) and multicentre trials (RCT within each of a number of organisations). Finally, the topic of sample size and power calculations is introduced in a seventh unit. The corresponding practical for this course is: SPSS II
Intended Learning Outcomes	Students are able to understand: - repeated measures ANOVA for within-subject and split-plot (between x within) designs, including factorial designs and covariates in repeated measures ANOVA; - mixed (multilevel) linear regression with random effects and autocorrelation; - sample size calculations for experimental and observational studies. Specifically, students are able to choose the correct method of analysis, and specify a statistical model, for repeated measurements, to compare different models and choose the best model (based on checking assumptions, model fit and parsimony on top of plausibility), and to interpret effect estimates and significance tests obtained with that model. Students are furthermore able to choose the correct formula for computing the sample size for basic and often used research designs, and to compute the sample size with that formula.
Instruction language	EN
Prerequisites	Good understanding of descriptive and inferential statistics at the elementary and

	intermediate level, including t-tests, factorial ANOVA and multiple linear regression. Skilled in the use of SPSS for statistical data analyses.
Teaching methods	Assignments: data analyses by computer, and homework Lectures Trainings): computer practical trainings in SPSS and GPower Practical lectures
Assessment methods	Attendance Written exam or Computer Test, depending on the standard in FPN
Key words	within-subject designs, repeated measures ANOVA, mixed (multilevel) regression, marginal versus random effects models, sample size, power

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☒ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No
3b	**If the answer to question 3a is "NO" please explain.**	Yes for the exam, no for the attendance. Absence on 1 or 2 of 7 practical lectures is permitted without catch-up. More absence means no pass for attendance, see the Exam rules and regulations.
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

The practical training associated with PSY4107 Advanced Statistics II is PSY4117. Practical Training SPSS II is offered in all RM specialisations

Title	Practical Training: SPSS II
Period	4-5
Code	PSY4117
ECTS credits	-
Organisational unit	Methodology and Statistics
Coordinator	Gerard van Breukelen
Descriptions	This practical training forms part of the PSY4107 Advanced Statistics II course. The practical consists of seven sessions in the computer rooms. In the first six sessions SPSS procedures for repeated measures and multilevel data are practised. The goal is to understand how proper analyses of such data can be done using SPSS. In the last session GPower will be used to practice sample size (power) calculations for some elementary research designs.
Intended Learning Outcomes	Students are able to understand and apply: - how to run with SPSS: repeated measures ANOVA for within-subject and split-plot (between x within) designs, including factorial designs and covariates; - how to run SPSS for: mixed (multilevel) linear regression with random effects and autocorrelation; - how to use GPower for sample size (power) calculations for your own research (master thesis, grant application).
Instruction language	EN
Prerequisites	Good understanding of descriptive and inferential statistics at the elementary and intermediate level, including t-tests, factorial ANOVA and multiple linear regression. Skilled in the use of SPSS for statistical data analyses.
Teaching methods	Training(s)
Assessment methods	Attendance
Key words	within-subject designs, repeated measures ANOVA, mixed (multilevel) regression, marginal versus random effects models , sample size, power, effect size

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☒ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No
3b	**If the answer to question 3a is "NO" please explain.**	100% attendance. Catch-up assignment for absence in 1 of 7 sessions. No pass if more that 1 absent, see Exam rules and regulations.
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☒ No
4b	**If the answer to question 4a is "NO" please explain.**	See answer 3b
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Timing Neural Processing with EEG and MEG
Period	5
Code	PSY4256
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Fren Smulders
Descriptions	Cognitive neuroscientists can currently choose from a range of imaging methods to investigate human brain function. Each of these methods has its own strengths and limitations, which determine its suitability for a particular research question. Electroencephalography (EEG) and magnetoencephalography (MEG) offer an unparalleled ability as non-invasive measures of both electrical oscillatory brain activity and the time course of activation of neural systems involved in perceptual and cognitive processes. Relevant topics include auditory and visual perception, attention, language, memory and their development. EEG and MEG signals reflect complementary aspects of brain activity, with MEG having some advantages over EEG in the localisation of underlying neural sources. This course provides detailed knowledge on EEG and MEG. The study of EEG and MEG experimental design, data acquisition and data analysis will be combined with detailed literature discussions on theoretical and methodological issues. Based on different types of empirical questions, there will be discussion of the potential of a range of methods for advanced EEG and MEG analysis, including analysis in the time and frequency domain, source localisation, the combination with functional magnetic resonance imaging (fMRI) and transcranial magnetic stimulation (TMS) methods, independent component analysis and analyses of functional connectivity.
Intended Learning Outcomes	Students are able to understand: measurement and experimental design in electro-encephalography; event-related potentials; magneto-encephalography; analyses: dipole source a., distributed source a., Fourier a., wavelet a., independent component a., connectivity a.; machine learning; application: mental chronometry, attention, lateralised event-related potentials, combining electro-encephalography with functional magnetic resonance imaging, trans-cranial electric and magnetic stimulation.
Instruction language	EN
Prerequisites	
Teaching methods	Lectures Paper Presentation PBL
Assessment methods	Attendance Final paper Presentation
Key words	electroencephalography, magnetoencephalography, biological signal analysis, source localisation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No

3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☒ Yes presentation (25%) and final paper (75%) ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☒ No
6b	If the answer to question 6a is "NO" please explain.	see, weighing
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Translational Neuroscience: Towards Clinical Applications for Disorders of Consciousness
Period	5-6
Code	PSY4257
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Bettina Sorger
Descriptions	Translational Neuroscience aims at expanding our understanding of brain structure, function, and disease in order to finally translate this knowledge into clinical applications and novel diagnostics and therapies of nervous-system disorders. After the students had been introduced with the main state-of-the-art neuroscience methods (EEG, TMS, [real-time] fMRI, DWI *etc.*) in previous courses and workshops, this core course focuses on the (multi-modal) application of these neuroscientific tools in one particular context: the neuroscientific investigation of disorders of consciousness and the development of related clinical neuroscientific applications (diagnostics and treatment). After a general introduction to Translational Neuroscience, the students will be familiarised with the different disorders of consciousness. Then, the students will present and critically review several Translational Neuroscience (including brain-computer interface) studies focusing on improving diagnostics and treatment for patients with disorders of consciousness. At the end of the course, we will discuss (un-)related novel ideas for Translational Neuroscience research.
Intended Learning Outcomes	Students are able to understand: - introduction to Translational Neuroscience; - intensive discussion of Translational Neuroscience possibilities in the context of disorders of consciousness; - critical evaluation of empirical Translational Neuroscience articles; - practical application of methodological knowledge in a clinical context; - generation of own Translational Neuroscience ideas.
Instruction language	EN
Prerequisites	
Teaching methods	Presentation Assignment PBL
Assessment methods	Attendance Presentation Final paper
Key words	translational neuroscience, clinical neuroscience, consciousness, disorders of consciousness, brain imaging methods, brain-computer interfacing

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Research Grant Writing Course**
Period	1
Code	PSY5112
ECTS credits	3
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Sebastian Köhler, Ron Handels
Descriptions	Research is expensive. Finding appropriate funding sources and writing a convincing application is therefore a core comptenency of scientists. In this course, students will apply what they have learned during the Research Grant Writing Workshop (PSY4112) by going through a full grant proposal writing and review process. Students will work together (groups of 4-6 students) to write a research proposal on their selected topic, including an original research hypothesis, design, methods, motivation and valorization. Students are encouraged to think across boundaries of different scientific fields. A mentor (senior researcher) will guide students during this writing process. The students will write their proposal in 3 steps, and they will receive feedback from their mentor and peers along the way. The resulting grant proposals will be reviewed by two assessors and presented during a symposium by way of an oral presentation.
Intended Learning Outcomes	Students are able to: - review literature; - formulate a research hypothesis; - design a innovative research study; - write a competitive grant proposal; - present and illustrate a grant proposal at a symposium.
Instruction language	EN
Prerequisites	This course is a continuation of the Research Grant Writing Workshop (PSY4112).
Teaching methods	Work in subgroups Skills Assignments
Assessment methods	Attendance Final paper Presentation
Key words	grant proposal, interdisciplinary, hypothesis, design, methods, research symposium

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	If students miss attendance of their group's presentation during the final symposium, they have to present the proposal individually to the course coordinators.
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☒ No
4b	If the answer to question 4a is "NO" please explain.	

5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	X Yes, attendence must be 'pass'; the final group-based paper is graded by 2 raters and the average is taken as a grade for the each group member. Students also rate other group members' performance, and in case of exceptionally poor or good functioning 0.5 points will be added or reduced, respectively to the grade of that student. ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**The Brain's Engram: Memorising Experiences and Experiencing Memory**
Period	1
Code	PSY5213
ECTS credits	4
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Vincent van de Ven
Descriptions	The brain is able to retain a myriad of experiences in the memory for shorter and longer durations of time. Memory formation requires encoding followed by the selection of relevant items in working memory, and the consolidation of the experience into a lasting neural representation. At the same time, memory retrieval appears to involve the reactivation of the neural processes of memory formation. In this course, students will discuss the neuroscience of working memory and episodic memory, and in how far these types of memory rely on similar neural mechanisms and brain networks. The role of prefrontal cortex as well as the hippocampal complex in memory formation and retrieval will be discussed in detail. With the current knowledge and methods, it has become possible to artificially create, delete, and retrieve memories, and we will read some of the research papers that have led to this unprecedented capability.The literature comprises introductory materials on plasticity in aplysia and LTP, as well as cutting-edge memory research papers from various neuroscience disciplines, including cognitive neuroimaging, neurophysiology, molecular biology (optogenetics), pharmacology, and pharmacology.
Intended Learning Outcomes	Students will - acquire knowledge and understanding of basic processes underlying learning and memory, including neurophysiological correlates at the level of spiking and local field potentials, oscillations, and cellular plasticity processes; - acquire knowledge, understanding as well as the ability to critically analyse and evaluate core papers on learning and memory that combine theories, methods, and data from different fields, including cognitive neuroscience, neurophysiology, pharmacology, and molecular neuroscience; - improve their ability to integrate insights from different fields (as mentioned in previous points) to gain deeper insight in fundamental theories of memory and in core concepts including encoding, (re)consolidation, maintenance and retrieval; - gain anatomical and functional knowledge on the contributions of hippocampus, frontal lobe, and sensory cortices to learning and memory; - gain the ability to read current, cutting-edge, multidisciplinary empirical research papers documenting approaches to implant artificial memories, delete specific memories, or reactivate/retrieve memories under experimental control; - further improve their skills in reading, analyzing, evaluating and verbally discussing interdisciplinary papers, leading to suggestions for better design and/or analysis.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Paper(s) PBL
Assessment methods	Attendance Written exam
Key words	working memory, prefrontal cortex, theta oscillations, episodic memory, hippocampus, space, time, place cells, grid cells, LTP, cellular mechanisms of plasticity

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes Ⅹ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Skills Training

PSY4221 EEG and ERP is offered in CN and FN

Title	EEG and ERP
Period	1
Code	PSY4221
ECTS credits	2
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Fren Smulders
Descriptions	Electroencephalography (EEG) can measure oscillatory electrical brain activity and Event Related Potentials (ERP) allow for precise measurement of the time course of brain processes. They are low cost, non-invasive methods and are widely available. For these reasons they make a unique contribution to cognitive neuroscience. Scientific interest in EEG and ERP is growing, and results have been increasingly integrated with other neuro-imaging methods during the last few decades. Lectures and basic literature provide an introduction for students to the basics of EEG and ERP research, EEG and ERP terminology and the possibilities and limitations of EEG and ERP. For a Midterm paper students study an empirical data article from the literature and answer questions about its EEG and ERP methods and interpretation based on lectures, basic literature and other sources. Students also study practical measurement issues, such as electrode placement and types of artefacts. Finally, students will interpret the resulting data. Successful measurement requires an understanding of the basics of EEG and ERP signal analysis techniques, such as artefact management, spectral analysis, filtering, ERP averaging, time-frequency analysis etc. Students also receive training in running an ERP experiment, including electrode application, minimising artefacts, and health and safety in the lab. A number of simple experimental paradigms will be used that provide interesting and reliable results. Data processing will include a number of common EEG analyses, e.g. analyses in the time and frequency domain.
Intended Learning Outcomes	Students are able to understand: basic EEG/ERP paradigms, EEG recording systems, measurement settings, electrode application, data quality verification, analogue-digital conversion, basic EEG / ERP components, interpreting topographical plots, neural origins of EEG, time domain analysis, frequency domain analysis, time-frequency analysis, filtering, ocular artefact control, muscle artefact control, choice of reference, re-referencing.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Skills Training(s) Work in subgroups
Assessment methods	Attendance Assignment Final paper
Key words	electroencephalography (EEG), Event-related potentials (ERP), electrophysiology, measurement, analysis of brain potentials

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions

		☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☒ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**fMRI**
Period	2
Code	PSY4227
ECTS credits	2
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Elia Formisano, Federico De Martino
Descriptions	The primary goal is to provide hands-on experience in experimental design, acquisition and analysis of fMRI experiments. In the first tutorial, each student group separately formulates an experimental question/hypothesis to be tested with fMRI and elaborates an appropriate experimental design. In a subsequent meeting, each group present to the other groups (in an oral presentation) its proposal for an fMRI study and all studies are discussed and evaluated; at the end of the meeting one study is selected. In the group meetings and independent study, all students are involved in implementing the experimental set-up required for performing the selected study (e.g. selection and preparation of stimuli, implementation of the design) and participating in the fMRI measurements. In the last meetings, all students perform the statistical analysis of the datasets. Assistance and prior preparation, especially in the implementation stage (stimulus programming) and data analysis stage (preparation of data in usable format for analysis in Brain Voyager QX), is provided by the tutors. Finally, students describe and discuss their findings in an individually written report.
Intended Learning Outcomes	Students are able to understand and gain hands-on experience of: - experimental design, hypothesis formulation, operationalization; - fMRI blocked and event related designs; - parameters for MRI scanning, MR safety and procedures, fMRI measurements; - pre-processing fMRI data, statistical analysis fMRI data, results interpretation.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Presentation(s) Research Skills Work in subgroups Working visit(s)
Assessment methods	Attendance Presentation Final paper
Key words	functional MRI, experimental design, fMRI data acquisition, fMRI data analysis

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Take home assignment (paper)
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☒ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Neuroanatomy
Period	3
Code	PSY4108
ECTS credits	1
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Jos Prickaerts
Descriptions	The aim of this practical training is to make you acquainted with the neuroanatomical terminology and to gain insight into the spatial and functional organisation of the brain. It is essential to have a basic knowledge of the brain anatomy when working in the field of neuropsychology or neurobiology. Many specific brain areas can be linked to particular functions. Thus, knowledge of the brain anatomy and its main functions allows direct linkage of specific neurological or psychiatric disorders to particular brain areas. After a short theoretical introduction, you will study whole brains and brain material of mammals at both macroscopical (visual inspection) and microscopical level. The emphasis will be on major brain systems, including the basal ganglia and limbic system.
Intended Learning Outcomes	Students are able to understand: - organisation of the brain in particular the limbic system and basal ganglia; - brain dissection; - microscopical staining techniques.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture Skills Work in subgroups
Assessment methods	Attendance Written exam
Key words	neuroanatomy, limbic system, basal ganglia

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☒ Other: fill-in exercises (assign the correct name to brain structures)
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Diffusion Weighted Imaging and Fibre Tracking
Period	4
Code	PSY4228
ECTS credits	1
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Johannes Franz, Sven Hildebrand
Descriptions	Diffusion weighted imaging and fibre tracking are a set of techniques that use the Magnetic Resonance (MR) scanner to probe fibre-bundles, which connect different regions of the brain. Thus, instead of the cerebral grey matter, it is the white matter that is the object of study. The connections between brain-regions are the substrate of the interaction and communication between different brain systems. Thus, knowledge about the anatomy of these anatomical connections is of great importance to cognitive neuroscientists. The anatomy of fibre-tracts is imaged indirectly, by measuring the diffusion of water in the brain. Water diffuses more easily in a parallel way rather than perpendicular to the direction of surrounding axon bundles. Thus, by measuring the direction of local diffusion of water, inferences about the trajectories of fibre-bundles can be drawn. After completing this training, student will have knowledge of: i) how the MR scanner can be made sensitive to directed diffusion of water and how the resulting diffusion weighted images can be processed; ii) different models for local water diffusion within a voxel, along with useful quantities that can be derived from these models; iii) fibre tracking or tractography- how to get from local models of water diffusion to measures of global connectivity between brain regions. Furthermore, student will gain hands-on experience in analysing and visualising diffusion weighted MR data and in using tractography algorithms and assessing the results.
Intended Learning Outcomes	Students are able to understand: - how to make the MR scanner sensitive to directed diffusion of water and how the resulting diffusion weighted images can be processed; - different models for local water diffusion within a voxel, along with useful quantities that can be derived from these models; - fibre tracking or tractography - how to get from local models of water diffusion to measures of global connectivity between brain regions.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Training(s)
Assessment methods	Assignment Attendance
Key words	diffusion, MRI, DTI, tractography

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Programming in Matlab Basic Course**
Period	5
Code	PSY4224
ECTS credits	2
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Giancarlo Valente
Descriptions	Matlab provides a powerful environment for numerical computation, data analysis and visualisation. It is, in essence, a programming environment that has built-in primitives for common scientific tasks that in other languages, such as C or Delphi, require many operations. Examples are tasks such as matrix algebra (used in statistical analysis of data), Fourier transforms (used in signal processing) and 2D or 3D plots for visualisation of data or analysis-results. Many complete packages for the analysis of cognitive neuroimaging data (e.g. fMRI data or EEG/MEG data) are implemented in Matlab. Thus, usage of these packages requires at least a basic understanding of Matlab. Furthermore, if more advanced analysis or visualisation is needed than what is offered by existing packages, developing new functionalities in Matlab is often the most convenient option. The first part of the course will deal with how Matlab primarily represents and processes data, i.e. as matrices. Subsequently, attention is focused on the usage of the environment: the prompt; the workspace; the help options; and loading, saving and visualising data. The principles behind programming will be introduced, with particular emphasis on neuroimaging applications.
Intended Learning Outcomes	Students are able to understand: Matlab environment, Matlab variables, vectors, matrices, matrix algebra, 2D and 3D plots, conditional loops, scripts, functions, file Input-Output, structures, cells.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Work in subgroups
Assessment methods	Attendance Take home exam
Key words	programming principles, scripts and functions, data analysis

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: home assignments
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes

		☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Programming in Matlab Advanced Course**
Period	1
Code	PSY5223
ECTS credits	1
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Giancarlo Valente
Descriptions	This course deals with advanced topics in Matlab programming. In particular, it will focus on how to implement efficient and re-usable programs for neuroimaging applications. Students will learn how to put the principles of efficient programming, such as debugging and profiling, into practice. Advanced topics in graphics and user interfaces will also be discussed.
Intended Learning Outcomes	Students are able to understand: debugging, efficient programming, graphical objects, graphical user interfaces.
Instruction language	EN
Prerequisites	PSY4224 Programming in Matlab Basic Course
Teaching methods	Assignment(s) Lecture(s) Skills Work in subgroups
Assessment methods	Attendance Assignment
Key words	efficient programming, debugging, graphical user interfaces

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: assignment
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Methodological and technical workshops

Title	**Methods of Deactivation**
Period	3
Code	PSY4233
ECTS credits	1
Organisational unit	Cognitive Neuroscience (FPN)
Coordinators	Teresa Schuhmann
Descriptions	In three consecutive practical training sessions, students acquire direct hands-on experience with non-invasive magnetic brain stimulation (transcranial magnetic stimulation (TMS) and transcranial electric stimulation (TES)). Students learn how to use the brain stimulator devices, how to evoke muscle responses and how to induce visual experiences. Students act as both the experimenter, applying the brain stimulation, and the participant, receiving the magnetic pulses. Practical I: Technical introduction/motor thresholds/motor excitability Practical II: TMS-induced visual experiences (phosphenes) Practical III: TMS Neuronavigation (frameless stereotaxy) There are a variety of ways in which activity in a brain region can be prevented or influenced. Some studies use anatomical lesion methods (in animals), while others use reversible methods such as cooling, and pharmacological or genetic manipulations in animals, or TMS in human participants. The training will end with a lecture that provides an overview of these different methodologies, including a discussion of the advantages and limitations of the different techniques and of the issues related to data interpretation.
Intended Learning Outcomes	Students are able to understand: Transcranial Magnetic Stimulation, application of TMS, motor threshold determination, phosphene threshold determination, neuronavigation, transcranial electric stimulation, cooling, various other deactivation methods.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Training(s)
Assessment methods	Attendance Assignment
Key words	Transcranial Magnetic Stimulation, non-invasive brain stimulation, fMRI-guided neuronavigation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Hands-on assessment during practical
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Real-Time fMRI and Neurofeedback**
Period	4
Code	PSY4231
ECTS credits	1
Organisational unit	Cognitive Neuroscience (FPN)
Coordinators	Rainer Goebel and Bettina Sorger
Descriptions	Recent progress in computer hard- and software allows real-time analysis of functional magnetic resonance imaging (fMRI) data, which provides the basis for brain-computer interface (BCI) applications such as neurofeedback, control of external devices and motor-independent communication. In fMRI-based neurofeedback studies, subjects can observe representations of their own brain activation while being measured in the MRI scanner. FMRI-based neurofeedback is performed by reading, analysing and visualising the hemodynamic brain signals in real-time during an ongoing experiment. This real-time approach is in contrast to the standard analysis approach in which the huge amount of incoming fMRI signals are recorded first and then analysed hours or days after the experiment. During this workshop, there will be an introduction into the real-time fMRI methodology and a discussion of fMRI neurofeedback applications, which have demonstrated that with sufficient practice, subjects are indeed able to learn to modulate activity in certain brain areas. These results are extremely important for basic neuroscience research, because they allow researchers to study the degree to which humans can modulate their own brain activity and to potentially unravel the function of *hitherto* unknown brain areas. Neurofeedback research also touches on deep philosophical issues, such as the neural correlates of free will. It might also be possible in the future to help people with pain or depression by regulating at will neural activity in relevant brain areas. In fMRI-based communication studies, activation patterns evoked by participants are 'decoded' and interpreted online, e.g. as letters of the alphabet, offering the possibility for people with severe motor impairments to 'write' letters purely controlled by mental imagery. In this workshop, a number of online analysis strategies will be discussed for decoding mental states, including analysis of the mean signal of regions-of-interest (ROIs) and the use of pattern classifiers operating at the voxel level.
Intended Learning Outcomes	Students are able to understand: - principles of real-time fMRI, setup and conduction of real-time fMRI experiments; - serving as subjects (two students) in a real-time BCI session; - basics of real-time fMRI data analysis (Turbo-BrainVoyager software).
Instruction language	EN
Prerequisites	
Teaching methods	Lecture Work in subgroups
Assessment methods	Attendance Final paper
Key words	real-time fMRI, neurofeedback, brain-computer interface (BCI), brain reading

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:

2	Are all ILO's being assessed with the selected assessment methods?	☐ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Basic Mathematical Methods
Period	5
Code	PSY4237
ECTS credits	2
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Giancarlo Valente
Descriptions	Neuroscientific research has greatly benefited from recent developments in data analysis methods. The aim of this course is to provide participants with the basic 'tools' needed to gain a better understanding of the data analysis methodologies and to help them develop methods and strategies to tackle their research problems. The course will cover the basic aspects of number representation, with an emphasis on complex numbers, needed for Fourier analysis, and will then focus on basic algebra. The course will cover in detail vectors and matrices and their operations, including sums, products, inversion and eigenvalue decomposition and linear systems of equations. The course will also focus on the basic concepts of calculus, including infinitesimals, differential and integral calculus. Each session of the course has a practical component attached, in which the participants solve, with the aid of the tutor, a number of exercises. These are both pen-and-paper and MATLAB computer-based exercises. Furthermore, a selected range of applications of the illustrated concepts in the field of neuroscience are provided throughout the course.
Intended Learning Outcomes	Students are able to understand: trigonometry, exponentials and logarithms, complex numbers, polar representation, functions of one variable, algebra, solution of a system of linear equations.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Work in subgroups
Assessment methods	Attendance Take home exam
Key words	algebra, complex numbers, pre-calculus, vectors, matrices

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: assignment
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No

6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Research Grant Writing Workshop**
Period	6
Code	PSY4114
ECTS credits	2
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Sebastian Köhler, Ron Handels
Descriptions	Research is expensive. Finding appropriate funding sources and writing a convincing application is therefore a core comptenency of scientists. During this workshop students will learn why and how to apply for research grants. The need for acquiring funding for research, the opportunities for, and availability of grant application funding will be discussed. Students will start by chosing a topic (from a list of topics) andwrite an abstract on their research idea. Subsequently, they work in teams to discuss individual ideas and decide on a joint research idea that will serve as a basis for writing a full grant proposal during the second-year Research Grant Writing Course with guidance of a mentor (see description of PSY5112. Mentors are researchers from all RM tracks who have experience in applying for different types of grants will provide students with first-hand knowledge and tips. Students will learn fundamentals of good grant writing, general preparation of the grant application and how to deal with reviewer comments. Ethical issues including feasibility and acceptability of the research, and the role of the local research ethics committee will be discussed.
Intended Learning Outcomes	- students will learn about the importance of grant writing for an academic career; - students will recognize opportunities for funding, ethical aspects of grants, how grants can be acquired and grant writing skills; - students will develop a first outline of a grant proposal with peers.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Work in subgroups Skills Assignments
Assessment methods	Attendance Final paper
Key words	funding possibilities, grant applications, proposal writing, team science

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☒ No
4b	**If the answer to question 4a is "NO" please explain.**	The resit is a written compensatory assignment.

