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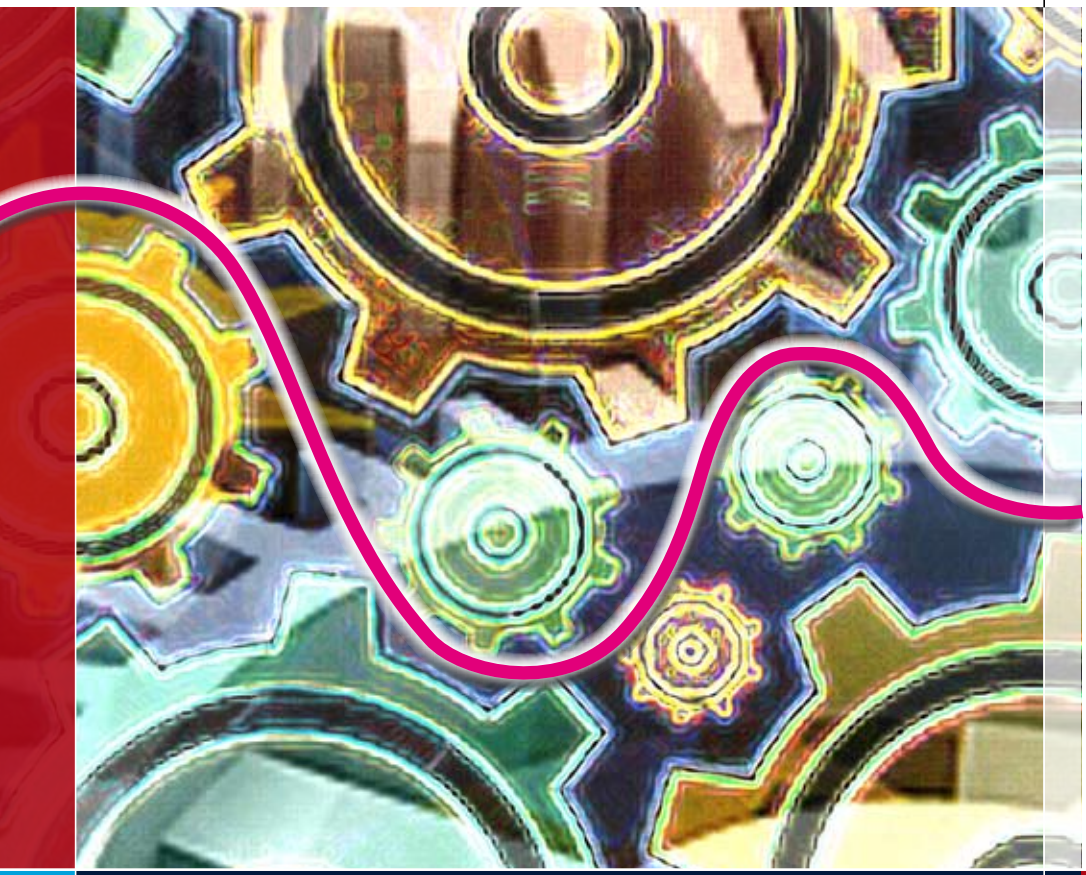

Prospectus | 08/09

Faculty of Psychology and Neuroscience

Research Master

Faculty of Psychology and Neuroscience

Prospectus

Research Master in Cognitive Neuroscience, Neuropsychology and Psychopathology (MSc)

2008 • 2009

Maastricht University

P.O. Box 616 6200 MD Maastricht
The Netherlands

FACULTY of PSYCHOLOGY and NEUROSCIENCE (FPN) ***(Coordinating Faculty)***
FACULTY OF HEALTH, MEDICINE AND LIFE SCIENCES (FHML)

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Timetable Research Master

programme 2008-2009

	August					September					Agenda
week	**31**	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**	19-08 till 22-08 Inkom (General Introduction)
Mon		4	11	18	25	1	8	15	22	29	01-09 till 05-09 Introduction week
Tue		5	12	19	26	2	9	16	23	30	
Wen		6	13	20	27	3	10	17	24		
Thu		7	14	21	28	4	11	18	25		
Fri	1	8	15	22	29	5	12	19	26		
Sat	2	9	16	23	30	6	13	20	27		
Sun	3	10	17	24	31	7	14	21	28		

	October					November					
week	**40**	**41**	**42**	**43**	**44**	**44**	**45**	**46**	**47**	**48**	
Mon		6	13	20	27		3	10	17	24	
Tue		7	14	21	28		4	11	18	25	
Wen	1	8	15	22	29