5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes X No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	Though PSY4112 is followed on by PSY5112 in the next academic year, taking the latter is not conditional on having passed PSY4112

Title	Signal Analysis
Period	1
Code	PSY5231
ECTS credits	2
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Giancarlo Valente
Descriptions	Traditional and advanced statistics provide essential knowledge and tools for the correct formulation of scientific inferences and for summarising a research work. Nonetheless, modern techniques in neuroscience research have strongly increased the amount of information that can be extracted from experimental data and analysed, especially on account of the improved spatial and temporal resolution of the acquisition methods. Most of the new information can be recovered by including in the statistical modelling the 'signal' structure of the data, generally due to the physical dimensions of data, time and space. This Signal Analysis course introduces the practical implementation of the traditional and latest research approaches to time and space signal analysis in the context of neuroscience research. The course focuses on time series analysis from one- and multi-dimensional data. The basics of discrete time and space signal acquisition and modelling are presented and discussed in their practical neuroscience applications. The course has the objective to provide the participants with an operational understanding of the classical signal analysis techniques like preprocessing, analysis in the frequency, time and amplitude domains, Fourier series, Fourier Transform and FFT, spectral analysis, linear system theory and implementation of filters in time and frequency domains. Practical demonstrations from real world data reinforce concepts introduced in the lectures. MATLAB implementation of these techniques is also addressed throughout the meetings.
Intended Learning Outcomes	Students are able to understand: statistical modeling, stationary signals, sampling theorem and frequency, harmonics, Fourier Series, Fourier Transform, Discrete Fourier Transform, linear systems, filters.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Presentation(s) Skills Training(s) Work in subgroups
Assessment methods	Attendance Take home exam
Key words	frequency representation, linear systems, filters

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Assignments
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Electives

The following electives are offered in all RM specialisations.

Title	Elective: Course
Period	Throughout Year 1
Code	PSY4156
ECTS credits	1-3
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Vincent van de Ven
Descriptions	Students can attend a course outside of their RM specialization, choosing from local courses that are offered by one of the RM specializations or a regular Master's programme at Maastricht University, or a course that is organised at a different university in The Netherlands or abroad (external courses). The content, format and organisation of local courses are described in this catalogue or in the course descriptions of other UM Master's programmes. The content, format and organisation of external courses are determined by the host university. Elective courses must not overlap with required RM core courses, but instead offer new knowledge and insights. Enrollment in an elective course is subject to approval by the RM Electives Coordinator, for which you must complete an online application form (see AskPsy.nl). Elective courses do not substitute for mandatory courses.
Intended Learning Outcomes	Students are able to be involved in: extracurricular interests, broadening academic scope, taking specialised courses.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Presentation(s) Skills Training(s)
Assessment methods	
Key words	electives, external courses, external workshops

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Depends on Course
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	Depends on Course
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	Depends on Course
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No

6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Elective: Review
Period	Throughout Year 1
Code	PSY4157
ECTS credits	3
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Vincent van de Ven
Descriptions	Students can write a critical literature review or meta-analysis based on a specialised topic, under the supervision of a member of the scientific staff of Maastricht University. Students take the initiative to locate and arrange a supervisor for the review. The review topic, content and format will be determined by mutual agreement between student and supervisor. Students are expected to devote 84 hours to the Review Elective. Each student may complete maximally one Review or one Research elective (PSY4158). The Review Elective must be completed and assessed prior to the start of the internship.
Intended Learning Outcomes	Students are able to understand: extracurricular interests, specialisation on topic of interest, supervised scientific writing, literature review.
Instruction language	EN
Prerequisites	
Teaching methods	Paper(s)
Assessment methods	Final paper
Key words	elective, review paper, paper assignment, literature review, writing assignment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Writing assignment
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Elective: Research
Period	Throughout Year 1
Code	PSY4158
ECTS credits	3
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Vincent van de Ven
Descriptions	Students can participate in (parts of) an empirical research project that is conducted and supervised by a member of the FPN or FHML scientific staff. Students can apply for an available project from the list of project descriptions, which is published and continuously updated from December onwards. When accepted to participate in the research, students may assist in designing the experiment or observational study, acquire empirical data, be trained in using measurement equipment, analyse empirical data, program an experimental design or analysis pipeline, or take part in other parts of the research project. At the end of the elective students must hand in a short research report (or some equivalent thereof given the nature of the elective project) of maximally 5 pages about the practical experience obtained. Students are expected to spend 84 hours on the elective project, which includes time spent on practical work and the research report. The principal investigator of the project will supervise the practical work and grade the research report. Each student may complete maximally one Research Elective project. The Research Elective must be completed and graded before the start of the internship.
Intended Learning Outcomes	Students are able to understand: planning or designing empirical research, empirical data analysis, writing research report, quantitative methods, conducting research, skill learning of data acquisition techniques, functioning in a research team.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Patient contact PBL Presentation(s) Research Skills Training(s) Work in subgroups
Assessment methods	Final paper Participation
Key words	elective, practical research, empirical research, data acquisition, analysis, laboratory skills, experimental design, patient research, interviewing, scoring and normalization

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Writing Assignment (elective report) + practical research work
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No

3b	If the answer to question 3a is "NO" please explain.	Only for elective report
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	X Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☒ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Research Internship and Master's Thesis

Internships

1. *PSY5107 Research Proposal, PSY5120/5121(research option) PSY5122/5123 (clinical option), Research Internship and PSY5103 Master's Thesis -> for [CN, FN, DN ->50 credits] and [NP and PP->30 credits]. Internship coordinators differ per specialisation.*
    *   *50 credits apply to: CN, FN, DN and for PP and NP students who choose to do only a research Internship (not including the clinical part)*
    *   *NP and PP students doing a clinical internship in addition to the research internship will obtain 30 credits for the Research Proposal + Research Internship + Master's Thesis + 20 credits for Clinical Internship, Clinical Research Proposal and Minor's Thesis.*
2. *Clinical Internship, Research Proposal Minor's Thesis and Minor's Thesis PSY5104, PSY5108, and PSY5105. Descriptions are the same for NP and PP. Only the internship coordinators differ per specialisation.* ***See NP***

Title	**Research Proposal, Research Internship and Master's Thesis**
Period	2-6
Code	PSY5107, PSY5120/PSY5121 (research option) PSY5122/PSY5123 (clinical option), and PSY5103/PSY5109
ECTS credits	**50 EC (1, 10/25, and 14, respectively)** for RM CN, FN, DN, NP and PP students who do *not* complete a clinical internship and minor's thesis. The duration of the research internship is expected to be around 34 weeks. The total research internship will be assigned 50 credits: 36 credits for the research activities, including the research proposal (1 credit; graded pass/fail) (PSY5107), and the practical execution of the internship (10 credits graded included in GPA (PSY5120); 25 credits pass/fail and thus not included in the GPA) (PSY5121) and 14 credits (graded assessment) for the master's thesis (PSY5103). **30 EC** (1, 10/9, and 10, respectively) for **RM PP and RM NP** students who choose to conduct both a research and a **clinical** internship (plus minor's thesis). The duration of the research internship is expected to be around 19-21 weeks. The total research internship will be assigned 30 credits: 20 credits for the research activities, including the research proposal (1 credit; graded pass/fail) (PSY5107) and the practical execution of the internship (10 credits graded included in GPA (PSY5122); 9 credits pass/fail and thus not included in the GPA (PSY5123)), and 10 credits (graded assessment) for the master's thesis (PSY5109).
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Gerda Kraag
Descriptions	The second part of the second year of the research master's programme is devoted to conducting a research internship. As a result of the many international research contacts that faculty members have established, a substantial number of students will conduct their research internship abroad. Students start their internship with the writing of a research proposal. Students finish the master's programme by writing a thesis based on their internship research project. The internship can be completed at Maastricht University or at external research institutes. In all cases, a student's research proposal and master's thesis will be evaluated by two assessors. At least one of these assessors must be a member of the Faculty of Psychology and Neuroscience (FPN), the Faculty of Health, Medicine and Life Sciences (FHML), or the School of Business and Economics (SBE). Both assessors must hold a PhD degree. A detailed guide on research internships and the master's thesis can be found on AskPsy > Curriculum > Internships. Each specialisation has its own internship coordinator: - RM Cognitive Neuroscience: to be announced - RM Fundamental Neuroscience: Pilar Martínez, Psychiatry and Neuropsychology (FHML), Phone: (0)43 38 81042, 40 Universiteitssingel, Room 2.574, Email: p.martinez@maastrichtuniversity.nl - RM Neuropsychology: Michael Schwartze, Neuropsychology and Psychopharmacology (FPN), Phone (043) 38 82802, 40 Universiteitssingel, Room A2.765,

	Email: michael.schwartze@maastrichtuniversity.nl
	For the clinical part:
	Ieke Winkens, Neuropsychology and Psychopharmacology (FPN),
	Phone (043) 38 84512, 40 Universiteitssingel, Room A2.761,
	Email: fpn-np-internship@maastrichtuniversity.nl
	- RM Psychopathology:
	Nicole Geschwind, Clinical Psychological Science (FPN),
	Phone (043) 38 81487, 40 Universiteitssingel, Room 2.767,
	Email: nicole.geschwind@maastrichtuniversity.nl
	- RM Drug Development and Neurohealth:
	Jacco Briedé, Toxicogenomics,
	Phone (043)3881094, 50 Universiteitssingel, Room 4.114,
	Email: j.briede@maastrichtuniversity.nl
Intended Learning Outcomes	Students are able to understand and apply:
	conducting a (supervised) empirical research project and summarising the research and findings in the form of a master's thesis.
Instruction language	EN
Prerequisites	The research internship cannot be started until:
	- at least 60 credits have been attained during the programme;
	- the above mentioned 60 credits must include the courses Advanced Statistics I and II.
Teaching methods	Assignment(s)
	Paper(s)
	Research
	Skills
	Working visit(s)
Assessment methods	Attendance
	Final paper
	Observation
	Participation
Key words	internship, research, master's thesis

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other: research proposal and master thesis
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No NA: prosposal is pass/fail; master thesis is graded (between 0 and 10; 6.0 is sufficient)

6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Overview RM in Fundamental Neuroscience (FN)

	Research Master in Fundamental Neuroscience (FN) Year 1 (2021-2022) **Specialisation Coordinator:** Daniel van den Hove
Period 0	Introduction week: **PSY4958** Introduction in Problem-Based Learning (training for non-UM students*) (- credits): Wladimir van Mansum
Throughout Year 1	**Electives:** **PSY4161** Elective: Laboratory Animal Sciences (elective) (3 credits): Saskia Seeldrayers **PSY4156** Elective: Course OR **PSY4157** Elective: Review OR **PSY4158** Elective: Research (3 credits each): Vincent van de Ven **OR** **PSY4159** Double Elective: Research (6 credits): Vincent van de Ven OR **PSY4160** Double Elective: Review (6 credits): Vincent van de Ven
Period 1 30-08-2021 22-10-2021	**Core courses: **** **PSY4311 **** Introduction to Molecular Biochemical Techniques (5 credits): Gunter Kenis *Practical Training:* **PSY4341** Genes and Proteins: Gunter Kenis OR **PSY4312 **** Introduction to Psychology (5 credits): Eef Theunissen *Practical Training:* **PSY4353** Measuring Cognitive Functions: Nadia Hutten **PSY4313** Neuroanatomy (4 credits): Jörg Mey *Practical Training*: **PSY4344** Mammalian Macro- and Microscopical Neuroanatomy: Jörg Mey **PSY4106** Advanced Statistics I (3 credits): Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Workshop: **PSY4340** Introduction in Genetics (1 credits): Gunter kenis
Period 2 25-10-2021 17-12-2021	**Core courses:** **PSY4314** Neurodegeneration (4 credits): Tim Vanmierlo *Practical Training*: **PSY4351** Immunocytochemical Staining of Human Postmortem Tissue and Evaluation of the Staining using the Multihead Microscope: Tim Vanmierlo **PSY4315** Biopsychological Neuroscience (4 credits): Jos Prickaerts *Practical Training:* **PSY4343** Neuropsychological Experiment: Jos Prickaerts **PSY4106** Advanced Statistics I: Jan Schepers *Practical Training*: **PSY4119** SPSS I and Lisrel: Jan Schepers
	Workshop: **PSY4834** Valorisation (2 credit): Mark Govers, Rudy Schreiber, Jos Prickaerts
Christmas break	
Period 3 03-01-2021 28-01-2021	**Core courses:** **PSY4320** Neurological Neuroscience (5 credits): Govert Hoogland *Practical Training*: **PSY4347** Genotyping your NMDA Receptor: Govert Hoogland
	Workshop: **PSY4332** Surgery for Intractable Movement and Psychiatric Disorders (1 credit): Ali Jahanshahianvar
	PSY4100 Colloquia (total of 1 credit): Rudy Schreiber
Period 4 31-01-2022 01-04-2022	**Core courses:** **PSY4360** Neuroimmunology and Inflammation (4 credits): Mario Losen, Pilar Martinez-Martinez *Practical Training*: **PSY4349** Neuroinflammation: Mario Losen **PSY4336** Neuroplasticy and Pain (5 credits): Bert Joosten

	Practical Training: **PSY4346** Cell Culture: Bert Joosten **PSY4107** Advanced Statistics II (total of 3 credits): Gerard van Breukelen *Practical Training*: **PSY4117** SPSS II: Gerard van Breukelen
	Workshop: **PSY4832** Biomedical Brain Imaging (3 credits): Dennis Hernaus
	PSY4100 Colloquia: Rudy Schreiber
Period 5 04-04-2022 03-06-2022	**Core courses:** **PSY4323** Psychiatric Neuroscience (4 credits): Daniel van den Hove, Gunter Kenis *Practical Training*: **PSY4352** Western Blotting: Daniel van den Hove, Gunter Kenis **PSY4322** Electrophysiology: From Single Cell Activity to 'Cognitive' Markers (4 credits): Anke Sambeth **PSY4107** Advanced Statistics II: Gerard van Breukelen *Practical Training*: **PSY4117** SPSS II: Gerard van Breukelen
	PSY4100 Colloquia: Rudy Schreiber
	Workshop: **PSY4373** Introduction to R (1 credit): Ehsan Pishva, Wolfgang Viechtbauer
Period 6 07-06-2022 01-07-2022	**Workshop:** **PSY4114** Research Grant Writing Workshop (2 credits): Sebastian Köhler, Ron Handels **PSY4371** Psychiatric Epidemiology (1 credit): Wolfgang Viechtbauer
	PSY4100 Colloquia: Rudy Schreiber

Students from Erasmus Rotterdam receive an exemption for PBL Training

**PSY4311: This introduction course is required for students with a psychological background. The parallel course PSY4312 is required for students with a biological background. Thus, students enroll in either PSY4311 or PSY4312. The course coordinators of both courses evaluate which of the two courses a student is required to take.*

	Research Master in Fundamental Neuroscience (FN) Year 2 (2022-2023)
Period 1	**Core course:** **PSY5112** Research Grant Writing Course (3 credits): Sebastian Köhler, Ron Handels
	Skills Training: **PSY4221** EEG and ERP (2 credits): Fren Smulders
	Workshop: **PSY5332** Behavioural Tests and Models (1 credit): Jos Prickaerts **PSY5333** Advanced Genetics (1 credits): Gunter Kenis
Throughout Year 2	Electives: **PSY4161** Elective: Laboratory Animal Sciences (elective) (3 credits): Saskia Seeldrayers **PSY4156** Elective: Course OR **PSY4157** Elective: Review OR **PSY4158** Elective: Research (3 credits each): Vincent van de Ven **OR** **PSY4159** Double Elective: Research (6 credits): Vincent van de Ven OR **PSY4160** Double Elective: Review (6 credits): Vincent van de Ven
32 weeks	**PSY5107** Research Proposal (1 credit), **PSY5120** Research Internship Graded (10 credits)/**PSY5121** Research Internship Ungraded (25 credits) & **PSY5103** Master's Thesis (14 credits): Gerda Kraag

Specialisation in Fundamental Neuroscience (FN)

The specialisation in Fundamental Neuroscience provides students with both the theoretical background and practical experience for research at the interface between neuroscience and psychology, thus offering interdisciplinary cross-integration. The focus is on acquiring the molecular biological (e.g. proteomics, genomics), neuroanatomical (e.g. immunocytochemistry), electrophysiological (e.g. EEG, ERP) and behavioural techniques (e.g. rodent and human tests) necessary for preclinical basic research. In addition, the specialisation provides an in-depth study into state-of-the-art knowledge of physiological and pathophysiological mechanisms underlying psychological, psychiatric and neurological disorders (e.g. affective disorders, cognitive disorders, motor disorders). Within this context, the role of the emerging fields of neuroinflammation and pain is also studied. Main research topics include cell signalling, brain plasticity, neurodegeneration, regeneration, genetics and epigenetics in a translational setting (in both animal and human). Teaching is undertaken by a multidisciplinary team from the Faculty of Psychology and Neuroscience (FPN) and, in particular, the School for Mental Health and Neuroscience of the Faculty of Health, Medicine and Life Sciences (FHML). The staff consists of professionals from relevant disciplines and includes biological psychologists, molecular biologists, neuropsychologists, neurobiologists, neuroanatomists, psychopharmacologists, immunologists and psychiatrists. The specialisation in Fundamental Neuroscience trains researchers to be equipped for investigations into the underlying fundamental molecular mechanisms of psychological and psychiatric disorders in academic as well as industrial settings.

Coordinator Fundamental Neuroscience

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*PSY4958 is offered in all RM specialisations. **See CN***

Colloquia
*PSY4100 Colloquia is offered in all RM specialisations. **See CN***

Core courses

Title	**Introduction to Molecular Biochemical Techniques**
Period	1
Code	PSY4311
ECTS credits	5
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Gunter Kenis
Descriptions	This course focuses on fundamental biological concepts including cellular organisation, DNA, RNA and proteins. Additionally, this course provides students with a conceptual understanding of the most important concepts in molecular neuroscience. Students are made familiar with selected aspects of molecular biology that provide the non-specialist with the principles for understanding the structure and functional relationships of molecular biology techniques. The corresponding practical for this course is: Genes and Proteins
Intended Learning Outcomes	Students will be able to understand: cell biology, molecular biology, biochemistry, regulation of gene and protein transcription, research methods in molecular cell biology and vocabulary (e.g. scientific and technical words). Students will be able to apply: acquisition of basic laboratory techniques, including preparation of buffers, pipetting, pH titration, a protein assay (standard curve), RNA extraction and DNA isolation, conventional PCR.
Instruction language	EN
Prerequisites	This introductory course is required for students with a psychological background. The parallel course PSY4312 is required for students with a biological background. Thus, students enroll in either PSY4311 or PSY4312. The course coordinators of both courses evaluate which of the two courses a student is required to take.
Teaching methods	Lecture(s) Presentation Research Skills PBL
Assessment methods	Attendance Participation Paper Written exam
Key words	RNA, DNA, protein, ELISA, RIA, PCR, western blot

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No

4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4311 Introduction to Molecular Biology and Biochemistry is PSY4341 Practical Training: Genes and Proteins.

Title	**Practical Training: Genes and Proteins**
Period	1
Code	PSY4341
ECTS credits	-
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Gunter Kenis
Descriptions	This practical training provides students with a practical understanding of the most important techniques in molecular neuroscience. Students are made familiar with selected aspects of molecular biology that provide the non-specialist with the principles for understanding the structure and functional relationships of molecular biology techniques This includes basic laboratory techniques such as pipetting, pH titration and a protein assay. Specific techniques performed in the lab are DNA/RNA isolation and analysis, DNA synthesis and PCR
Intended Learning Outcomes	Students will be able to understand: - standard techniques in molecular research laboratories; - acquaintance with terms of molecular biology/biochemistry.
Instruction language	EN
Prerequisites	
Teaching methods	Paper Research Skills Work in subgroups
Assessment methods	Attendance Final paper
Key words	general laboratory techniques, RNA, DNA isolation, protein purification, ELISA, PCR/ RT-PCR, western blot

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code)**	☐ Yes ☐ No

	(e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?		
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.		

Title	Introduction to Psychology
Period	1
Code	PSY4312
ECTS credits	5
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Eef Theunissen
Descriptions	In this course students acquire an overview of human cognitive psychology. A selected number of psychological themes are covered, surveying knowledge on how humans act and interact, how they differ from each other, how they reason and how they 'know' things. The course focuses on 'normal' human performance, but malfunction and psychopathology are also covered. The major emphasis of the course is on understanding human behaviour by means of cognitive, non-biological theories and paradigms. The corresponding practical for this course is: Measuring cognitive functions
Intended Learning Outcomes	Students will be able to understand: - psychological methods and designs; - cognition, perception, personality, behaviour, consciousness.
Instruction language	EN
Prerequisites	This introductory course is required for students with a biological background. The parallel course PSY4311 is required for students with a psychological background. Thus, students enroll in either PSY4311 or PSY4312. The course coordinators of both courses evaluate which of the two courses a student is required to take.
Teaching methods	Assignment(s) Lecture(s) Paper(s) PBL Presentation(s)
Assessment methods	Attendance Final paper Participation Presentation
Key words	introduction, behaviour, cognition, psychology

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	X Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☒ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4312 Introduction to Psychology is PSY4353 Practical Training: Measuring Cognitive Functions

Title	Practical Training: Measuring cognitive functions
Period	1
Code	PSY4353
ECTS credits	-
Organisational unit	Neuropsychology and psychopharmacology (FPN)
Coordinator	Nadia Hutten
Descriptions	You will conduct an experiment in which you will test the effect of a (psychoactive) manipulation on cognitive functioning. You will also participate as a test subject in the experiments of your fellow students. Next, you have to analyse the data collected during the experiment and present the results to your fellow students.
Intended Learning Outcomes	Students will be able to understand: - psychological experiment, measuring cognitive functions; - data analysis; - presenting (poster or oral).
Instruction language	EN
Prerequisites	
Teaching methods	Research
Assessment methods	Attendance Participation
Key words	Cognitive functions; psychological experiment.

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Neuroanatomy
Period	1
Code	PSY4313
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Jörg Mey
Descriptions	It is essential to have a basic knowledge of the brain anatomy when working in the field of molecular neuroscience. The aim of the course is to acquaint students with the neuroanatomical terminology and provide insight into the spatial and functional organisation of the brain. Many specific brain areas can be linked to particular functions. Thus, knowledge of the brain anatomy and its main functions allows connecting specific neurological or psychiatric disorders with particular brain areas. In addition, various other methods of modern brain imaging (both *in vivo* and *ex vivo*) are discussed. The course also encompasses practical training in which students study human, sheep and rat macro and micro brain anatomy. The corresponding practical for this course is: Mammalian Macro- and Microscopical Neuroanatomy
Intended Learning Outcomes	Students will be able to understand: basic human neuroanatomy, brain imaging, microglia and macroglia, neurons, blood brain barrier, ventricular system, brain vasculature, immunohistochemistry.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) PBL Skills Training(s)
Assessment methods	Attendance Written exam
Key words	neuroanatomy, glia, neurons, blood brain barrier, ventricular system, immunohistochemistry, brain imaging

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4313 Neuroanatomy is PSY4344 Practical Training: Mammalian Macro- and Microscopical Neuroanatomy

Title	Practical Training: Mammalian Macro- and Microscopical Neuroanatomy
Period	1
Code	PSY4344
ECTS credits	-
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Jörg Mey
Descriptions	You will participate in different practical training sessions to study human, sheep and rat macro and micro brain anatomy. *Practical training 1*: Studying human brain anatomy macroscopically using plastic brain models and plastinated human brains; *Practical training 2*: Dissecting a sheep brain and study mammalian brain anatomy. Special attention is paid to the limbic system and the basal ganglia; *Practical training 3:* Staining of rat brain slices using histochemistry and enzymatic labelling with antibodies. Afterwards, these slices are studied microscopically to gain insight in the rat brain anatomy at a cellular level.
Intended Learning Outcomes	Students will be able to understand: human neuroanatomy, sheep neuroanatomy, rat neuroanatomy, microscopy, immunohistochemical staining techniques.
Instruction language	EN
Prerequisites	
Teaching methods	Skills Training(s)
Assessment methods	Attendance Final paper
Key words	neuroanatomy, immunohistochemistry, human, rat, sheep

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No

7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

PSY4106 Advanced Statistics I is offered in all RM specialisations. **See CN**

The practical training associated with PSY4106 Advanced Statistics I is PSY4119 Practical Training: SPSS I and Lisrel is offered in all RM specialisations. **See CN**

Title	Neurodegeneration
Period	2
Code	PSY4314
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Tim Vanmierlo
Descriptions	This course provides in-depth education into the biological factors and mechanisms underlying the development and course of commonly occurring neurodegenerative disorders, such as dementia and Parkinson's disease. Age-related neurodegenerative disorders bring about a huge impact on the afflicted patients, their family members but also on society as a whole. The range of neurodegenerative disorders are known to show shared but also strikingly distinct properties with respect to clinical manifestations, macroscopical and microscopical neuropathology, and the molecular and cellular mechanisms involved, such as at the levels of cellular stress, aberrant protein aggregations and selective neurovulnerability. The aim of this course is to gain insight into these properties and thus into neurodegenerative processes, such as the formation and deposition of aggregated proteins, the loss of neurons and synapses, alterations in neurogenesis and inflammatory processes, alterations in metabolic/oxidative state, and the course will open the discussions whether these properties and processes may cause or consequence. Moreover, this course furthermore covers the influences of genetic and environmental factors on onset and course of neurodegenerative disorders and strategies for therapy. Human studies and studies using model systems such as transgenic animal models and neural cell cultures will be discussed. The corresponding practical for this course is: Immunocytochemical Staining of Human Postmortem Tissue and Evaluation of the Staining using the Multihead Microscope
Intended Learning Outcomes	Students will be able to understand: - biological changes in the brain during aging. Anatomical, genomic, biochemical, electrophysiological and behavioural aspects of age-related neurodegenerative disorders such as dementia, dementia of the Alzheimer's type, vascular dementia, frontal tempolar dementia, synucleinopathies (incl. Parkinson disease), and polyglutamine-delated disorders such as Huntington's disease; - epidemiology and diagnostic aspects of dementia and other common age-related neurodegenerative disorders; - amyloid beta cascade hypothesis, amyloid precursor protein, Presenelin 1 and 2, Tau, ubiquitin, ApoE polymorphism, risk factors, oxidative stress, loss of synapses, energy metabolism and mitochondrial dysfunction, cell death, plaques, tangles, epigenetics, neuronal loss, gliosis, immune system, cytoarchitecture of hippocampus and neocortex, neuroplasticity, neurogenesis, life-style interventions and pharmacotherapy.
Instruction language	EN
Prerequisites	Laboratory skills are recommended.
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Research Skills Training(s) Work in subgroups PBL

Assessment methods	Attendance
	Presentation
	Written exam

Key words	neurodegeneration, cognition, protein dysfunction and aggregation, amyloid beta cascade hypothesis, neuro-immune-vasculature interplay

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

The practical training associated with PSY4314 Neurodegeneration is PSY4351 Practical Training: Immunocytochemical Staining of Human Postmortem Tissue and Evaluation of the Staining Using the Multihead Microscope

Title	**Practical Training: Immunocytochemical Staining of Human Postmortem Tissue and Evaluation of the Staining using the Multihead Microscope**
Period	2
Code	PSY4351
ECTS credits	-
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Tim Vanmierlo
Descriptions	An immunocytochemical procedure will be followed to label plaques (ABeta) and neurofibrillary tangles (abnormal Tau) and to the staining will be evaluated afterwards using the multihead microscope.
Intended Learning Outcomes	Students will be able to understand: - collecting Postmortem tissue, fixation, paraffin, immunocytochemical staining, recognition of neuropathological hallmarks in Tauopathies: Alzheimer's disease (AD); - plaques, tangles Synucleinopathies: Parkinson disease, Multisystem atrophy; - polyglutamine diseases: Huntington, and Spinocerebellar ataxias; - mixed pathogies; - diffuse Lewy body disease, early and late onset AD, Amyloid beta cascade hypothesis, amyloid precursor protein, Tau, ubiquitin, GFAP, gliosis, cytoarchitecture of hippocampus and neocortex.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL Research Skills Training(s)
Assessment methods	Attendance Observation Take home exam
Key words	tauopathies (e.g. Alzheimer's), synucleinopathies (e.g. Parkinson), polyglutamine diseases (Huntington), neurodegenerative mechanisms

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No

6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Biopsychological Neuroscience**
Period	2
Code	PSY4315
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Jos Prickaerts
Descriptions	This course provides an in-depth description of biopsychological concepts that are relevant to the field of neuroscience. It covers elements from functional neuroanatomy, neurophysiology and psychopharmacology, as applied to brain and behaviour research. Major emphasis will be placed on the macro- and microanatomy of the brain and on molecular, i.e. neurochemical and neurobiological, mechanisms related to neurotransmission, hormones and drug action. With respect to 'function', a detailed description is given of processes underlying sexual behaviour, affective behaviour, motivated behaviour and cognitive processes. The course also encompasses practical training in a neuropsychological experiment in which you will participate to investigate the link between biology and psychology. You have to analyse the data collected during the experiment and makes a poster of the results. The corresponding practical for this course is: Neuropsychological Experiment
Intended Learning Outcomes	Students will be able to understand: - biology underlying fundamental psychological processes; - integrating biology and psychology to understand brain and behaviour functions.
Instruction language	EN
Prerequisites	
Teaching methods	Paper PBL Presentation Skills
Assessment methods	Attendance Participation Final paper Presentation
Key words	neurotransmitters, hormones, signal transduction, memory, affect, motivation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: participation+presentation+written essay
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	X Yes Final grade = 20% participation+ 30% presentation + 20% essay writing ☐ No

6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4315 Biopsychological Neuroscience is PSY4343 Practical Training: Neuropsychological Experiment

Title	Practical Training: Neuropsychological Experiment
Period	2
Code	PSY4343
ECTS credits	-
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Jos Prickaerts
Descriptions	You will participate as a test subject in a neuropsychological experiment which investigates the link between a biological response and a psychological function, in particular cognitive function. Next, you have to analyse the data collected during the experiment and make a poster based on the results.
Intended Learning Outcomes	Students will be able to understand: - neuropsychological experiment; - data analysis; - making poster.
Instruction language	EN
Prerequisites	
Teaching methods	Skills Research
Assessment methods	Attendance Participation
Key words	neuropsychological experiment, poster

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: making poster
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Neurological Neuroscience
Period	3
Code	PSY4320
ECTS credits	5
Organisational unit	Neurosurgery/ Psychiatry and Neuroscience (FHML)
Coordinator	Govert Hoogland
Descriptions	Neurological disorders such as epilepsy and movement disorders (e.g. Parkinson's disease, Huntington's disease) arise from a primary structural/molecular lesion (e.g. trauma, disrupted brain development, gene defect) followed by a chronic process of neuronal network reorganisation. Once this process has reached a critical stage, the patient will manifest clinically observable symptoms. Though drug therapy is the first choice in treating patients with neurological disorders, this introduces side effects and pharmacoresistance in a considerable number of patients. Hence, alternative treatment options are explored, some of which are established and some which are still in an experimental stage. Surgical treatment strategies aim at restoring the function of the pathologic neuronal network by i) electrical modulation of the network, ii) disrupting or isolating the pathologic network by resective surgery and iii) building new networks by gene therapy, stem cell transplantation or induction of cytogenesis. One of the challenges that this approach faces is the anatomical and functional demarcation of the pathologic network. As with any therapy, its efficacy depends on selecting suitable candidates, which implies a multidisciplinary workup. The course focuses on the underlying molecular mechanisms as well as the (lack of) rationale behind the treatment options. Students gain experience with the multidisciplinary workup and the molecular assays that are currently explored to characterise these disorders. The course also encompasses practical training in which students have to genotype their own NMDA receptor. The corresponding practical for this course is: Genotyping your NMDA Receptor
Intended Learning Outcomes	Students will be able to understand: translational research approaches for neurological disorders including epilepsy and movement disorders.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Skills PBL
Assessment methods	Attendance Presentation Written exam
Key words	epilepsy, movement disorders, genetics, electrophysiology, functional neurosurgery

Nr.	Question	Answer
1	In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	Are all ILO's being assessed with the selected assessment methods?	☐ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4320 Neurological Neuroscience is PSY4347 Genotyping your NMDA Receptor

Title	Practical Training: Genotyping your NMDA Receptor
Period	3
Code	PSY4347
ECTS credits	-
Organisational unit	Neurosurgery/ Psychiatry and Neuroscience (FHML)
Coordinator	Govert Hoogland
Descriptions	Students isolate their own DNA and use this in a restriction fragment polymorphism assay to analyse their individual NMDA genotype. The data is discussed in groups in the light of seizure susceptibility based on journal articles.
Intended Learning Outcomes	Students will be able to understand genotyping, data analysis.
Instruction language	EN
Prerequisites	
Teaching methods	Research
Assessment methods	Attendance Participation
Key words	genotyping, polymorphism, NMDA receptor

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Neuroimmunology and Inflammation**
Period	4
Code	PSY4360
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Mario Losen, Pilar Martinez-Martinez
Descriptions	Neuroimmunology is the study of interactions between the immune and the nervous systems. Immune mechanisms and inflammatory processes play an important role in maturation and aging during normal life span. Moreover, brain and spinal cord trauma, neurodegenerative brain diseases and autoimmune diseases involve activation of immune mechanisms and inflammation, which in turn contribute to disease development. This course explains the function of the immune system in general with a special focus on the immune privileged central nervous system. In particular, the course emphasizes the role of inflammatory cells and proinflammatory molecules such as lipids and antibodies in Alzheimer's disease, multiple sclerosis, Parkinson's disease and mood disorders. A special focus is placed on the molecular basis of novel treatment approaches for these diseases and regulation of the inflammatory mediators in neurodegeneration. The course also encompasses a practical on neuroinflammation in which students learn to use a relevant biochemical assay. The corresponding practical for this course is: Neuroinflammation
Intended Learning Outcomes	Students will be able to understand the interaction of the immune system with the nervous system in neuropsychiatric disorders.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Paper(s) PBL Presentation(s) Work in subgroups
Assessment methods	Attendance Presentation Written exam
Key words	neuroimmunology, inflammation, macrophages and microglia, B cells, T cells, dendritic cells, blood brain barrier (BBB), lipids, antibodies

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No

6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4360 Neuroimmunology and Inflammation is PSY4349 Practical Training: Neuroinflammation

Title	Practical Training: Neuroinflammation
Period	4
Code	PSY4349
ECTS credits	-
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Mario Losen
Descriptions	Students participate in a neuroinflammation practical, which will be based on ongoing experimental Research in the School for Mental health and Neuroscience. These practicals focus on the characterization of autoantibodies against neuronal receptors, using techniques such as enzyme-linked immunosorbent assays (ELISA), cell-based assays (CBA) and immunofluorescence (IF) microscopic analysis. Such techniques are clinically relevant to detect autoantibodies from individuals with neuropsychiatric diseases, including for example myasthenia gravis or NMDA encephalitis.
Intended Learning Outcomes	Students will be able to understand: - neuroinflammation markers; - biochemical assays; - data analysis.
Instruction language	EN
Prerequisites	
Teaching methods	Research
Assessment methods	Attendance Final paper
Key words	neuroinflammation, ELISA, FACS, cell culture

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No

| 7b | If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course. | |

Title	Neuroplasticity and Pain
Period	4
Code	PSY4336
ECTS credits	5
Organisational unit	Anesthesiology (FHML)
Coordinator	Bert Joosten
Descriptions	Acute (physiological) nociceptive pain is protective and helps us to deal with potentially threatening or damaging environmental stimuli. However, pain is not always considered adaptive and beneficial to our survival. Pain can become chronic and can also become very resistant to pain medicine in the present drug arsenal. Finding out which molecular and cellular mechanisms are involved in the transition from acute to chronic pain and/or the ability to mediate chronic pain itself is expected to result in an improved pain management as it allows for mechanism-based treatment approaches. This course covers the basic understanding of nociceptive signaling. Moreover, it will be discussed how nociception can be modulated. Conditions of pain amplification will be then be discussed with particular attention to neuropathic pain and post-surgical pain. Peripheral and central sensitization will be discussed as processes of molecular neuroplasticity, which lays the foundation for amplification of nociceptive signaling under pathological conditions. In the last decade, it has become clear that neuro-inflammation and particularly the activation of non-neuronal cells such as central glia (microglia and astrocytes) contribute largely to amplification of pain (e.g. chronic pain) during such pathological conditions. Glial activation, via release of pro-inflammatory factors and other neuroactive mediators, is an important contributor to neuroplasticity and includes central sensitization. A better understanding of processes of neuro-inflammation and neuroplasticity in conditions of chronic pain are thought to aid in development of novel, more effective pain therapies. This course is subdivided into three parts. The first part focuses on nociceptive and inflammatory pain, discussing processes of neuroplasticity and pain, with special attention paid to the cellular and molecular nature of peripheral and central sensitization. The second part covers chronic pain conditions and underlying cellular and molecular mechanisms. The third part aims to integrate the knowledge obtained in the first two parts of the course in a translational way (bench-to-bedside-and-back-to-bench approach). The corresponding practical for this course is: Cell Culture
Intended Learning Outcomes	Students will be able to understand: - nerve injury and neuro-inflammation; - cellular and molecular pain mechanisms; - cellular and molecular plasticity; - peripheral and central sensitization; - pain management; - cell culture techniques; - translational research.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) PBL Presentation(s) Skills Training(s)
Assessment methods	Attendance

	Final paper
	Presentation
Key words	pain conditions, cellular and molecular neuroplasticity, neuro-inflammation, translational research

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

The practical training associated with PSY4336 Neuroplasticity and Pain is PSY4346 Practical Training: Cell Culture

Title	Practical Training: Cell Culture
Period	4
Code	PSY4346
ECTS credits	-
Organisational unit	Anesthesiology (FHML)
Coordinator	Bert Joosten
Descriptions	During this practical session, students acquire skills in cell culturing. To this end, a murine cell line will be used to assess toxicity of materials used as treatments of neuropathic conditions. Moreover, demonstrations about animal models of pain, and behavioural tests to assess pain, are presented to students. Each student analyses data collected during the practical session and produces a short written report.
Intended Learning Outcomes	Students will be able to understand: - cell culture; - animal models of pain; - behavioural tests for pain assessment; - translational pain modelling.
Instruction language	EN
Prerequisites	
Teaching methods	Presentation(s) Skills Training(s)
Assessment methods	Attendance Final paper
Key words	cell culture, pain models, pain assessment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No

7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Psychiatric Neuroscience (FN)/Psychiatric Neuroscience: Psychopharmacology (DN)**
Period	5
Code	PSY4323 (FN)/PSY4841 (DN)
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Daniel van den Hove, Gunter Kenis
Descriptions	The main aim of this course is to gain insights into the molecular neurobiology of psychiatric disorders and how these phenotypes can be studied in animal models (i.e. the principle of translation). The first part of this course focuses on the psychobiology of stress, emotions and associated disorders such as depression and anxiety disorders. Chronic and/or excessive stress may lead to the development of psychiatric conditions such as depression and anxiety, diseases in which a patient shows inadequate coping associated with a severe disruption of daily life. A major challenge in research on stress and related disorders is to unravel the molecular basis of persistent changes in behaviour that explain the symptoms of mental illness and their (partial) reversal during treatment. A major focus during the course is on the limbic system, the sympathetic nervous system and the hypothalamo-pituitary-adrenal axis as key players of emotional regulation in health and disease. Furthermore, the roles of different neurotransmitter systems such as the serotonergic system will be discussed in depth. The second part of the course deals with the neurobiology of major psychotic disorders such as schizophrenia. In particular, this course addresses the molecular processes that influence psychosis-related cognitive domains from a translational point of view. Students will also study the mechanisms by which adverse environmental exposures de-regulate key brain structures that influence the mesocorticolimbic dopaminergic system - a core phenomenon in psychosis pathophysiology. The corresponding practical for this course is: Western Blotting
Intended Learning Outcomes	Students will be able to understand: psychobiology of stress, neurobiology of psychiatric disorders, anxiety, anxiety disorders, panic disorder, major depression, psychosis, schizophrenia, molecular psychiatry, gene-environment (GxE) interactions, environmental exposure, functional neuroanatomy, (neuro)psychiatric (endo)phenotypes, animal models for psychiatric disorders, translational neuropsychiatry, the pathophysiology of mental disorders, hypothalamic-pituitary-adrenal axis, mesocorticolimbic system.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) PBL Presentation(s) Work in subgroups
Assessment methods	Attendance Final paper Presentation Written exam
Key words	stress, depression, anxiety disorders, panic disorder, schizophrenia, gene-environment (GxE) interactions

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

The practical training associated with PSY4323 Psychiatric Neuroscience/PSY4841 Psychiatric Neuroscience: Psychopharmacology is PSY4352 Practical Training: Western Blotting/PSY4823 Werstern Blotting: A Pharmacological Perspective

Title	Practical Training: Western Blotting (FN)/Practical Training: Western Blotting: A Pharmacological Perspective (DN)
Period	5
Code	PSY4352 (FN)/PSY4823 (DN)
ECTS credits	-
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Daniel van den Hove, Gunter Kenis
Descriptions	The objective of this practical is to learn the principles of working with *in-vitro* model systems and to use Western Blotting to measure protein levels. After an introduction, students will design their own small research project. During the entire course, students work on this project and conduct the necessary experiments. Students use human cell lines to examine the neuroplastic/toxic effects of stress hormones (e.g. cortisol) in relation to molecular biological changes. The effects on neurotrophic factor signaling are determined by Western Blotting.
Intended Learning Outcomes	Students will be able to understand: western blotting, cell culture, neuroplasticity, psychopharmacology, protein chemistry, psychobiology of stress, neurobiology of psychiatric disorders, anxiety, anxiety disorders, major depression, molecular psychiatry, environmental exposure, functional neuroanatomy, (neuro)psychiatric (endo)phenotypes, animal models for psychiatric disorders, translational neuropsychiatry, the pathophysiology of mental disorders.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Presentation(s) Research Skills Training(s) Work in subgroups
Assessment methods	Attendance Final paper Presentation
Key words	western blot, stress, depression, anxiety disorders, neurotrophic factors

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No

4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

PSY4107 Advanced Statistics II is offered in all RM specialisations. **See CN**

The practical training associated with PSY4107 Advanced Statistics II is PSY4117 Practical Training SPSS II is offered in all RM specialisations. **See CN**

Title	**Electrophysiology: From Single Cell Activity to Cognitive Markers**
Period	5
Code	PSY4322
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Anke Sambeth
Descriptions	Our brain is busy all the time, whether we are awake or asleep. There are thousands of neurons which are in constant communication with each other. Neurotransmitters and electrical currents convey information from one cell to another, which in turn produces electrical signals that we can measure. This course is an introduction into the field of electrophysiology. Students first learn about how currents develop (i.e., role of molecules, ion channels and membrane) and how they can be measured in individual neurons (e.g., patch clamp or single cell recording), groups of neurons (local field potentials) and brain regions (electroencephalography). Students also examine differences in measurements across species. For instance, can electrodes be placed in humans using the same approach used for rats? Finally, students will learn how to interpret these currents in terms of event-related potentials, (de)synchronisation and functional connectivity measures. In addition to the theoretical basis, students will discuss some of the practical issues when performing electrophysiological recordings, such as measurement settings and electrode positions, and applications of electrophysiology in psychopharamacology and neurological disorders.
Intended Learning Outcomes	Students: - can explain neuronal electrochemical processes, patch clamp measurements and single neuron recording techniques; - have basic understanding of how EEG is measured; - can interpret event-related potentials from different species, EEG frequencies, event-related (de)synchronisation, and source localization; - can design electrophysiological studies with a link to (psycho)pharmacology and neurological disorders.
Instructionlanguage	EN
Prerequisites	
Teaching methods	Lecture(s) PBL Presentation(s)
Assessment methods	Attendance Presentations Take home exam
Keywords	electrophysiology, signal transduction, patch clamp, single cell recording, electroencephalography, translational neuroscience

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

PSY5112 Research Grant Writing Course is offered in all RM specialisations. ***See CN***

Skills Training

*PSY4221 EEG and ERP (in CN, **FN,** NP. In NP it is offered as an Elective).* ***See CN***

Title	**Surgery for Intractable Movement and Psychiatric Disorders**
Period	3
Code	PSY4332
ECTS credits	1
Organisational unit	Neurosurgery/ Psychiatry and Neuropsychology (FHML)
Coordinator	Ali Jahanshahi
Descriptions	The aim of this workshop is to guide the participants through the first key steps of neuroscience experiments related to movement and psychiatric disorders. Students receive relevant knowledge via an interactive lecture and have the opportunity to apply this in a semi hands-on setting. Students are also shown stereotactic surgery that is used to selectively lesion brain areas, to chronically infuse drugs into brain areas and to deep brain stimulate and electrophysiologically record from brain areas. Also, there are discussions on behavioral tests used to study the functional consequences of the neurosurgical interventions.
Intended Learning Outcomes	Students will be able to understand: - stereotactic surgery for movement; - psychiatric disorders.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture
Assessment methods	Attendance Written exam
Key words	stereotactic surgery, brain lesions, deep brain stimulation, drugs, electrophysiology

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

PSY4832 Biomedical Brain Imaging. *See DN*

PSY4114 Research Grant Writing Workshop is offered in all RM specialisations. See CN

Title	Introduction in Genetics
Period	1
Code	PSY4340
ECTS credits	1
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Gunter Kenis
Descriptions	While genetic liability to neurological and psychiatric disorders has been established, the search for the responsible genetic factors is still ongoing. This workshop focuses on how genetic variations confer risk of complex diseases. Students will gain insight, by using theoretical models, into how these alterations affect DNA transcription, RNA processing and protein synthesis, ultimately leading to variation in phenotype expression. An initial overview is given of sources of genetic variation, ranging from large scale alterations in the genome structure to common variations such as single nucleotide polymorphisms. Advantages and disadvantages of current strategies in genomic research, such as genome wide association studies, will be examined. Regulation of gene expression including epigenetic processes such as DNA methylation and histone modifications are then discussed. At the end of this course, students will be able to better understand, interpret and critically evaluate recent reports on large scale genetic studies of common complex diseases.
Intended Learning Outcomes	Students will be able to understand: genetic variation, polymorphisms, copy number variations, haplotypes, linkage analysis, linkage disequilibrium, mendelian inheritance, population genetics, epigenetics, genetics of complex neuropsychiatric diseases, genome wide association studies, regulation of gene expression, DNA methylation, histone modifications, gene-environment interplay, micro-RNA.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Work in subgroups
Assessment methods	Attendance Presentation Final Paper
Key words	DNA, RNA, genetic variation, polymorphism, gene expression, genetics, epigenetics, genetic association, heritability

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No

6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Introduction to R
Period	5
Code	PSY4373
ECTS credits	1
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Ehsan Pishva, Wolfgang Viechtbauer
Descriptions	R is a free software environment for statistical computing and graphics (https://www.r-project.org/). R software provides basic program functionality, which can be added onto with smaller program modules called packages. R packages for bioinformatics allow biologists to perform a wide range of analyses from basic statistics and plotting to advanced genomic investigation. The content for the first two learning outcomes will be the same for all students. For the assignment students can choose learning on the topic pathway enrichment or drug repositioning, respectively, based on their own interest.
Intended Learning Outcomes	Students will be able to: - use the basic functions in R and plotting; - find and Install different packages; - apply available packages for pathway enrichment analysis; - apply available packages for drug repositioning.
Instruction language	EN
Prerequisites	
Teaching methods	Work in subgroups Skills Paper Assignments
Assessment methods	Attendance Assignment
Key words	R, bioinformatics, pathway analysis, drug repositioning

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No

7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Advanced Genetics
Period	1
Code	PSY5333
ECTS credits	1
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Gunter Kenis
Descriptions	Recent advances in genetics and stem cell technology have generated unprecedented possibilities for molecular and behavioural neuroscience. Genetic editing techniques allow modulating the expression of genes in selective neuronal or glia subtypes. Using optogenetics, specific neuronal subtypes can be tuned on and off in living, freely moving animals in order to examine their effect on behavioural responses, including cognition. At the cellular level, differentiation of patient-derived pluripotent stem cells into neurons enables to study differential responses of neurons from patients and healthy humans. Even further, patient-derived cells can be steered to organize functional 3D networks, which open new strategies for personalized treatment investigations. In this course, students will be thought the basic principles of these emerging techniques, some of which will be used during internship projects. Besides theoretical lectures, assignments on the use of bioinformatics tools and applications in experimental paradigms will be given.
Intended Learning Outcomes	Students will be able to understand: - genome editing tools: TALEN, Zn-fingers, CRISPR/Cas system; - generation of induced pluripotent stem cells (iPSCs), differentiation to neuronal subtypes, and 3D network formation (i.e. brain organoids); - applications of iPSCs and organoids for molecular neuroscience; - principles and application of optogenetics in behavioural neuroscience; - generation and use of transgenic and knock-out animals.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Work in subgroups
Assessment methods	Attendance Presentation Final Paper
Key words	genomic editing, CRISPR/Cas, optogenetics, neuronal stem cells, induced pluripotent stem cells, brain organoids, gene knock-out, transgenic mice

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	

5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Behavioural Tests and Models
Period	1
Code	PSY5332
ECTS credits	1
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Jos Prickaerts
Descriptions	Neuroscience research involves the use of a wide variety of behavioural tests and models with laboratory animals. There are several criteria that neuroscientists can use to select behavioural tests and models. Eventually data has to be analysed, integrated and interpreted. How is this all done? Examples from mainly cognitive and affective tests and models are given. You will learn about these issues by analysing, interpreting and presenting data from experiments as well as from literature.
Intended Learning Outcomes	Students will be able to understand: - concepts of behavioural animal testing including validity; - raw data management and analysis; - interpretation of behavioural data.
Instruction language	EN
Prerequisites	
Teaching methods	Work in subgroups Skills Paper Presentation
Assessment methods	Attendance Final paper Presentation
Key words	test, model, in vivo, validity, translation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: presentation+written essay
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	X Yes 50% presentation + 50% written essay ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No

7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Elective: Laboratory Animal Sciences**
Period	1
Code	PSY4161
ECTS credits	3
Organisational unit	Central Animal Facilities (CPV)
Coordinator	Saskia Seeldrayers
Descriptions	This workshop is an elective course and will teach you careful and responsible use of laboratory animals in biomedical research. Next to technical and methodological aspects of planning and execution of animal experiments, time is spent on ethical considerations, well-being of animals and alternatives for animal research. This workshop offers you a series of lectures on Laboratory Animal Science (Alternatives, Behaviour, Anatomy, Physiology, Genetics, Laws & Regulations, Ethics) on the one hand and a task assignments focusing on designing procedures and projects, the proper choice of an animal model and the 3R's (replacement, reduction and refinement). The workshop consists of a basic course and species-specific modules, i.e. theory and practical part. In the practical part you learn to perform procedures on animals in specific modules. This includes basic and appropriate biology (species specific), minimally invasive procedures (species specific) and principles of surgery. More information on: https://www.maastrichtuniversity.nl/education/course/lab-animal-science
Intended Learning Outcomes	Students will be able to understand: - basic facts and principles which are essential for the humane use and care of laboratory animals and for the quality of research; - handling of animals and invasive procedures.
Instruction language	EN
Prerequisites	- A Bachelor degree in a biological or zootechnical discipline, or; - Knowledge of the basic subjects of biology of at least 18.75 ECTS in total, including at least 7.5 ECTS on anatomy/zoology and 7.5 ECTS on physiology. - Thus to be able to participate in this workshop, you need to prove that you have had sufficient training in anatomy and physiology. All students have to provide a list of courses that they followed. In addition, you have to take an additional exam to check if your knowledge of anatomy or physiology is sufficient. Literature will be provided and you can study these topics at home and participate in this exam before the workshop. - The workshop and its practical species-specific modules are only accessible for students who need a practical training to perform tasks during their research master internship. Thus, students are only allowed to participate in the practical modules if they have a confirmation of an accepted internship with laboratory animals.
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Skills Work in subgroups
Assessment methods	Attendance Written exam
Key words	experimental designs, ethics, animal care, animal welfare, legislation, handling animals, surgery, invasive procedures

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Electives

PSY4156 Elective: Course, PSY4157 Elective: Review and PSY4158 Elective: Research are offered in all RM specialisations. **See CN**
PSY4159 Double Elective: Research and PSY4160 Double Elective: Review are only offered in RM FN and DN. **See DN**

Research Internship and Master's Thesis. **See CN**

Overview RM in Neuropsychology (NP)

	Research Master in Neuropsychology (NP) Year 1 (2021-2022) **Specialisation Coordinator: Arjan Blokland**
Period 0	Introduction week: PSY4958 Introduction in Problem-Based Learning (training for non-UM students*) (- credits): Wladimir van Mansum
Throughout Year 1	**Electives:** **PSY4156** Elective: Course OR **PSY4157** Elective: Review OR **PSY4158** Elective: Research (3 credits each): Vincent van de Ven
Period 1 30-08-2021 22-10-2021	**Core courses:** **PSY4407** Brain Damage (4 credits): Sonja Kotz **PSY4408** Behavioural Disorders (4 credits): Michael Schwartze **PSY4106** Advanced Statistics I (total of 3 credits): Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Skills Training: **PSY4434** Basic Cognitive Psychological Skills (3 credits): Eliza de Sousa Fernandes Perna
Period 2 25-10-2021 17-12-2021	**Core courses:** **PSY4409** Arousal and Attention (4 credits): Pim Heckman **PSY4416** Ageing (4 credits): Martin van Boxtel **PSY4106** Advanced Statistics I: Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Skills Training: **PSY4433** Neuropsychological Assessments (2 credits): Max Colombi
Christmas break	
Period 3 03-01-2022 28-01-2022	**Core course:** **PSY4411** Biopsychology (4 credits): Pim Heckman
	Skills Training: **PSY4108** Neuroanatomy (1 credit): Jos Prickaerts
	PSY4100 Colloquia (total of 1 credit): Rudy Schreiber
Period 4 31-01-2022 01-04-2022	**Core course:** **PSY4417** Stress, the Brain and Depression (3 credits): Rob Markus **PSY4413** Executive Control (4 credits): Peter van Ruitenbeek **PSY4107** Advanced Statistics II (total of 3 credits): Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	Workshop: **PSY4435** Human Neuroimaging (3 credits): Tjeerd Boonstra, Peter van Ruitenbeek
	PSY4100 Colloquia: Rudy Schreiber
Period 5 04-04-2022 03-06-2022	**Core course:** **PSY4414** Neuropsychiatric Disorders (3 credits): Inez Ramakers, Willemijn Jansen **PSY4107** Advanced Statistics II: Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen

	Skills Training: **PSY4423** Neuropsychology in Practice: From Test Results to Report and Advice (2 credits): Caroline van Heugten, Claire Wolfs **PSY4424** Neuropsychological Rehabilitation (2 credits): Caroline van Heugten
	PSY4100 Colloquia: Rudy Schreiber
Period 6 07-06-2022 01-07-2022	**Core course:** **PSY4415** Neuropsychopharmacology (3 credits): Jan Ramaekers
	Workshop: **PSY4335** Psychopharmacology (1 credit): Peter van Ruitenbeek **PSY4114** Research Grant Writing Workshop (2 credits): Sebastian Köhler, Ron Handels **PSY4371** Psychiatric Epidemiology (1 credit): Wolfgang Viechtbauer
	Skills Training: **PSY4424** Neuropsychological Rehabilitation: Caroline van Heugten
	PSY4100 Colloquia: Rudy Schreiber

Students from Erasmus Rotterdam receive an exemption for PBL Training

	Research Master in Neuropsychology (NP) Year 2 (2022-2023)
Period 1	**Core course:** **PSY5112** Research Grant Writing Course (3 credits): Sebastian Köhler, Ron Handels **PSY5411** Cognitive Development (3 credits): Esther Keulers **PSY5414** Brain, Learning and Memory (3 credits): Peter van Ruitenbeek
	Workshop: **PSY5431** Neuropsychological Assessment in Children (1 credit): Esther Keulers
32 weeks	**PSY5107** Research Proposal (1 credit), **PSY5120** Research Internship Graded (10 credits) (research option)/**PSY5121** Research Internship Ungraded (25 credits) (research option), **PSY5122** Research Internship Graded (10 credits) (clinical option)**/PSY5123** Research Internship Ungraded (9 credits) (clinical option) & **PSY5103** Master's Thesis (14 credits): Gerda Kraag OR **PSY5109** Master's Thesis (10 credits): Gerda Kraag
	PSY5108 Research Proposal Minor's Thesis (1 credit), **PSY5104** Clinical Internship (15 credits), **PSY5111** Clinical Activities Report (- credits) & **PSY5105** Minor's Thesis (4 credits): Gerda Kraag

Specialisation in Neuropsychology (NP)

The specialisation in Neuropsychology studies the relationship between brain and behaviour. This specialisation focuses on understanding cognitive (memory, perception, planning, attention, psychomotor functions) and emotional-affective (e.g. mood, anxiety, motivation, arousal) behaviour starting from the perspective of brain structure and function. This is measured on a continuum ranging from normal behaviour to pathological psychiatric dysfunctions (e.g. depression, anxiety, Korsakoff's syndrome, schizophrenia, dementia, ADHD). In addition, in the context of psychopharmacology, the brain-behaviour relationship is thoroughly studied by pharmacological manipulation of brain neurochemistry and function in human and animal models, including the use of interventional psychoactive substances (e.g. hormones, drugs, medicine and foods or dietary ingredients) in combination with behavioural, psychophysiological and neurofunctional research techniques. An integrated programme is presented that includes most aspects of basic and applied neuroscience. In addition, students work in a multidisciplinary team of psychologists, biologists and psychiatrists and have access to state-of-the art clinical, behavioural and bio-psychological laboratories. They further also acquire a basic understanding of neuroimaging techniques. Although the primary emphasis of the curriculum is on research, this specialisation also prepares students who wish later to pursue advanced clinical training, in accordance with the scientist-practitioner model

Coordinator Neuropsychology

Arjan Blokland, Neuropsychology and Psychopharmacology (FPN), Phone +31(0)43 38 81903, UNS40, room A2.731, Email: a.blokland@maastrichtuniversity.nl

PSY4958 is offered in all RM specialisations. **See CN**

Colloquia

PSY4100 Colloquia is offered in all RM specialisations. **See CN**

Core Courses

Title	**Brain Damage**
Period	1
Code	PSY4407
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Sonja Kotz
Descriptions	Much of what we know about cognitive and affective functions and processes comes from close observation of patients with acquired damage to the central nervous system. This course reviews mechanisms underlying the brain-behavior relationships that form the basis of neuropsychological dysfunctions in persons who suffer from acquired brain damage across the lifespan. Perceptual and cognitive dysfunctions after focal or diffuse cortical and subcortical lesions and/or in connection fiber tracts are discussed together with the neurocognitive assessment procedures that are commonly used to identify such deficits, including disorders of memory, praxis, language, visual spatial abilities, and executive functions. Students are introduced to the fields of Behavioral Neurology and Neuropsychology and will work on central questions such as: What do different neurological pathologies entailing functional and/or structural brain changes tell us about the brain-behavior relationship? The intended learning goals are: (1) acquisition of knowledge about the causes and neurobiological effects of acquired brain lesions, (2) acquaintance with the etiology and taxonomy of common neurological and neuropsychological syndromes, and (3) critical reflection of the consequences of brain lesions for diagnostics and treatment in clinical settings. This knowledge and reflection are essential for understanding the principles of neuropsychological rehabilitation, which can be used to support or even improve residual function after acquired brain damage and can ameliorate the life quality of neurological patients.
Intended Learning Outcomes	Students will be able to understand: functional brain anatomy, cerebral vascularisation, neurophysiology of brain repair, neurological diseases, stroke, epilepsy, traumatic brain injury, alcohol-induced brain dysfunction, Korsakoff's disease, cognitive control, neuropsychological syndromes, brain plasticity, history of neuropsychology, neuropsychological assessment, cognitive rehabilitation.
Instruction language	English
Prerequisites	Bachelor's level knowledge of the hierarchical organisation of brain functions, basic brain anatomy and physiology.
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Written exam
Key words	neuroanatomy, neurology, history of neuropsychology, neuropsychology acquired brain dysfunction, brain injury, neuropsychological assessment, rehabilitation, brain plasticity, brain imaging

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No

3a	Is there a resit possibility for every assessment method included?	☒ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Behavioural Disorders**
Period	1
Code	PSY4408
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Michael Schwartze
Descriptions	The course covers the range of cognitive and behavioural problems that accompany the most common neuropsychiatric and neurological disorders (e.g. schizophrenia, ADHD, autism and acquired brain injuries). The course provides insight into the underlying neurobiological and psychological mechanisms, and it touches on the principle of vulnerability, and protective/risk factors in the aetiology of behavioural disorders.
Intended Learning Outcomes	You will gain an understanding of the psychological, neurobiological, and epidemiological mechanisms underlying cognitive and biological models of developmental-, psychiatric-, and neurological disorders and neuropsychiatric syndromes.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Written exam
Key words	behavioural disorders, cognitive and biological models, development, neuropsychiatry, acquired brain injury, neuropsychology, intervention

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

*PSY4106 Advanced Statistics I is offered in all RM specialisations. **See CN***

*The practical training associated with PSY4106 Advanced Statistics I is PSY4119. Practical Training: SPSS I and Lisrel is offered in all RM specialisations. **See CN***

Title	Arousal and Attention
Period	2
Code	PSY4409
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Pim Heckman
Descriptions	This course familiarises students with key concepts and controversies in the study of effects of arousal and alertness on attention and cognitive performance, with an emphasis on the role of brain circuitry and neurotransmitters. It is known that human performance fluctuates depending on the state of alertness; when we are sleepy or tired, we are less attentive to events going on around us than when we are fully awake and alert. However, people who are extremely stressed or highly aroused can also have problems in effectively focussing or shifting their focus of attention (e.g. ADHD, anxiety disorders). The mechanisms underlying the relation between arousal, attention and performance have been the subject of extensive research in psychology. Therefore, this course will review current knowledge on subcortical arousal systems, attention networks and the neurobiology of sleep, in addition to a critical discussion of the classical Arousal Theory. Psychopharmacological studies will be presented that illustrate the role of different neurotransmitters in arousal and attention.
Intended Learning Outcomes	Students will be able to understand: arousal theory, inverted-U model, Yerkes-Dodson law, cognitive energetic model, additive factors method, Posner's attentional networks, orienting, Posner's cueing paradigm, Corbetta's model of attentional control, focused attention and the underlying neural mechanisms, alertness, sustained attention, vigilance, noradrenergic locus coeruleus activity, clonidine, signal detection theory, executive attention, prefrontal dopaminergic activity, Borbely's model of sleep regulation, caffeine, neurocognitive theory of insomnia, benzodiazepines, flip-flop mechanism of sleep-wake regulation, antihistamines.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Presentation Final paper
Key words	arousal, alertness, attention networks, brainstem arousal systems, sleep-wake regulation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	

5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☒ Yes Final grade = 80% essay writing + 20% presentation ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Ageing
Period	2
Code	PSY4416
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Martin van Boxtel
Descriptions	This course covers a broad range of topics in the field of cognitive development and ageing. The initial focus is on healthy ageing, to better understand processing changes that may arise in abnormal aging such as in neurodegeneration. Important questions covered will include: What is ageing? What neurobiological and cognitive mechanisms determine whether a person ages pathologically, normally, or successfully? Can the ageing process be influenced? To address these questions, students will critically reflect on influential theories, state-of-the-art research, established research methods, and clinical interventions. General themes are physical ageing, neural ageing, cognitive ageing, pathological ageing (mild cognitive impairment, dementia, Parkinson's disease), intervention strategies (including body/mind), and methodological issues in ageing research.
Intended Learning Outcomes	Participants will obtain active understanding of: Physical ageing, evolutionary theories of ageing, neural aging, amyloid cascade hypothesis, temporal lobe dysfunction, frontal lobe dysfunction, subcortical dysfunction, processing-speed theory, white matter decline, decline of cognitive control, inhibition deficit hypothesis, default-mode network dysfunction, parietal lobe dysfunction, mild cognitive impairment, Alzheimer's disease, vascular dementia and other types of dementia, Parkinson's disease, successful ageing, reserve theories, compensation and intervention, body/mind interventions in ageing and emotional ageing.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Written exam
Key words	physical, neural, cognitive, and emotional ageing, dementia, Parkinson's disease, neurodegeneration, intervention

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No

6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Biopsychology
Period	3
Code	PSY4411
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Pim Heckman
Descriptions	This course provides an in-depth description of biopsychological concepts of brain function. It will cover elements from functional neuroanatomy, neurophysiology and psychopharmacology as they are applied to brain and behaviour research. The students will first review the macro- and microanatomy of the brain, and also neurochemical and neurobiological mechanisms related to neurotransmission. Special attention will be paid to basic cellular processes leading to disturbances in the brain. The students will discuss questions such as: How do the chemicals in our brain influence neurons? How do they potentially affect the brain and leads to Alzheimer's disease? What is the specific role of second messengers in these processes? Additionally, the students will deal with sexual differentiation and which biological processes determine sexual or gender differences. In the fourth task the students will learn more about the neurobiological changes that lead to addiction.
Intended Learning Outcomes	Students are able to: - explain the basic mechanisms of neuronal communication within a neuron and between neurons; - explain the principles and mechanisms of neurotransmission and receptor binding; - explain the consequences of receptor activation (metabotropic or ionotropic) on intracellular events, i.e, second messenger signaling cascades; - explain the biological factors that lead to sexual differentiation and which factors udnerlie gender identity; - explain how addiction can be explained on basis of the biological changes in the mesolimbic system. The students will learn that dopamine and endorphins play an essential role. The students will learn the concepts of wanting and liking as different properties of addiction, each with a different neuronal substrate; - write a short research proposal on a biological oriented topic of their choice; - present a biological topic of their choice to a peer group in an understandable manner.
Instructionlanguage	EN
Prerequisites	
Recommendedliterature	
Teaching methods	Lecture(s) PBL Presentation(s)
Assessment methods	Attendance Final paper Presentation
Keywords	action potentials, second messengers, neurotransmitters, depression, cognition, Alzheimer, neurogenesis

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: writing of a research paper

2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	X, Yes presentation is 30% and paper is 70% ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Executive Control
Period	4
Code	PSY4413
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Peter van Ruitenbeek
Descriptions	A key element in the current understanding of behavioural organisation is executive control. At present, a redefinition of related concepts and a rapid expansion of our knowledge are taking place, based on insights from cognitive neuroscience. Based on data from imaging studies, the behavioural and computational models of cognitive mechanisms are being restructured. Throughout the course, emphasis will be on mechanisms of control, such as motor control needed for movement, and cognitive control (or executive function) to bias the selection of action and thoughts to achieve our goals. Various experimental approaches are evaluated and discussed in the light of recent literature. Experts in the field of cognitive and motor control research will present their current work, and students will be able to discuss their own papers and topics with them.
Intended Learning Outcomes	Students will be able to understand: motor and cognitive control (executive functions) and brain structures involved in these types of control.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL Presentation(s)
Assessment methods	Attendance Presentation Written Exam
Key words	motor control, cognitive control, executive functions

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No
3b	**If the answer to question 3a is "NO" please explain.**	Attendance refers to the obligatory attendance for which there is no catch up assignment
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	X Yes presentation 1/3, written exam 2/3 ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☒ No
6b	**If the answer to question 6a is "NO" please explain.**	Weighted average grade should be sufficient
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code)**	☐ Yes ☒ No

	(e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Stress, the Brain and Depression
Period	4
Code	PSY4417
ECTS credits	3
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Rob Markus
Descriptions	It has become increasingly clear that stress is one of the most important triggers for several cognitive-affective disorders. For instance, a tremendous amount of biological and cognitive-psychological research has been conducted on the onset and course of stress-related affective disorders like depression. Cognitively oriented psychologists have shown that the chance of developing stress-related depression is enhanced as a result of negative and dysfunctional (stress-inducing) thoughts, whereas biologically oriented psychologists and psychiatrists particularly emphasize the importance of biochemical brain dysfunction. Yet, despite intensive research over the past decades, unidirectional biological and cognitive achievements have not yet produced definitive conclusions about critical psychobiological risk factors involved in stress-related affective disorders like depression. In addition, and contrary to a one-dimensional approach, this course will concentrate on the interaction between stress and (genetic-) brain vulnerability in explaining susceptibility for stress-related affective disorders.
Intended Learning Outcomes	Students will be able to understand: - gene-brain mechanisms involved in stress; - biochemistry of depression; - interaction between genes, brain, stress and depression.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Paper(s) Presentation(s)
Assessment methods	Attendance Final paper
Key words	stress, genes, brain, depression, psychopharmacology

Are you planning on changing this module in 2021-2023 significantly in terms of content? yes no
 If "yes": please indicate what these changes are and why:...

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No

6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

*PSY4107 Advanced Statistics II is offered in all RM specialisations. **See CN***

*The practical training associated with PSY4107 Advanced Statistics II is PSY4117. Practical Training SPSS II is offered in all RM specialisations. **See CN***

Title	**Neuropsychiatric Disorders**
Period	5
Code	PSY4414
ECTS credits	3
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Inez Ramakers & Willemijn Jansen
Descriptions	This course provides basic and advanced knowledge of neuropsychiatric disorders. Several neuropsychiatric disorders will be extensively discussed from a biopsychosocial perspective. In particular, the focus will be on new knowledge and developments within the neuropsychiatry, related to both research and clinical practice. The course covers main findings, biopsychosocial theories and controversies related to several neuropsychiatric disorders, with an emphasis on brain mechanisms and behavioural and cognitive dysfunction. The course discusses disorders at the interface between neuropsychiatry and cognitive/behavioural neurology. Each tutorial meeting covers another neuropsychiatric disorder, for example Gilles de la Tourette, pediatric delirium, ECT by depression, and anxiety disorders. Specific attention is given to neuropathology related to functional and structural brain imaging, neurochemistry as well as psychosocial factors. In short, this course deals with all major aspects of a number of specific neuropsychiatric disorders, including: biopsychosocial theories; neurobiological mechanisms; cognitive and behavioural implications; treatment and research. Students learn to integrate all the previously mentioned aspects of the disorders in order to increase their general knowledge of neuropsychiatry. The tutorial meetings will be led by renowned clinical experts in the field and will provide an excellent learning experience for students who want to focus on working within neuropsychiatry. Students also have to give a group presentation by themselves being related to a neuropsychiatric disorder, from a biopsychosocial perspective.
Intended Learning Outcomes	- students are able to recognize neuropsychiatric disorders and related biopsychosocial models; - students are able to identify different biopsychosocial (and cultural) factors being related to a specific neuropsychiatric disorder, and summarize these in a review; - students are able to interpret the relationships of different factors, including neurobiologic mechanisms, gene environment interactions, behavioural and cognitive problems, neurotransmitters, and neuroimaging, being related to a specific neuropsychiatric disorder; - students are able to write a review from a biopsychosocial perspective related to a specific neuropsychiatric disorder, including etiology, treatment, implications for clinical practice, and future perspectives.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL Work in subgroups Presentation(s) Paper(s)
Assessment methods	Attendance Final paper Presentation
Key words	neuropsychiatric disorders, brain mechanisms, biological theories, psychosocial theories, research, treatment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Neuropsychopharmacology**
Period	6
Code	PSY4415
ECTS credits	3
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Jan Ramaekers
Descriptions	This course addresses the influence of drugs upon normal functioning and on disease states. Neurobiological and neurochemical mechanisms are presented with the aim to deepen insight into the various mechanisms of drug action. The course will review major classes of drugs that are used frequently in the treatment of mental disorders and neurological disease, but also other classes of drugs that have side effects on the central nervous system. Other topics in this course are behavioural toxicology, experimental designs used in treatment studies, drugs of abuse and recreational drugs.
Intended Learning Outcomes	Students will be able to understand neurobiology of drugs and mental disorders.
Instruction language	EN
Prerequisites	
Teaching methods	PBL
Assessment methods	Attendance Final paper Presentation
Key words	drug action, psychopharmacology of CNS disorders, behavioural toxicity

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

PSY5112 Research Grant Writing Course is offered in all RM specialisations. ***See CN***

Title	Cognitive Development
Period	1
Code	PSY5411
ECTS credits	3
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
~~Coordinator~~	Esther Keulers
Descriptions	The focus of the course is on cognitive development during childhood and adolescence. Behavioral changes and underlying brain changes will be discussed. The aim is to learn more about scientific views on normal cognitive development and the methodological difficulties in demonstrating these views empirically. Although the focus is on normal development, development is often studied in the context of abnormal development. Examples of topics that are discussed during the course are general cognitive ability, executive function, brain maturation, cognitive stimulation and training, and cognitive vs socio-emotional development.
Intended Learning Outcomes	Students will be able to: - understand and critically evaluate theoretical and methodological issues in studies of cognitive development from childhood to adolescence; - generate research ideas about and think about solutions to issues relevant in the field of cognitive development.
Instruction language	EN
Prerequisites	
Teaching methods	Work in subgroups Presentations Assignments Lectures
Assessment methods	Attendance Final paper Presentation
Key words	child neuropsychology, individual differences, cognitive development

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: paper (i.e., letter to editor)
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	X Yes: paper 50% and (small group) presentation (50%) ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code)**	☐ Yes ☒ No

	(e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Brain, Learning and Memory**
Period	1
Code	PSY5414
ECTS credits	3
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Peter van Ruitenbeek
Descriptions	There has been a rapid increase in our understanding of the basic mechanisms underlying the consolidation of new information and its subsequent retrieval. Both data from preclinical research in animal models and in preclinical human models and neuroimaging experiments will be used in this course, together with seminal experiments in patients. Recent theories and experimental data illustrate how a multidimensional view of learning and memory can help elucidate the relevant mechanisms in terms of neurobiology, neurochemistry and cognition. The influences of drugs on information processing and memory are also discussed in depth.
Intended Learning Outcomes	- students are able to remember and understand the role of the hippocampus in memory functions, the role of other limbic structures in learning and memory, the role of neurotransmitters as drug targets in learning and memory; - students are able to evaluate the use of various methods (e.g. lesions, animal models, cognitive tasks) in learning and memory research.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Presentation(s) PBL
Assessment methods	Attendance Final paper
Key words	prefrontal cortex, hippocampus, limbic system, neurotransmitters, working memory, short-term memory, long-term memory, acquisition, consolidation, retrieval, cognition enhancing drugs

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No
3b	**If the answer to question 3a is "NO" please explain.**	Attendance refers to the obligatory attendance for which there is no catch up assignment
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Skills Training

Title	**Basic Cognitive Psychological Skills**
Period	1
Code	PSY4434
ECTS credits	3
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Eliza de Sousa Fernandes Perna
Descriptions	This course focuses on the acquisition and training of basic skills required in cognitive performance research. The course is centred around a psychological experiment in which students study the detrimental effects of arousal manipulation (environmental noise) on cognitive processing. Students will learn how to perform a field experiment and will undertake all the various stages that are necessary to acquire and analyse the data and report on the results. Students will be required to recruit a small number of subjects and to administer the test battery according to a pre-defined protocol. The test battery consists of paper and pencil tests that have been presented and discussed in previous courses. After data acquisition, a number of interactive sessions are planned in which students not only learn to explore and analyse their data with SPSS but also lean how to interpret the results. Students conclude the course by writing a journal style paper in APA format describing the experiment. Particular attention will be given to predicting and explaining the results within a theoretical perspective and comparing them with previous findings. An overview of the techniques and tests currently used to evaluate performance in a number of cognitive domains (such as language, perception, attention and executive functions), are also presented to students in this course.
Intended Learning Outcomes	Students will be able to understand: psychological testing; data preparation; data analysis using multivariate techniques; report writing.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills
Assessment methods	Attendance Final paper
Key words	field experiment, applied behavioural testing, data reduction and analysis techniques, report writing

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Final paper
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Neuropsychological Assessment
Period	2
Code	PSY4433
ECTS credits	2
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Max Colombi
Descriptions	Neuropsychological assessment runs parallel to the courses Arousal and Attention and Ageing. The core elements in this skills training are the collection and interpretation of cognitive, emotional and behavioural data in order to support neurological or neuropsychiatric diagnosis. The skills training commences with an introductory lecture covering the principles and interpretation of neuropsychological assessment. During a 6-week period, students are trained in neuropsychological history taking, observing patient behaviour, cognitive testing and interpreting cognitive and behavioural data. Finally, each student writes a comprehensive neuropsychological report based on a simulated clinical case.
Intended Learning Outcomes	Students will obtain the basic skills of neuropsychological assessment, i.e. observing, interviewing, cognitive testing, combining and interpreting behavioural and cognitive data and neuropsychological report writing.
Instruction language	EN
Prerequisites	Introductory knowledge on psychodiagnostics and related psychometrics.
Teaching methods	Assignment(s) Lecture(s) Paper(s) Patient contact Skills Training(s) Work in subgroups
Assessment methods	Attendance Final paper
Key words	neuropsychological assessment, cognitive disorders, brain disease, brain injury, test taking, interviewing, observations, psychometry

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

PSY4108 Neuroanatomy is offered in CN, NP and PP. **See CN**

Title	Neuropsychology in Practice: From Test Results to Report and Advice
Period	5
Code	PSY4423
ECTS credits	2
Organisational unit	Neuropsychology and Psychopharmacology (FPN), Psychiatry and Neuropsychology (FHML)
Coordinator	Caroline van Heugten, Claire Wolfs
Descriptions	Students learn to integrate several aspects of a neuropsychological examination. This kind of examination can be used both in clinical settings and in clinical research and contains the following aspects: interview, clinical impression, test results, rating scales, questionnaires, etc. Learning to interpret and integrate the different aspects will result in a coherent neuropsychological report and conclusion. Tests and theoretical and practical knowledge will be presented in the current skills training to help students achieve the course goals. Note that the major focus of this skills training is not to test a patient or a subject participating in a study, but to interpret the data.

The skills training consists of eight meetings. In the first two meetings, an overview will be presented of the skills needed to form a conclusion about the data acquired by testing a patient or research subject. Furthermore, students will practise performing and interpreting tests, rating scales and questionnaires. The use of normative data, the concept of validity and what to do when a subject's performance is lower, or otherwise deviant from what would be expected, will also be addressed.

Meetings three to eight will be led by clinical experts. Video segments of different patients with a neuropsychological or psychiatric problem (e.g. patients from the departments of psychiatry, neurology and geriatrics) will form the basis of a group discussion and presentations, in which the emphasis will be on the interpretation of patient material. |
Intended Learning Outcomes	- students will practice performing neuropsychological tests, rating scales and questionnaires; - students will be able to interpret test results and ratings on questionnaires; - students will be able to translate theoretical knowledge on neuropsychological assessment to application in clinical practice.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Skills
Assessment methods	Attendance Participation Presentations
Key words	clinical neuropsychology, assessment, cognitive dysfunctioning, emotional problems, behavioural problems

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:

2	Are all ILO's being assessed with the selected assessment methods?	☐ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Neuropsychological Rehabilitation
Period	5, 6
Code	PSY4424
ECTS credits	2
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Caroline van Heugten
Descriptions	The course will address the content of neuropsychological interventions as well as the procedures and designs that can be used for the execution of evidence-based research. Throughout the meetings, the basic premises and 'pitfalls' in this type of research will be elaborated and the possibilities to circumvent these problems by proper choice of approach and design will be discussed. Various research designs will be compared in terms of their strengths and weaknesses (e.g. experimental studies, quasi-experimental designs, intention-to-treat, single case designs, challenge-studies, depletion studies). Various forms of neuropsychological treatments will be discussed and students will receive practical training in rehabilitation principles. Skills will be developed that can be applied in cognitive training and psycho-education. Forms of complex behavioural treatment will also be discussed.
Intended Learning Outcomes	- students will be able to explain the different neuropsychological treatment methods used in clinical practice; - students can select and apply an adequate research design for the evaluation of the effects of neuropsychological treatment; - students are able to design a randomized clinical trial to evaluate the effect of neuropsychological treatment.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Skills
Assessment methods	Attendance Participation Presentation
Key words	rehabilitation, treatment, acquired brain damage, effectiveness

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes

		☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Methodological and technical workshops

PSY4435 Human Neuroimaging is offered in NP and PP

Title	Human Neuroimaging
Period	4
Code	PSY4435
ECTS credits	3
Organisational unit	Neuropsychology & Psychopharmacology
Coordinator	Tjeerd Boonstra, Peter van Ruitenbeek
Descriptions	This course aims at introducing basic knowledge and principles of functional brain imaging techniques, with a special emphasis on their application in addressing clinically oriented research questions. The workshop comprises three sections. The first section is a practical introduction into MRI/EEG image processing and statistical analysis, centering on functional MRI and ERPs. During the meeting you will be become familiar with the following basic aspects of image analyses: the MR image and its preprocessing; First level statistical analysis (creating colored blobs); Second level analysis, with special emphasis on between subject designs. The second part of the workshop consists of more theoretical introductions to novel clinically relevant imaging techniques. In three education group meetings you will study at a deeper level some imaging topics that are thought basic for patient-oriented research. General topics that may be discussed include brain connectivity (structural, functional and effective connectivity), structural imaging techniques (voxel-based morphometry, cortical volume and thickness …), and image analysis techniques (head motion correction, multivariate pattern analysis, independent component analysis…). A third section comprises a group assignment. In a small group you get the opportunity to elaborate in more depth an imaging topic that has your interest. Each group will prepare a presentation in which they share their insight and understanding of this topic with the rest of the students.
Intended Learning Outcomes	Students will be able to understand: - functional brain imaging techniques and principles; - data analysis; - between group experimental designs and its pitfalls; - available imaging techniques for clinically oriented research.
Instruction language	EN
Prerequisites	Basic knowledge of brain anatomy, experimental design and statistics.
Teaching methods	Lecture(s) Paper(s)
Assessment methods	Attendance Assignment Written Exam
Key words	Magnetic Resonance Imaging (MRI), functional MRI, structural MRI, neuroimaging, data analysis, brain connectivity

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions ☐ Other:

2	Are all ILO's being assessed with the selected assessment methods?	☒ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☒ No
3b	If the answer to question 3a is "NO" please explain.	Attendance refers to the obligatory attendance for which there is no catch up assignment
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	X Yes 60% presentation, 40% written exam ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☒ No
6b	If the answer to question 6a is "NO" please explain.	Weighted average should be sufficient.
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Psychiatric Epidemiology
Period	6
Code	PSY4371
ECTS credits	1
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Wolfgang Viechtbauer
Descriptions	The course provides an introduction to the methodologies and analytical strategies of epidemiology as applied to mental health outcomes. The principles and practice of various study types (cohort, case-control, RCT, ecological) will be taught, with emphasis on interpreting associations and possible causality thereof. Consideration will be given to such issues as confounding, bias, and moderation. Further topics to be covered include the use and interpretation of diagnostic studies, the basic principles of analysing dichotomous and time-to-event outcomes, genetic epidemiology, and the use of systematic reviews and meta-analysis for building cumulative knowledge.
Intended Learning Outcomes	Students will be able to understand: - different epidemiological study types, including their purpose, advantages and disadvantages; - calculation and interpretation of effect size and outcome measures for dichotomous and time-to-event outcomes; - principles of analysing epidemiological studies; - genetic epidemiology; - the basic steps of conducting a systematic review and meta-analysis.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Training(s) Work in subgroups
Assessment methods	Attendance Final paper
Key words	epidemiology, methodology, statistics, experimental studies, observational studies, diagnostic studies, systematic reviews, meta-analysis

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☒ No

6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

PSY4114 Research Grant Writing Workshop is offered in all RM specialisations. **See CN**

Title	**Psychopharmacology**
Period	6
Code	PSY4335
ECTS credits	1
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Peter van Ruitenbeek
Descriptions	Students will become acquainted with some current topics in psychopharmacology, i.e. mechanisms of medicinal drugs including new avenues, nutritional substances and substance use disorder. There will be explicit attention to the different perspectives of Psychopharmacology from the tracks in which participating students are residing, ie. Neuropsychology (NP) and Psychopathology (PP). Some research topics and perspectives in Psychopharmacology: - Old illicit drugs, new drugs or new targets? - Addiction - Nutrition or Drug Treatment? - Cognitive enhancement?
Intended Learning Outcomes	- students are able to understand and remember principles of psychopharmacology and illustrate them using examples of psychopharmacological studies; - students are able to create a presentation on a topic of psychopharmacology and present (apply) it professionally.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Presentation(s) Work in subgroups
Assessment methods	Attendance Presentation
Key words	psychopharmacology

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No
3b	**If the answer to question 3a is "NO" please explain.**	Attendance refers to the obligatory attendance for which there is no catch up assignment
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Neuropsychological Assessment in Children
Period	1
Code	PSY5431
ECTS credits	1
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Esther Keulers
Descriptions	The aim of this workshop is to acquaint students with neuropsychological testing in children and with the interpretation of clinical data in relation to a conceptual model of brain-behaviour relationships. The constructs and assessment of cognitive functions in children will be discussed, with special attention given to methodological aspects of assessment. A number of cognitive tests for children will be presented during the workshop. Models of cognitive psychology will be considered in the context of developmental disorders, including memory, attention, information processing and intelligence. The focus is on test paradigms from the field of child neuropsychology used to probe domain-specific functions, with an emphasis on the need to integrate information from different sources: medical history, radiology, interview, test results, scientific literature, etc.
Intended Learning Outcomes	Students will be able to: - understand as well as critically evaluate concepts relevant for neuropsychological assessment (cognitive abilities), assessment methods and test results; - analyse and interpret neuropsychological assessment data from patient with different syndromes/ difficulties; - integrate different sources of information in answering diagnostic questions about patient cases and write a clinical report about this.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Skills Work in subgroups
Assessment methods	Attendance Final paper
Key words	cognitive abilities, multiple disability, neuropediatrics, specific impairment, neuropsychological assessment/methods

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: paper (i.e., case report)
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No

6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Electives

PSY4156 Elective: Course, PSY4157 Elective: Review and PSY4158 Elective: Research are offered in all RM specialisations. **See CN**

Internships

3. *PSY5107 Research Proposal, PSY5120/5121(research option) PSY5122/5123 (clinical option), Research Internship and PSY5103 Master's Thesis -> for [CN, FN, DN ->50 credits] and [NP and PP->30 credits]. Internship coordinators differ per specialisation.*
   - *50 credits apply to: CN, FN, DN and for PP and NP students who choose to do only a research Internship (not including the clinical part)*
   - *NP and PP students doing a clinical internship in addition to the research internship will obtain 30 credits for the Research Proposal + Research Internship + Master's Thesis + 20 credits for Clinical Internship, Clinical Research Proposal and Minor's Thesis.*
4. *Clinical Internship, Research Proposal Minor's Thesis and Minor's Thesis PSY5104, PSY5108, and PSY5105. Descriptions are the same for NP and PP. Only the internship coordinators differ per specialisation.* **See NP**

Research Internship and Master's Thesis. **See CN**

Title	**Clinical Internship, Clinical Activities Report, Research Proposal Minor's Thesis and Minor's Thesis**
Period	2-6
Code	PSY5104, PSY5111, PSY5108 and PSY5105
ECTS credits	**20** (15 (internship including CAR), 1 (RP), and 4 (MINT), respectively)
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Gerda Kraag
Descriptions	Students specialising in **Psychopathology** or in **Neuropsychology** may choose to conduct a 13-week clinical internship in an approved setting. The clinical internship can be conducted in conjunction with the research internship or separately. Students are required to submit an additional (clinical) research proposal and scientific report (the minor's thesis) based on client/patient-based investigations performed during the clinical internship. The aims of the clinical internship are twofold. Firstly, the internship is meant to provide experience in conducting research in a clinical setting; a small-scale research project culminates in the minor's thesis. Secondly, the internship provides an introduction to the organisation and practice of mental health care, as well as basic experience in clinical diagnosis and therapeutic interventions. To this end, students will be supervised and assessed by a mental health professional with respect to their clinical skills. A clinical activities report is written and assessed by the faculty supervisor. Both parts (clinical internship and clinical activities report) should be assessed sufficiently to obtain the (15) credits. For Psychopathology and Neuropsychology students who choose to undertake a clinical internship, the clinical internship and minor's thesis will be assigned 20 credits, and the research internship and master's thesis will be assigned 30 credits. A detailed guide on clinical internships and the minor's thesis can be found on www.askpsy.nl > FPN Research Master Students > Internships. Although it is not a requirement of the research master's programme, students who wish to meet Dutch requirements for admission to advanced clinical training programmes are advised to extend their clinical internship by at least two weeks. - RM Psychopathology Internship Coordinator: Nicole Geschwind, Clinical Psychological Science (FPN), Phone (043) 38 81487, 40 Universiteitssingel East, Room A2.767, Email: Nicole.geschwind@maastrichtuniversity.nl - RM Neuropsychology Internship Coordinator: Ieke Winkens, Neuropsychology and Psychopharmacology (FPN) Phone (043) 38 82761/84095, 40 Universiteitssingel East, Room A2.761, Email: i.winkens@maastrichtuniversity.n
Intended Learning Outcomes	Students are able to understand the work environment of the clinical psychologist. This internship gives students the opportunity to practice clinical skills in a real-life setting and to design and conduct a small-scale clinical research project.
Instruction language	EN
Prerequisites	The clinical internship cannot be started until: • At least 60 credits have been attained during the programme; • The above mentioned 60 credits must include the courses Advanced Statistics I and II, and, for students following the Psychopathology specialisation, all Clinical Skills (I–IV) training must be included and for students following the

	Neuropsychology specialisation the following skills training courses must have been completed: - Neuropsychological Assessments; - Basic Cognitive Psychological Skills; - Neuropsychology in practice. Additional requirements can apply to students who did not obtain a Bachelor's degree in Psychology and/or a bachelor's degree at Maastricht University
Teaching methods	Assignment(s) Paper(s) Patient contact Research Skills Training(s) Working visit(s)
Assessment methods	Attendance Final paper Observation Participation
Key words	clinical research, clinical practice, clinical training, psychodiagnostics, patient contact

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: minor proposal and minor thesis and clinical activities report
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No NA: minor proposal is pass/fail; minor thesis is graded (between 0 and 10, 6.0 is sufficient); clincial activities report is pass/fail
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Overview RM in Psychopathology (PP)

	Research Master in Psychopathology (PP) Year 1 (2021-2022): Anne Roefs **Specialisation Coordinator: Anne Roefs**
Period 0	Introduction week: **PSY4958** Introduction in Problem-Based Learning (training for non-UM students*) (- credits): Wladimir van Mansum
Throughout Year 1	**Electives:** **PSY4156** Elective: Course AND/OR **PSY4157** Elective: Review AND/OR **PSY4158** Elective: Research (5 credits in total): Vincent van de Ven
Period 1 30-08-2021 22-10-2021	**Core course:** **PSY4511** Anxiety Disorders (4 credits): Marisol Voncken, Marleen Rijkeboer **PSY4512** Mood Disorders (total of 4 credits): Frenk Peeters **PSY4106** Advanced Statistics I (total of 3 credits): Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Skills Training: **PSY4531** Research Practical Psychometrics (total of 2 credits): Wolfgang Viechtbauer **PSY4532** Clinical Skills I: Interviewing Skills (2 credits): Sandra Mulkens **PSY4534** Clinical Assessment Instruments (total of 2 credits): Tineke Lataster
Period 2 25-10-2021 17-12-2021	**Core course:** **PSY4512** Mood Disorders: Frenk Peeters **PSY4513** Stress and Trauma (4 credits): Dennis Hernaus, Stella Voulgaropoulou **PSY4106** Advanced Statistics I: Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Skills Training: **PSY4531** Research Practical Psychometrics: Wolfgang Viechtbauer **PSY4533** Clinical Skills II: Diagnostic Test Procedures (2 credits): Claire Wolfs, Tineke Lataster **PSY4534** Clinical Assessment Instruments: Tineke Lataster
Christmas break	
Period 3 03-01-2022 28-01-2022	**Core course:** **PSY4521** Bodily Distress Disorders (4 credits): Ann Meulders
	Skills Training: **PSY4108** Neuroanatomy (1 credit): Jos Prickaerts **PSY4534** Clinical Assessment Instruments: Tineke Lataster
	PSY4100 Colloquia (Total of 1 credit): Rudy Schreiber
Period 4 31-01-2022 01-04-2022	**Core course:** **PSY4514** Developmental Psychopathology (4 credits): Peter Muris **PSY4519** Eating Disorders (4 credits): Lotte Lemmens **PSY4107** Advanced Statistics II (total of 3 credits): Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	Skills Training: **PSY4534** Clinical Assessment Instruments: Tineke Lataster

	Workshop: **PSY4435** Human Neuroimaging (3 credits): Tjeerd Boonstra, Peter van Ruitenbeek
	PSY4100 Colloquia: Rudy Schreiber
Period 5 04-04-2022 03-06-2022	**Core course:** **PSY4516** Psychosis (4 credits): Dennis Hernaus **PSY4107** Advanced Statistics II: Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	Workshop: **PSY4373** Introduction to R (1 credit): Ehsan Pishva, Wolfgang Viechtbauer
	Skills Training: **PSY4534** Clinical Assessment Instruments: Tineke Lataster
	PSY4100 **Colloquia:** Rudy Schreiber
Period 6 07-06-2022 01-07-2022	**Core course:** **PSY4520** Mental Health and Happiness (total of 3 credits): Madelon Peters
	Workshop: **PSY4335** Psychopharmacology (1 credit): Peter van Ruitenbeek **PSY4114** Research Grant Writing Workshop (2 credits): Sebastian Köhler, Ron Handels **PSY4371** Psychiatric Epidemiology (1 credit): Wolfgang Viechtbauer
	Skills Training: **PSY4534** Clinical Assessment Instruments: Tineke Lataster
	PSY4100 Colloquia: Rudy Schreiber

Students from Erasmus Rotterdam receive an exemption for PBL Training

	Research Master in Psychopathology (PP) Year 2 (2022-2023)
Period 1	**Core course:** **PSY5112** Research Grant Writing Course (3 credits): Sebastian Köhler, Ron Handels **PSY5511** Personality Disorders (4 credits): Jill Lobbestael
	Skills Training: **PSY5533** Clinical Skills III: Clinical Interviews for the DSM 5 (SCID-training) (1 credit): Lotte Lemmens, **PSY5523** Clinical Skills IV: Intervention Techniques (2 credits): Lotte Lemmens
32 weeks	**PSY5107** Research Proposal (1 credit), **PSY5120** Research Internship Graded (10 credits) (research option)/**PSY5121** Research Internship Ungraded (25 credits) (research option), **PSY5122** Research Internship Graded (10 credits) (clinical option)**/PSY5123** Research Internship Ungraded (9 credits) (clinical option) & **PSY5103** Master's Thesis (14 credits): Gerda Kraag OR **PSY5109** Master's Thesis (10 credits): Gerda Kraag
	PSY5108 Research Proposal Minor's Thesis (1 credit), **PSY5104** Clinical Internship (15 credits), **PSY5111** Clinical Activities Report (- credits) & **PSY5105** Minor's Thesis (4 credits): Gerda Kraag

Specialisation in Psychopathology (PP)

The specialisation in Psychopathology provides students with the theoretical background and clinical insights necessary for future research in the various fields of mental health, in particular experimental psychopathology, clinical psychology, and psychiatry. Interactive core seminars cover biopsychosocial theories and state-of-the-art research on the epidemiology, genetics, psychological and neurobiological mechanisms underlying onset and course, treatment and prevention of mental disorders throughout the life cycle. In addition to the coverage of specific disorders and underlying processes, attention is paid to positive psychology and to broader issues and controversies, such as gender and cultural differences, the validity of experimental and animal models of psychopathology and gene-environment interactions. The programme includes training in diagnostic and other clinical skills, as well as elective research experience in health care settings. In the second year, all students complete a research internship/master's thesis; they may also choose to complete a shorter clinical internship/minor's thesis in addition. The possibility of designing individualised electives, choosing elective courses from other specialisations, and participating in a research elective affords students not only an in-depth understanding of the multidisciplinary approaches to psychopathology, but also gives them the opportunity to tailor the programme along the lines of their personal research interests. Although the primary emphasis of the curriculum is on research, this specialisation also prepares students who wish later to pursue advanced clinical training, in accordance with the scientist-practitioner model.

Coordinator Psychopathology

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PSY4958 is offered in all RM specialisations. ***See CN***

Colloquia

PSY4100 Colloquia is offered in all RM specialisations. ***See CN***

Core Courses

Title	**Anxiety Disorders**
Period	1
Code	PSY4511
ECTS credits	4
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Marisol Voncken, Marleen Rijkeboer
Descriptions	In industrialized countries, anxiety disorders are the largest group of mental disorders for which patients are referred, and without appropriate treatment the natural course is often chronic. Luckily, anxiety disorders are relatively well studied and understood, and the outcome of treatment is relatively favorable. In anxiety disorders, it is fascinating that a person can get a panic attack by, for instance, seeing a spider even though spiders are completely harmless. It gets even more interesting when you start to disentangling such an anxiety response. If we do that, we can even empathize with this over-the-top panic response and it becomes very understandable why this response does not fade out. For instance, one reason is that the panic response itself blocks the ability to discover that a spider is actually a harmless creature that does not run toward to bite you. There are many more reasons that maintain anxiety responses. In this course, students will first learn what the features of pathological anxiety are and are challenged to apply findings in the literature on to clinical cases. For instance, why do patients with social anxiety disorder, patients that are highly afraid of being disliked actually provoke dislike in others? The literature focuses on cognitive-behavioral maintenance factors of the anxiety disorders such as cognitive biases, safety behaviors, metacognitive processes and imagery. With regard to treatment techniques knowlegde will be updated with recent insights of the working mechanisms of exposure and developments in new treatment techniques such as EMDR, imagery rescripting and cognitive bias modification (CBM). At the end of the course, they will scientifically debate about new treatment developments in the anxiety disorder field. Last, students get the opportunity to design experimental studies that disentangle maintenance factors in anxiety. They will design such studies in subgroups and present them. The final aim and most important assignment of this course is that students write their own research proposal on one of the topics in the course.
Intended Learning Outcomes	Students will be able to: - apply learning theory and cognitive-behavioral models on clinical anxiety disorder cases; - understand and explain to informed professionals new insights in the exposure procedure; - on a basic level design a relevant exposure procedure based on recent insights in exposure for an anxiety disorder patient; - understand and explain to informed professionals why cognitive biases, safety behaviors, meta-cognitive processes and imagery are maintenance factors in anxiety disorders; - design and write about relevant research proposals based on current literature in the field of anxiety disorders; - debate using scientific evidence on new developments in treatment techniques for anxiety disorders.
Instruction language	EN
Prerequisites	
Teaching methods	Lectures Presentations Assignments

	Workshop
	Debate
	Work in subgroups
Assessment methods	Attendance
	Written assignment: scientific writing
	Final paper: research proposal
Key words	anxiety, anxiety disorders, phobia, panic disorder, agoraphobia, social anxiety disorder, obsessive compulsive disorder

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☒ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Mood Disorders
Period	1, 2
Code	PSY4512
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Frenk Peeters
Descriptions	This course is intended to give the student an overview of current concepts and research in the field of mood disorders. During the course, fundamental aspects of onset and course of the most important mood disorders (major depression, bipolar disorder and dysthymia) will be addressed. Over the last couple of decades, it has become increasingly clear that mood disorders are chronic psychiatric disorders characterised by acute episodes, relapses, recurrences and residual symptomatology. Both onset and course of mood disorders are the result of complex interactions between distal (e.g. genetic and developmental) and proximal (e.g. severe life events) risk factors. This is illustrated by discussion of mood disorders across the life span in the light of biological, psychological and social approaches. Current research strategies aimed at clarifying the role of these different aspects will be the central theme throughout the course. Based on this framework, state-of-the-art treatments for mood disorders are addressed and illustrated where possible.
Intended Learning Outcomes	Students will be able to understand: Epidemiology, etiology of mood disorders, course, treatment, major depression, bipolar disorder, dysthymia, diagnostic issues, kindling, scar, personality, genes, immunesystem, environment, gene-environment interaction, efficacy, effectiveness, cognitive behavioural therapy, interpersonal therapy, electroconvulsive therapy, gender, life stressors.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Presentation(s) Work in subgroups PBL
Assessment methods	Attendance Presentation Final paper
Key words	epidemiology, aetiology, course, treatment, major depression, bipolar disorder, dysthymia

Nr.	Question	Answer
1	In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	Are all ILO's being assessed with the selected assessment methods?	☐ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	

5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

PSY4106 Advanced Statistics I is offered in all RM specialisations. See CN

The practical training associated with PSY4106 Advanced Statistics I is PSY4119. Practical Training: SPSS I and Lisrel is offered in all RM specialisations. See CN

Title	**Stress and Trauma**
Period	2
Code	PSY4513
ECTS credits	4
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Dennis Hernaus, Stella Voulgaropoulou
Descriptions	This course is designed to give students an in-depth overview of key concepts and controversies in current stress research, with an emphasis on the role that stress is thought to play in the aetiology, pathophysiology, and course of psychiatric disorders. The first half of the course will focus on biological and psychological mechanisms involved in (mal)adaptive responses to stressors. In the second half, we will apply this knowledge to better understand aspects of posttraumatic stress disorder (PTSD): epidemiology, risk and protective factors, prevention, and evidence-based treatment options. Throughout the course, attention will be paid to how current theories about stress and trauma can be translated into testable hypotheses and feasible research designs. In addition, the generalisability and clinical relevance of findings from experimental stress exposure paradigms and studies in animal models will be considered.
Intended Learning Outcomes	Students will be able to understand: conceptualisation and measurement of stress, appraisal and coping processes, sympathetic-adrenal medullary system, hypothalamic-pituitary-adrenal axis, stress neurobiology, experimental stress paradigms, long-term effects of prenatal stress and childhood adversity, gene-environment interactions, environmental sensitivity, epidemiology of trauma exposure, risk and protective factors, social support, resilience, diagnostic criteria, burnout, acute stress disorder, posttraumatic stress disorder, cognitive mechanisms, biological mechanisms, prevention, clinical trials, treatment approaches (rationale and efficacy), barriers to translating research into clinical practice, ethical issues in stress research. Students will be able to apply: designing an experimental stress study, writing a study (experiment) proposal, giving a brief empirical presentation, teamwork during small group assignments.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Presentation(s) Work in subgroups PBL
Assessment methods	Attendance Assignments Final paper Presentation
Key words	stress, childhood adversity, life events, psychoneuroendocrinology, posttraumatic stress disorder

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Bodily Distress Disorders**
Period	3
Code	PSY4521
ECTS credits	4
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Ann Meulders
Descriptions	Why do a relatively large number of individuals complain about longstanding bodily complaints, and continue to seek medical care despite the absence of a medical cause of their complaints? This course focuses on the mental representations of bodily symptoms, and their effects on observable behaviours, which can be quite disabling. Interestingly, a shift in scientific focus has occurred in the last decade from stable individual traits towards more dynamic transdiagnostic psychological processes. The emphasis of this course is on the cognitive and behavioural mechanisms (e.g. conditioning, reasoning, attention, avoidance) that play a role in the aetiology and maintenance of chronic pain, shortness of breath (dyspnea), ringing in the ears, and fear of serious illnesses. Evidence-based cognitive-behavioural interventions are discussed. Because of its prototypical character, the problem of chronic pain and pain disorder will be the main focus of this course.

The course starts with three introductory sessions during which a modern approach of bodily distress disorders is presented. In each of the four subsequent 'meet-the-expert' sessions, a lecturer specialised in a particular disorder from a collaborating university lab is invited, and students will be given the opportunity to actively interact with the experts. If possible, a visit to one of the experts' labs will be organised. In previous years, this was the lab of the research group Health Psychology at the University of Leuven (Belgium). The course ends with an interactive mini-symposium during which students present their research paper. |
Intended Learning Outcomes	Students will be able to understand: theoretical approaches of symptom perception and body appearance concerns, catastrophic (mis)interpretations of bodily symptoms, congenital insensitivity to pain, gate-control theory of pain, sensory-discriminative and affective dimension of interception, neural correlates of pain, pain matrix, descending modulation, theories of health anxiety, fear-avoidance model of pain, interoceptive conditioning, safety behaviours, attentional processes, stress, coping and acceptance, communal coping model, self-consciousness, self-discrepancies, air hunger, differences and communalities between pain and dyspnea, experimental pain and dyspnea induction methods, cognitive-behavioural treatment for bodily distress disorders, exposure.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL Presentation(s) Work in subgroups Working visit(s)
Assessment methods	Attendance Final paper Presentation
Key words	bodily complaints, chronic pain, dyspnea, health anxiety

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Developmental Psychopathology
Period	4
Code	PSY4514
ECTS credits	4
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Peter Muris
Descriptions	The aim of this course is to introduce students to the field of developmental psychopathology, an interdisciplinary field that employs the framework of normal development to understand psychopathology as it unfolds throughout the natural lifespan. Developmental psychopathology integrates research findings from developmental and clinical psychology, behavioural genetics, neuropsychology and psychiatry into models that explain how psychopathology develops. The focus of this seminar will be to examine child psychopathology through the lens of developmental psychopathology. The sessions will cover broad conceptual and methodological issues in developmental psychopathology research, as well as genetic, environmental influences and family factors in the development of psychopathology. Additional sessions will address current theory and research in specific types of childhood psychopathology, such as anxiety, depression, conduct disorders and autism. In each of these sessions, findings from developmental research will be integrated with clinical studies.
Intended Learning Outcomes	Students will be able to understand: child psychopathology, oppositional-defiant disorder, conduct disorder, antisocial personality disorder, primum non nocere, bullying, KOPP, children of parents with psychiatric problems parental rearing, Munchhausen by proxy, mental retardation, assessment, Tourette's syndrome, autism, Pica, rumination disorder, conversion disorder, childhood schizophrenia.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Work in subgroups PBL
Assessment methods	Attendance Presentation Written exam
Key words	developmental psychopathology, child and adolescent disorders, etiology, treatment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	

5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Eating Disorders
Period	4
Code	PSY4519
ECTS credits	4
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Lotte Lemmens
Descriptions	Eating disorders are among the most prevalent disorders in adolescent and young adult females. Their exact aetiologies are largely unknown, although it has become evident that a range of factors influences an individual's vulnerability to eating disorders (like genetics, low self-esteem, perfectionism, impulsivity). An initial aim of the course is to discuss influential state-of-the art theories and empirical papers about the origin or maintenance of eating disorders. The question of whether obesity is an eating disorder is also discussed. Secondly, special attention will be paid to experimental psychopathology research methods for testing hypotheses on the origin, maintenance and reduction of these disorders. Thirdly, the gap with clinical practice is scrutinised. What is the best treatment a patient can get? And why is it so difficult to implement evidence-based or empirically supported treatments in clinical practice?
Intended Learning Outcomes	Students will be able to understand: - 1) the clinical pictures and (trans-)diagnostic criteria of eating disorders and obesity, 2) the relation between eating disorders and dieting, the beauty ideal, biased thinking, conditioned cravings, and 3) effective treatments for eating disorders, implementation of effective treatments and the gap between science and practice; - the writing of popular science, the reviewing of popular science and the presentation of popular science.
Instruction language	EN
Prerequisites	
Teaching methods	PBL, Lectures
Assessment methods	Attendance Participation Assignment
Key words	eating disorders, obesity, body image

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No

6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

*PSY4107 Advanced Statistics II is offered in all RM specialisations. **See CN***

*The practical training associated with PSY4107 Advanced Statistics II is PSY4117. Practical Training SPSS II is offered in all RM specialisations. **See CN***

Title	Psychosis
Period	5
Code	PSY4516
ECTS credits	4
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Dennis Hernaus
Descriptions	The course aims to provide the student with an overview of current thinking and unresolved issues in psychosis research. The origins of psychotic disorders and psychosis transition have been the subject of intense study in the last decade. Early epidemiological approaches have been complemented with studies of cognitive mechanisms, psychopathology, neuroimaging and, finally, treatment trials. There is now evidence to suggest that the onset of psychotic disorder is the endpoint of a process of interactive aetiological forces that involve genetic background factors associated with low-grade, non-clinical expression of psychosis in the general population, environmental stressors such as cannabis use and childhood trauma, and a number of cognitive vulnerabilities in the realm of neuropsychology and social cognition. In addition, it has become increasingly clear that the process of onset of psychosis is associated with neurocognitive changes and progressive sensitisation to dopaminergic stimulation, greater quantities of which may predict subsequent brain changes and poorer outcomes.
Intended Learning Outcomes	- a better understanding of psychosis, in particular its overlap with normal mentation; - its ontogeny and heterogeneity; - diagnostic conundrums; - linking brain mind, and environment; - linking genes, experience, and social context; - how to help affected individuals
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Presentation(s) Work in subgroups
Assessment methods	Attendance Final paper Assignment Observation
Key words	psychosis, diagnosis, treatment, aetiology, phenotype, research

Nr.	Question	Answer
1	In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	Are all ILO's being assessed with the selected assessment methods?	☐ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☐ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No

4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Mental Health and Happiness
Period	6
Code	PSY4520
ECTS credits	3
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Madelon Peters
Descriptions	This course will familiarise students with concepts and ideas from 'positive psychology'. Positive psychology was introduced by Martin Seligman around 2000 and can be viewed as a supplementary approach to clinical psychology. The positive psychological movement formulated three aims: (1) to focus on well-being and happiness instead of abnormal behaviour and psychopathology, (2) to be concerned with building positive qualities and strengths instead of repairing damage and (3) to prevent future problems instead of correcting past and present problems. The course starts with a general introduction to the field of positive psychology. The main concepts will be introduced and clarified, and an overview of the results of happiness studies will be presented. In subsequent meetings, various more specific topics will be discussed by means of lectures and group discussions. These topics include positive psychology and physical health, resilience and positive personality traits, positive psychotherapy and resilience-building interventions. The value of positive psychology as an addition to more traditional clinical psychological approaches will be discussed.
Intended Learning Outcomes	- students will learn about the history of positive psychology and how it relates to other approaches in psychology; - students will learn about determinants of happiness and wellbeing; - students will learn how positive affect and optimism can impact on mental and physical health; - students will learn about positive psychology interventions and their efficacy; - students will learn about the neurobiology of resilience; - students will be able to apply concepts stemming form positive psychology in their own work.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Presentation(s) Work in subgroups skills
Assessment methods	Attendance Final paper
Key words	positive psychology, happiness, wellbeing, mental and physical health, resilience

Nr.	Question	Answer
1	In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).	☐ Multiple choice ☐ Open ended questions ☒ Other:
2	Are all ILO's being assessed with the selected assessment methods?	☒ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☒ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No

4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

PSY5112 Research Grant Writing Course will be offered in all RM specialisations. **See CN**

Title	Personality Disorders
Period	1
Code	PSY5511
ECTS credits	4
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Jill Lobbestael
Descriptions	Personality disorders are chronic patterns of thought, emotion and behaviour that first appear in adolescence or young adulthood and cause dysfunction in relationships, work and other areas. They affect approximately 10% of the general population and are one of the most prevalent forms of psychopathology seen in mental health care settings. Over the past 30 years, there have been significant advances in the understanding of personality disorders, including their phenomenology and classification, development and aetiology. Moreover, while many personality disorder patients were traditionally thought to be untreatable, recent advances in psychotherapy and medication are showing promising indications of effectiveness in this challenging population. This course aims to provide students with an overview of theories, classification issues and treatment models of personality disorders, with an emphasis on current scientific debate. Topics include personality theories relating to personality disorders; biological models of personality disorders (e.g. genetic and neurotransmitter models); psychological models of personality disorders (e.g. modern psychodynamic, cognitive, interpersonal, integrative models); sociological perspectives on personality disorders; classifications issues (e.g. DSM-IV vs DSM-V diagnosis, Axis I vs. Axis II, categorical vs. dimensional models, polythetic definition, diagnostic techniques); aetiological issues; epidemiological issues; and treatment options.
Intended Learning Outcomes	- students are able to explain the definitions of the 10 different PDs, and gain insight on the clinical manifestation of the PDs; - students gain and apply knowledge about the current debate of whether PDs should be considered continuous, categorical or hybrid constellations; - students can explain the different models on PDs, like the biological model, modern psychodynamic models; cognitive models; and PD-specific models (e.g. Dialectical Behavior Theory and emotional hyperreactivity for borderline PD); - students are explain the main goals of the different treatment models, gain clinical insight into these therapies, and reflect on the empirical evidence supporting the effectiveness of the different therapies; - students gain knowledge and are able to critically reflect on the different assessment methods used in PD research.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) PBL
Assessment methods	Attendance Presentation Assigment Written exam
Key words	personality disorders, DSM-IV and DSM-V, classification, aetiology, epidemiology, treatment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☒ Open ended questions

		☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	x☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Skills Training

Title	Research Practical Psychometrics
Period	1-2
Code	PSY4531
ECTS credits	2
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Wolfgang Viechtbauer
Descriptions	This skills training provides a thorough overview of the basic principles of psychological measurement (i.e., psychometrics). Topics that are covered include classical test theory, reliability analysis (e.g., test-retest, parallel forms, split-half, Cronbach's alpha), validity (e.g., content, criterion, construct), principal component analysis, factor analysis (exploratory and confirmatory), and item response theory. SPSS, LISREL, and R will be used for the analyses.
Intended Learning Outcomes	Students will be able to understand: - the classical test theory (CTT) model; - methods for estimating the reliability of measurements based on the CTT; - various types of validity (content, criterion, and construct validity); - how to use the Spearman-Brown equation; - how to use the correction for attenuation and range restriction; - how to apply and interpret the results of a principal component and exploratory factor analysis; - how to apply and interpret the results of a confirmatory factor analysis; - basic principles of item response theory (IRT).
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Skills Training(s) Work in subgroups
Assessment methods	Attendance Final paper
Key words	psychometrics, reliability, validity, factor analysis, item response theory

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☒ No

6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Clinical Skills I: Interviewing Skills
Period	1
Code	PSY4532
ECTS credits	2
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Sandra Mulkens
Descriptions	The aim of this skills training is to teach students basic clinical interview skills needed for interviewing and diagnosing patients suffering from psychopathology (symptoms). After this course, students will be able to administer semi-structured interviews covering the reason for referral, chief complaint, history of the presented problem(s), mental state examination, and the developmental and social assessment and diagnoses (DSM-5). Students should be able to diagnose and classify the presented problem(s) and to suggest the type of treatment required. Students must be able to report the information retrieved from the interview in a structured manner and using professional language.
Intended Learning Outcomes	Students will be able to: - classify disorders according to the DSM-5; - conduct a clinical assessment, conduct interviewing skills regarding psychopathology (symptoms), administer semi-structured interviews, report in professional language.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Paper(s) Patientcontact Skills Training(s)
Assessment methods	Attendance Final paper Observation
Key words	interviewing skills, psychopathology, assessment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Paper
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐X No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Clinical Assessment Instruments
Period	1-6
Code	PSY4534
ECTS credits	2
Organisational unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Tineke Lataster
Descriptions	Parallel to the core courses throughout year 1, this series of skills training sessions introduces students to the range of rating scales, questionnaires, interview and observational instruments most commonly used in clinical practice and research. The first session will provide an overview of the classes of available instruments and their applications in clinical and research contexts. Later sessions will focus on instruments designed to assess specific symptoms and the severity of the disorders that are covered in the associated core course. Students will learn how to choose appropriate assessment instruments for clarifying individual diagnoses, planning interventions and monitoring their effects. These skills training sessions will provide students with basic background information and hands-on experience in the use of valid and reliable instruments for assessing psychopathology.
Intended Learning Outcomes	Students will be able to understand: - available research and clinical instruments for assessing psychopathology; - state and trait measures; - retrospective measures; - evaluating validity and reliability of assessment methods; - self-report, clinician-rated and informant-rated measures; - sources of bias and measurement error; - presentation and interpretation of test results in research and clinical practice; - continuous vs. categorical measures (symptoms vs. diagnoses); - assessing clinical change; broad vs. specific measures; - instruments designed or adapted for special populations.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Skills Training(s) Work in subgroups
Assessment methods	Attendance Participation
Key words	questionnaires, interviews, observational measures, clinical evaluation, reliability, validity, psychodiagnostics, treatment response

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other: no exam, no assessment
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	

5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Clinical Skills II: Diagnostic Test Procedures
Period	2
Code	PSY4533
ECTS credits	2
Organisational unit	Social Psychiatry (FHML)
Coordinator	Claire Wolfs, Tineke Lataster
Descriptions	Students will learn to conduct a psychodiagnostic interview with adult clients with psychiatric diagnoses and caregivers of patients. Students will also extend their experience in neuropsychological test administration and observation. They will acquire skills in writing a formal report and in communicating their conclusions to the patient. Following an introduction to the main cognitive domains in relation to brain areas and relevant neuropsychological and psychopathological test procedures, the skills training will focus several disorders: e.g., developmental disorders (including disorders of executive functioning and disorders of learning and attention); schizophrenia; bipolar disorder; depression; and personality functioning. These conditions will be discussed in relation to the principles of assessment of psychopathology and neuropsychology outlined in the first session. Students will practice their interviewing skills in real client interviews. In addition, students will be trained in neuropsychological history taking and test administration.
Intended Learning Outcomes	Students will be able to understand: the procedures for psychodiagnostics and neuropsychological testing that are needed for assessing type, severity, and extent of psychopathology and neuropsychological problems in individuals with psychiatric disorders.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Skills training Patient contact
Assessment methods	Attendance, active participation Final paper
Key words	clinical skills training, psychodiagnostics and neuropsychological testing, interview techniques, test administration

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: case report
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes

		☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

*PSY4108 Neuroanatomy is offered in CN, NP, DN and **PP.** **See CN***

Title	Clinical Skills III: Clinical Interviews for the DSM 5 (SCID-training)
Period	1
Code	PSY5533
ECTS credits	1
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Lotte Lemmens
Descriptions	The aim of this training is for students to become acquainted with the semi-structured clinical interviews for DSM 5: SCID-CV & SCID-PD. During the training, students receive background information and practical tips about structured clinical interviewing. Furthermore, after having observed the practice of interviewing and scoring (live + video material), students will practice several aspects of the SCID interviews themselves. Special emphasis lies on comparing the patient's answer to a question and the clinical judgement of stating whether or not a certain behavioral criterion is met. In addition, the interviews will be crictally evaluated and attention will be paid to the interpretation of findings and the explanation of outcomes to clients.
Intended Learning Outcomes	- knowledge of instruments and assessment methods in the field (i.e., semi-structured clinical interviews SCID-CV & SCID-PD, DSM 5 classification rules; - ability to apply instruments and assessment methods in the field; - ability to effectively communicate in English – in writing and orally, on field related topics; - ability to communicate scientific theories and empirical findings in an understandable way to both professionals (experts and non-experts) and to lay people (including clients); - ability to reflect on one's own professional behaviour (including ethical standards) and development.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture(s) Work in subgroups Presentation(s)
Assessment methods	Attendance Participation
Key words	standardised interviewing, psychiatric classifications, judging behavioural criteria

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No no weighing (pass/fail)
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes

		☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Clinical Skills IV: Intervention Techniques**
Period	1
Code	PSY5523
ECTS credits	2
Organisational unit	Clinical Psychological Science (FPN)
Coordinator	Lotte Lemmens
Descriptions	Cognitive behavioural therapy (CBT) is a widely used treatment regime that is considered as the evidence-based treatment for a wide range of psychopathological disorders, including anxiety disorders and depression. The behavioural component, exposure, was developed in the sixties by researchers like Skinner and was considered a breakthrough for specific phobias and obsessive-compulsive disorder. These disorders were seen as untreatable at that time. In the eighties, the cognitive component started to develop. Aaron Beck, who, in those days was trained as a psychoanalytic therapist, was able to treat depression within a few months using his cognitive approach. This was also considered a breakthrough, since psychoanalytic treatments for depression at that time normally took years of treatment. Researchers and therapists started to combine the behavioural and cognitive techniques, resulting in cognitive behavioural therapy. Over the years, many studies have shown the effectiveness of this treatment and, in the Netherlands CBT is included in the official professional guidelines for various psychopathological disorders. In this skills training, students get acquainted with the elementary therapeutic procedures of CBT, including case conceptualization, explaining the rationale, and applying exposure and cognitive therapy. Students will receive theoretical background information (literature/teacher) and observe the practice of CBT (teacher/video materials). In addition, they will practice various therapeutic procedures themselves (in session/homework) and write a verbatim report or therapy sessions.
Intended Learning Outcomes	- knowledge of theories and interventions in the field (i.e., CBT); - ability to apply theories and interventions in the field (i.e., elementary therapeutic CBT procedures including making a case conceptualisation, explaining the rational, applying exposure and cognitive techniques); - ability to effectively communicate in English – in writing and orally; - ability to communicate scientific theories in an understandable way to both professionals (experts and non-experts) and to lay people (including clients); - ability to reflect on one's own professional behaviour (including ethical standards) and development; - ability to work in a(n international team in a) clinical setting.
Instruction language	EN
Prerequisites	-
Teaching methods	Patientcontact Assignment(s) Work in subgroups Presentation(s)
Assessment methods	Attendance Assignment Participation
Key words	therapeutic skills, cognitive behavioural treatment, CBT, case conceptualisation, exposure, cognitive techniques

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No no weighing (pass/fail)
6a	**Should a student pass all of the assessments to pass the course?**	☒ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Methodological and technical workshops

PSY4435 Human Neuroimaging is offered in NP and PP. See NP

*PSY4335 is offered in NP and **PP**.* **See NP**

*PSY4371 Psychiatric Epidemiology is offered in FN, NP and **PP**.* **See NP**

PSY4114 Research Grant Writing Workshop is offered in all RM specialisations. **See CN**

Electives

PSY4156 Elective: Course, PSY4157 Elective: Review and PSY4158 Elective: Research are offered in all RM specialisations. ***See CN***

Research Internship and Master's Thesis. ***See CN and NP***

Overview of RM in Drug Development and Neurohealth (DN)

	Research Master in Drug Development and Neurohealth (DN) Year 1 (2021-2022) **Specialisation Coordinator: Rudy Schreiber**
Period 0	Introduction week: **PSY4958** Introduction in Problem-Based Learning (training for non-UM students*) (- credits): Wladimir van Mansum
Throughout Year 1	**Electives:** **PSY4156** Elective: Course OR **PSY4157** Elective: Review OR **PSY4158** Elective: Research (3 credits each): Vincent van de Ven **OR** **PSY4159** Double Elective: Research (6 credits): Vincent van de Ven OR **PSY4160** Double Elective: Review (6 credits): Vincent van de Ven
Period 1 30-08-2021 22-10-2021	**Core Courses: **** **PSY4311**** Introduction to Molecular Biochemical Techniques (5 credits): Gunter Kenis *Practical Training:* **PSY4341** Genes and Proteins: Gunter Kenis OR **PSY4312 **** Introduction to Psychology (5 credits): Eef Theunissen *Practical Training:* **PSY4353** Measuring Cognitive Functions: Nadia Hutten **PSY4818** Medical Needs & Failures, Target Discovery (3 credits): Rudy Schreiber **PSY4106** Advanced Statistics I (3 credits): Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Workshop: **PSY4340** Introduction in Genetics (1 credits): Gunter kenis
Period 2 25-10-2021 17-12-2021	**Core courses:** **PSY4842** Drug Discovery (4 credits): Arjan Blokland, Harald Schmidt *Practical Training:* **PSY4821** Robot-based High-Throughput Screening: Arjan Blokland **PSY4814** Drug Metabolism and Safety (5 credits): Jacco Briedé **PSY4106** Advanced Statistics I: Jan Schepers *Practical Training:* **PSY4119** SPSS I and Lisrel: Jan Schepers
	Workshop: **PSY4834** Valorisation (2 credit): Rudy Schreiber
Christmas break	
Period 3 03-01-2022 28-01-2022	**Core course:** **PSY4819** Big Data in Drug Discovery & Development (3 credits): Danyel Jennen *Practical Training:* **PSY4822** Computer Supported Training in Big Data in Drug Discovery & Development: Danyel Jennen
	Skills Training: **PSY4108** Neuroanatomy (1 credit): Jos Prickaerts
	Workshop: **PSY4833** Drug Discovery & Development Project Management (1 credit): Rudy Schreiber
	PSY4100 Colloquia (total of 1 credit): Rudy Schreiber

Period 4 31-01-2022 01-04-2022	**Core course:** **PSY4820** Clinical Development (4 credits): Rudy Schreiber, Pim Heckman **PSY4816** Pharmacoepidemiology, Drug Safety & Pharmaceutical Policy (4 credits): Frank de Vries, Yannick Nielen **PSY4107** Advanced Statistics II (total of 3 credits): Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	Workshop: **PSY4832** Biomedical Brain Imaging (3 credits): Dennis Hernaus
	PSY4100 Colloquia: Rudy Schreiber
Period 5 04-04-2022 03-06-2022	**Core course:** **PSY4841** Psychiatric Neuroscience: Psychopharmacology (4 credits): Daniel van den Hove, Gunter Kenis *Practical training*: **PSY4823** Western Blotting: A Pharmacological Perspective: Daniel van den Hove, Gunter Kenis **PSY4322** Electrophysiology: From Single Cell Activity to 'Cognitive' Markers (4 credits): Anke Sambeth **PSY4107** Advanced Statistics II: Gerard van Breukelen *Practical Training:* **PSY4117** SPSS II: Gerard van Breukelen
	PSY4100 Colloquia: Rudy Schreiber
	Workshop: **PSY4373** Introduction to R (1 credit): Ehsan Pishva, Wolfgang Viechtbauer
Period 6 07-06-2022 01-07-2022	**Core course:** **PSY4415** Neuropsychopharmacology (total of 3 credits): Jan Ramaekers
	Workshop: **PSY4114** Research Grant Writing Workshop (2 credits): Sebastian Köhler, Ron Handels
	PSY4100 Colloquia: Rudy Schreiber

Students from Erasmus Rotterdam receive an exemption for PBL Training

**PSY4311: This introduction course is required for students with a psychological background. The parallel course PSY4312 is required for students with a biological background. Thus, students enroll in either PSY4311 or PSY4312. The course coordinators of both courses evaluate which of the two courses a student is required to take.*

	Research Master in Drug Development and Neurohealth (DN) Year 2 (2022-2023)
Period 1 30-08-2021 22-10-2021	**Core course:** **PSY5112** Research Grant Writing Course (3 credits): Sebastian Köhler, Ron Handels **PSY5812** Applied Therapeutics (3 credits): Paddy Janssen
	Workshop: **PSY5332** Behavioural Tests and Models (1 credit): Jos Prickaerts
Throughout Year 2	**Electives:** **PSY4156** Elective: Course OR **PSY4157** Elective: Review OR **PSY4158** Elective: Research (3 credits each): Vincent van de Ven **OR** **PSY4159** Double Elective Research (6 credits): Vincent van de Ven OR **PSY4160** Double Elective: Review (6 credits): Vincent van de Ven
32 weeks	**PSY5107** Research Proposal (1 credit), **PSY5120** Research Internship Graded (10 credits)/**PSY5121** Research Internship Ungraded (25 credits) & **PSY5103** Master's Thesis (14 credits): Gerda Kraag

Specialisation: "Drug Development and Neurohealth" (DN)

The specialisation in Drug Development and Neurohealth (DN) provides students with theoretical background and practical experience with research & development in drug treatments and personalised healthcare. The DN perspective includes discovering and developing treatments for brain diseases and applying new insights from all disciplines across neuroscience, (clinical) pharmacology and genetics/genomics. The overarching theme is the pipeline of drug discovery & development, which follows the development of drug treatment from molecule to bedside, from chemical design to therapeutic application. This includes pre-clinical research (microorganisms/animals) and clinical trials (on humans) and may include the step of obtaining regulatory approval to market the drug.

In order to study mechanisms of action and efficacy of drugs that are aimed at neuropharmacological brain targets associated with affective-, neurodevelopmental-, neurodegenerative and neurovascular disorders, DN applies methods including molecular biological (e.g. proteomics, genomics), neuroanatomical (e.g. immunocytochemistry), electrophysiological (e.g. EEG, ERP) and behavioural techniques (e.g. rodent and human tests) necessary for preclinical and clinical research.

Teaching is undertaken by a multidisciplinary team from the departments of Neuropsychology & Psychopharmacology, Toxicogenomics, Pharmacology, Clinical Pharmacy and Toxicology, Psychiatry & Neuropsychology (Faculties of Psychology and Neuroscience and of Health, Medicine and Life Sciences). The staff consists of biological/neuro-psychologists, (clinical) pharmacologists, toxicologists and pharmacists. The DN specialisation trains researchers to be equipped for drug discovery & development and personalised healthcare for treatment of brain disorders in academic as well as industrial settings.

Coordinator Drug Development and Neurohealth

Rudy Schreiber, Dept. Neuropsychology & Psychopharmacology (FPN), +31(0)43 3884270, 40 Universiteitssingel East, Room A2.735, Email: rudy.schreiber@maastrichtuniversity.nl

*PSY4958 is offered in all RM specialisations**. See CN***

Colloquia

*PSY4100 Colloquia is offered in all RM specialisations. **See CN***

Core courses

*PSY4106 Advanced Statistics 1 and PSY4119 SPSS I and Lisrel **See CN***
*PSY4311 Introduction to Molecular Biochemical Techniques and PSY4341 Genes and Proteins **See FN***
*PSY4312 Introduction to Psychology **See FN***
*PSY4107 Advanced Statistics 2 and PSY4117 SPSS II **See CN***
PSY4841 *Psychiatric Neuroscience: Pyschopharmacology **See FN*** PSY4323 ***Psychiatric Neuroscience***
*PSY4823 Western Blotting: A Pharmacological Perspective **See FN PSY4352 Western Blotting***
*PSY4322 Electrophysiology **See FN***
*PSY4415 Neuropsychopharmacology **See NP***
*PSY5112 Research Grant Writing Course **See CN***

Title	Medical Needs & Failures, Target Discovery
Period	1
Code	PSY4818
ECTS credits	3
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Rudy Schreiber
Descriptions	Students will become acquainted with existing treatments, current and new targets in Neuroscience, i.e. how current knowledge of neuropsychiatric disease processes relates to existing medicinal drugs and research and development of new medicinal drugs. In this course we will focus on identifying neurobiological substrates of major Neuropsychiatric diseases such as Alzheimers Disease and Schizophrenia for which there still exist largely unmet medical needs, because of incomplete or absent treatment efficacy. This will be annotated with examples from the literature. For example in Alzheimers Disease only symptomatic pharmacological treatments are available while to date there is extensive research and development of novel disease modifying biologics treatments. This is a therapeutic area where many clinical trials have failed in the recent past. Ongoing investigations focus on vaccine or antibody treatments aimed at clearance or prevention of amyloid plaques and neurofibrillary tangles in order to obtain primary prevention therapies. Some attention will also be paid to drug development for rare diseases, specifically Autism. How to investigate the neural substrates that may be treatable with drugs, is unravelled by the Research Diagnostic Criteria (RDoC) project. Potential applications for RDoC have recently expanded to treatment development and clinical trials, given its potential for circuit-based treatment targets as compared to trials using current categories that suffer from excessive heterogeneity and questionable validity.
Intended Learning Outcomes	Students will understand: - the similarities and differences between *biomarkers* (e.g. in Alzheimers Disease: brain amyloid obtained by PET-scan), *disease targets* (amyloid volume in Alzheimers Disease), *drug targets* (amyloid in temporal lobe area) and *clinical targets* (memory performance); - the principles and the levels of aggregation (from molecule to behavioural function) in the RDoC framework; - the public/private collaboration in Autism Drug Development (EU-AIMS); - human pharmacological models of psychotic symptoms as method for drug screening.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture Assignment PBL Presentation
Assessment methods	Attendance Presentation Final Paper
Key words	target identification, target validation, disease dissection

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:

2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Drug Metabolism and Safety**
Period	2
Code	PSY4814
ECTS credits	5
Organisational unit	Department of Toxicogenomics (FHML)
Coordinator	Jacco Briedé
Descriptions	This course provides an insight into human drug metabolism at the molecular and cellular level, from pharmacological to toxic levels, and drug safety evalution processes, ranging from insight into the current safety regulations to novel concepts in safety assessment based on scientific innovations in cell models to replace test animals and in-silico-tools recently developed for a better prediction of drug safety before market introduction. It will also focus on the advantages of personalized medicine, pharmacokinetics and toxicogenomics. It will provide insight into how to extract relevant information such as dose finding and pharmacokinetics, from toxicological datasets (PredTox, TG-GATEs, diXa) and how this can be used to predict (un)safety, related mechanisms and unwanted side effects of different drugs.
Intended Learning Outcomes	Students will be able to understand: - pharmacokinetics, drug metabolism, dose finding, ADME concept; - toxicology, toxicogenomics drug safety evaluation, regulatory requirements. Skills: - detection of the differential toxic effects on neuronal cells based on gene expression detected by PCR.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment Paper PBL Presentation Skills
Assessment methods	Attendance Final Paper Presentation
Key words	drug safety, pharmacokinetics, drug toxicity, in-silico tools

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No

6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Drug Discovery
Period	2
Code	PSY4842
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN) and Pharmacology and Personalised Medicine (FHML)
Coordinator	Harald Schmidt
Descriptions	Student will become acquainted with the different strategies of drug discovery from early stages in which molecules are screened in low to high throughput screens from representative chemical or virtual libraries; subsequently, the obtained hit molecules are optimized with respect to pharmacodynamics and pharmacokinetics (ADME) to first lead compounds for in vivo testing in healthy animals and animal models of disease; this is followed by further optimization until eventually candidate molecules for registration and clinical development are defined. Patenting may occur at any point along that time-line and has to take the compound life cycle and later clinical development failures into account. Next to small molecule discovery, attention will be given to the recent development of recombinant human(ised) therapeutic antibodies. As a prerequisite for these rather standard processes, classical and possible future strategies of target identification and validation will be presented and analysed. In this context, important issues regarding the translational value of in vitro vs. in vivo models will be discussed. The corresponding practical for this course is: Robot-based High-Throughput Screening
Intended Learning Outcomes	Students will be able: - to give a good rational/definition of a medicinal drug; - to explain the different targets that drugs can have. This can be receptors, enzymes, second messengers, and biological targets; - understand the characteristic features of drugs how they bind to the different type of targets (in the brain); - to explain how high-throughput screening is done and how different tets models can be used for this purpose; - to explain what the use of in vivo and in vitro models has in the drug discovery program. Students will know the principles of selecting a good test battery for a drug discovery program. They will be able to apply concepts as construct-, external-, and predictive validity; - to write a research discovery plan starting form novel target, to drug finding, to drug testing; - to understand the requirements for proposing a drug candidate for clinical development.
Instruction language	EN
Prerequisites	
Teaching methods	PBL Presentation
Assessment methods	Attendance Presentation Final paper
Key words	hit, lead (optimization), candidate, target engagement, structure activity relationship (SAR), target identification and validation, low-high throughput screening, recombinant antibody, phage display, common mechanisms, ADME

Nr.	Question	Answer

1	In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).	☐ Multiple choice ☐ Open ended questions ☒ Other:
2	Are all ILO's being assessed with the selected assessment methods?	☒ Yes ☐ No
3a	Is there a resit possibility for every assessment method included?	☒ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	■Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4842 Drug Discovery is PSY4821 Practical Training: Robot-based High-Throughput Screening

Title	**Practical Training: Robot-based High-Throughput Screening**
Period	2
Code:	PSY4821
ECTS Credits	0
Organisational Unit	Neuropsychology & Psychopharmacology (FPN) and Pharmacology and Personalised Medicine (FHML)
Coordinator	Arjan Blokland
Description	Practical along with Core Course 'Drug Discovery'. A visit will be made at the medium throughput screening at the department of Pharmacology and Personalised Medicine, and a site visit to a high-throughput laboratory at Grünenthal (Aachen) or J&J (Beerse). During these visits the students will also be given more background information on the automated systems.
Intended Learning Outcomes	The students will be visiting a high-throughput facility in a drug development company. They will learn how high-throughput screening can be achieved based on different technologies: in vitro tests/models and big data analysis.
Instruction Language	EN
Prerequisites	
Teaching Methods	Working Visit
Assessment Methods	Attendance
Keywords	medium/high throughput screening, methods, automatisation

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☒ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☒ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ■No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☒ No
6b	**If the answer to question 6a is "NO" please explain.**	There is no assessment attendance is required
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☒ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	**Big Data in Drug Discovery and Development**
Period	3
Code	PSY4819
ECTS credits	3
Organisational unit	Department of Toxicogenomics (FHML)
Coordinator	Danyel Jennen
Descriptions	This course provides an in-depth insight how to exploit information publicly available in multiple web-based data infrastructures and how to use different software tools for drug discovery, design and further development. It will provide an introduction to how drugs can be designed using tools that can be applied for docking of potential molecular drug structures to protein targets, computerized tools that can be used to calculate properties of drugs (e.g. logP, Molecular Weight, Lipinski Parameters, etc.) and abstracted bioactivities (e.g. binding constants, pharmacology and ADMET). It will also provide insight how to use genomics data for complementing drug structure-activity relationships, including data retrieved from patients, which can be applied for identifying potential targets of drugs. The course also encompasses practical training in using these different in silico tools, which will be used to gather information about potential drugs and of existing drugs. The corresponding practical for this course is: Computer supported Training in Big Data in Drug Discovery and Development
Intended Learning Outcomes	Students will be able to understand: - biomarker discovery, exploring mechanisms, use of omics approaches; - in-silico modelling, computerized drug-protein interactions and activities; - training how to use different databases, eTox, ChEMBL, Open Phacts, Open TG-GATEs, diXa, as well as relevant software tools; - skills: Computer supported Training in Big Data in Drug Discovery & Development; - biology underlying fundamental psychological processes.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment Paper PBL Presentation Skills
Assessment methods	Attendance Final Paper Presentation
Key words	omics, drug discovery & development, big data, bioinformatics

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	

4a	Is the resit for every selected assessment method the same as the initial assessment method?	☐ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

The practical training associated with PSY4819 Big Data in Drug Discovery and Development is PSY4822 Practical Training: Computer supported Training in Big Data in Drug Discovery and Development

Title	**Practical Training: Computer supported Training in Big Data in Drug Discovery and Development**
Period	3
Code:	PSY4822
ECTS Credits	0
Organisational Unit	Toxicogenomics (FHML)
Coordinator	Danyel Jennen
Description	Skill training along with Core Course 'Big Data in Drug Discovery & Development'. In this training you'll experience a hands-on approach for modern target identification and validation. You will get familiar with the tools used in drug target evaluation and perform your own drug target analyses. Furthermore, you will use genomics data for complementing drug structure-activity relationships and for identifying potential targets of drugs. Finally, you will use the different data sources to categorise/group drugs via an integrated approach.
Intended Learning Outcomes	Students will be able to understand: skills in using different in silico tools which will be used to gather information about potential drugs and existing drugs.
Instruction Language	EN
Prerequisites	
Teaching Methods	Assignment
Assessment Methods	Attendance Presentation
Keywords	omics, drug discovery & development, big data, bioinformatics

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No

7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Clinical Development
Period	4
Code	PSY4820
ECTS credits	4
Organisational unit	Neuropsychology and Psychopharmacology (FPN)
Coordinator	Rudy Schreiber, Pim Heckman
Descriptions	Students will become acquainted with the concept of a clinical development plan and the critical path of studies in early and late development.
Intended Learning Outcomes	Students will be able to understand: - target product profile, single ascending dose studies, multiple ascending dose studies, experimental medicine studies, dose finding, proof of concept, efficacy, safety; - phases of clinical development (I-III) and special cases, i.e. development of anti-cancer drugs and biologicals as models for drug development in neuroscience; - role of biomarkers in patient stratification, target engagement and outcome/efficacy prediction; - novel trial formats, e.g. adaptive trials, single-case observations, non-Bayesian statistics; - relevant outcome parameters versus surrogate parameters; - recent cases of development failures and reasons; - drug repurposing and repositioning; - development pipelines.
Instruction language	EN
Prerequisites	
Teaching methods	Lecture Assignment PBL Presentation
Assessment methods	Attendance Presentation Final Paper
Key words	drug development, phase I, phase II, phase III, phase IV, proof of concept, dose finding, biomarkers, outcomes, trial design, repurposing/repositioning

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☒ Other: Presentation and paper (clinical development plan (CDP))
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☒ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☒ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☒ Yes 30% presentation, 70% CDP ☐ No

6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Pharmacoepidemiology, Drug Safety & Pharmaceutical Policy**
Period	4
Code	PSY4816
ECTS credits	4
Organisational unit	Clinical Pharmacy and Toxicology, Maastricht UMC+ (FHML)
Coordinator	Frank de Vries, Yannick Nielen
Descriptions	When a new medicine is granted a marketing authorization, its clinical safety profile has been assessed based on the results from randomised clinical trials (RCTs). The number of patients recruited for these pre-marketing (Phase-III) trials (in general up to 3,000), is able to detect adverse events that occur with frequencies of up to 1:1000 patient-years. Therefore, it is difficult to assess adequately the risk/benefit profile of a drug for regulatory authorities, such as the US Food and Drug Administration (FDA) or the European Medicines Agency (EMA). The authorities will ultimately decide whether a drug can remain on the market, whether its use will be restricted to certain subgroups of patients or whether it will be entirely pulled off the market. This problem is further enhanced by exclusion criteria for patients enrolled in RCTs, and their short duration of follow-up (generally several months up to 2-3 years). The intake of other medications or inclusion of children, elderly or pregnant women- such as in a real life setting - is often not allowed in RCTs. As a result, the EMA and FDA usually request pharmaceutical companies to conduct so called post-authorisation safety (PASS) studies. Similar studies are also conducted by other stakeholders such as academia or drug regulators such as the FDA. This course will give an overview of the lifecycle of drug development, with a strong emphasis on pharmacoepidemiology in Phase IV research. It will evaluate stakeholders, legislation scientific methods and commonly used data sources to assess the risk-benefit profile of drugs after market authorisation.
Intended Learning Outcomes	Students will be able to understand: - the latest developments of the regulatory process of drug development (Phase I-IV); - common and novel pharmacoepidemiological methods for the conduct of post-authorisation safefty studies (PASS). These include meta-analysis, case-control studies, cohort studies, and case-only methods; - commonly used datasources for the conduct of Phase IV research, inlcuding their strengths and limitations; - risk/benefit assessments by regulatory agencies; pharmacovigilance procedures; - the interactions between patients, prescribers, and payers (health insurance companies and governments).
Instruction language	EN
Prerequisites	
Teaching methods	Lecture PBL
Assessment methods	Attendance Written exam
Key words	pharmacoepidemiology, drug safety, pharmaceutical policy

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☒ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☒ Yes ☐ No

3a	Is there a resit possibility for every assessment method included?	☒ Yes ☐ No
3b	If the answer to question 3a is "NO" please explain.	
4a	Is the resit for every selected assessment method the same as the initial assessment method?	☒ Yes ☐ No
4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☒ No
6a	Should a student pass all of the assessments to pass the course?	☒ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☒ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Applied Therapeutics
Period	1
Code	PSY5812
ECTS credits	3
Organisational unit	Neuropsychology & Psychopharmacology (FPN) and Clinical Pharmacy and Toxicology, MUMC+ (FHML)
Coordinator	Paddy Janssen
Descriptions	This course addresses prevalence of psychiatric disorders and the use of psychotropic drugs. The students will be presented pharmacotherapeutic data of several drugs, necessary to start a therapeutic regimen for individual patients. Clinical pharmacological knowledge will be applied to several cases within different drug groups, i.e. cardiac and CNS drugs, with the objective to maximize drug effects while minimizing side effects (i.e. movement, cardiovascular, sexual and CNS side effects). The influence of genetic polymorphisms and drug-drug interactions on patient dependent drug choice and treatment adherence.
Intended Learning Outcomes	Students will be able to understand: - the epidemiology of psychiatric diseases and CNS drugs in the general population; - pharmacokinetic and pharmacodynamics properties of CNS drugs, including genetic polymorphisms; - how to translate clinical pharmacological concepts into pharmacotherapy of psychiatric diseases.
Instruction language	EN
Prerequisites	
Teaching methods	PBL
Assessment methods	Attendance Final Paper Presentation
Key words	clinical pharmacology, pharmacotherapeutics

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	

7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Skills Training

*PSY4108 Neuroanatomy. **See CN***

Workshops

*PSY4114 Research Grant Writing Workshop. **See CN***
*PSY4340 Introduction in Genetics. **See FN***
*PSY4373 Introduction to R. **See FN***

Title	Valorisation
Period	2
Code:	PSY4834
ECTS Credits	2
Organisational unit	Maastricht Valorisation Center
Coordinator	Rudy Schreiber
Description	This workshop deals with the theory and practice of valorisation. Valorisation is defined as ''The process of value creation from knowledge, by making it applicable and available for economic or societal utilisation, and by translating it in the form of new business, products, services, or processes''. The main item in this workshop is to discover how economic value can be created form neurohealth research. What products, services, and tools with practical applicability and commercial spinoff can be derived from this work? Can we create patents, licenses, startups and/or research collaborations based on new findings? If so, how can this be envisaged? Who could be potential partners and how do we approach them to find appropriate developers, manfacturers, and market parties? What are critical success factors to arrive at a favourable outcome? All of these matters will be dealt with in an interactive setting with students.
Intended Learning Outcomes	Students will be able to understand: - valorisation theory and practice; - the creation of tangible output from neurohealth research in the form of products, services and/or tools and the role patents, licenses, startups and collaborations can play to arrive at that stage.
Instruction Language	EN
Prerequisites	
Teaching Methods	Assignment Lecture PBL Presentation(s) Work in subgroups
Assessment Methods	Assignment Attendance
Keywords	valorisation, value creation, startup, license, patent, collaboration

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No

6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	Drug Discovery & Development Project Management
Period	3
Code:	PSY4833
ECTS Credits	1
Organisational Unit	Neuropsychology & Psychopharmacology (FPN)
Coordinator	Rudy Schreiber
Description	**Background**. A key component of every discovery project is the so-called 'progression scheme'. The stages of such a scheme typically consists of a series of activities, such as target identification and hit finding, with corresponding milestones, such as target selection and the selection of hits. Selection of the right assays, tests and models, and the implementation of relevant criteria for compounds to pass to the next stage is essential for the success of a discovery project. As is management of the compound flow through the various stages. **Project management**. In this hands-on course, the elements of the progression scheme will be explained and how the different activities are connected with each other. Subsequently, students will work in small teams to develop a progression scheme for a defined CNS discovery project. Activities and timelines will be recorded in a simplified Gantt chart. Every team will present their scheme at the end of the workshop.
Intended Learning Outcomes	Students will be able to understand: - progression scheme; - target identification & selection; - target assessment & validation; - hit finding & identifcation; - high throughput screening; - lead finding & selection; - nomination preclinical development candidate; - Proof of Mechanism & Proof of Concept; - behavioral models for CNS diseases; - project management, multidisciplinary teams; - Gantt chart.
Instruction Language	EN
Prerequisites	
Teaching Methods	Lecture Presentation
Assessment Methods	Attendance Presentation
Keywords	screening cascade, project stages, filter criteria, project milestones, Gantt chart

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No

4b	If the answer to question 4a is "NO" please explain.	
5	If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?	☐ Yes ☐ No
6a	Should a student pass all of the assessments to pass the course?	☐ Yes ☐ No
6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Title	**Biomedical Brain Imaging**
Period	4
Code:	PSY4832
ECTS Credits	3
Organisational Unit	Psychiatry and Neuropsychology (FHML)
Coordinator	Dennis Hernaus
Description	Neuroimaging techniques provide powerful insights into the distribution, binding, and other biological effects of pharmacological agents. For example, positron emission tomography can be used to directly assess the relationship between drug plasma concentration and target occupancy. Neuroimaging thus enables the possibility to test whether a new chemical entity reaches brain target tissue in sufficient amounts to be pharmacologically active, and to alter disease processes. This workshop will focus on how and whether neuroimaging techniques can yield biomarkers and surrogate endpoints that can aid the prediction of disease progression and (treatment) outcome.
Intended Learning Outcomes	Using the available literature, student presentations, and lectures, students will be able to understand and explain: - the basic principles of various brain imaging methods (PET, SPECT, MRI, fMRI, MRS); - how these approaches are typically used in clinical drug development stages (target identification, distribution, pharmacokinetics, target binding, drug efficacy, safety, personalized medicine); - opportunities and challenges of biomedical imaging techniques during the different phases of drug development.
Instruction Language	EN
Prerequisites	
Teaching Methods	Lecture PBL Presentation Work in subgroups
Assessment Methods	Attendance Presentation
Keywords	biomedical imaging, drug development, PET, SPECT, MRS, ph-MRI

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No

6b	If the answer to question 6a is "NO" please explain.	
7a	Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?	☐ Yes ☐ No
7b	If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.	

Electives

PSY4156 Elective: Course, PSY4157 Elective: Review and PSY4158 Elective: Research are offered in all RM specialisations. **See CN**
PSY4159 Double Elective: Research and PSY4160 Double Elective: Review are only offered in RM FN and DN.

Title	Double Elective: Research
Period	Throughout Year 1-2
Code	PSY4159
ECTS credits	6
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Vincent van de Ven
Descriptions	Students of the FN or DN track can participate in (parts of) an empirical research project that is conducted and supervised by a member of the FPN or FHML scientific staff. Note: This course differs from PSY4158, because it is only accessible to students following the FN or DN track and includes a higher workload and accompanying ECTS credits. Students can apply for an available FN or DN elective project from the list of project descriptions, which is published and continuously updated from December onwards and throughout the academic year. Students who are selected to participate in a research elective may assist in designing the experiment or observational study, acquire empirical data, be trained in using measurement equipment, analyse empirical data, or take part in other parts of the research project. Students must write a short research report of maximally 5 pages about the practical experience obtained. Students are expected to spend 168 hours on the FN or DN elective project, which includes time spent on practical work and the research report. The principal investigator of the project will supervise the practical work and grade the research report. Each student may complete maximally one Elective: Research FN or DN course, and it must be graded before before the start of the internship.
Intended Learning Outcomes	Students will be able to understand: - planning or designing empirical research; - empirical data analysis; - writing research report; - quantitative methods; - conducting research; - skill learning of data acquisition techniques; - functioning in a research team.
Instruction language	EN
Prerequisites	
Teaching methods	Assignment(s) Lecture(s) Paper(s) Patient contact PBL Presentation(s) Research Skills Training(s) Work in subgroups
Assessment methods	Final paper Participation
Key words	elective, practical research, empirical research

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Title	Double Elective: Review
Period	Throughout Year 1-2
Code	PSY4160
ECTS credits	6
Organisational unit	Cognitive Neuroscience (FPN)
Coordinator	Vincent van de Ven
Descriptions	Students write a critical literature review based on a specialised topic, under the supervision of a member of the scientific staff of Maastricht University. Students take the initiative to locate and arrange a supervisor for the review. The review topic, content and format will be determined by mutual agreement between student and supervisor. Students are expected to devote 168 hours to the Review Elective. Each student may complete maximally one FN or DN Review or one FN or DN Research elective (PSY4159). The Review Elective must be completed and assessed prior to the start of the internship.
Intended Learning Outcomes	Students will be able to understand: - extracurricular interests; - specialisation on topic of interest; - supervised scientific writing; - literature review.
Instruction language	EN
Prerequisites	
Teaching methods	Paper(s)
Assessment methods	Final paper
Key words	elective, review paper, paper assignment, literature review, writing assignment

Nr.	Question	Answer
1	**In case one of your assessment methods is a written exam. Please select which type of written exam (more options possible).**	☐ Multiple choice ☐ Open ended questions ☐ Other:
2	**Are all ILO's being assessed with the selected assessment methods?**	☐ Yes ☐ No
3a	**Is there a resit possibility for every assessment method included?**	☐ Yes ☐ No
3b	**If the answer to question 3a is "NO" please explain.**	
4a	**Is the resit for every selected assessment method the same as the initial assessment method?**	☐ Yes ☐ No
4b	**If the answer to question 4a is "NO" please explain.**	
5	**If there is more than 1 assessment method, how are the grades combined? Is there e.g., a weighing?**	☐ Yes ☐ No
6a	**Should a student pass all of the assessments to pass the course?**	☐ Yes ☐ No
6b	**If the answer to question 6a is "NO" please explain.**	
7a	**Is passing this course linked to, or conditional upon passing another course (with a PSY or IPN code) (e.g. is the grade obtained for a practical report included in the grading of the parallel core course)?**	☐ Yes ☐ No
7b	**If the answer to question 7a is "YES" please explain why, how and provide the IPN/PSY code of the other course.**	

Research Internship and Master's Thesis. *See CN*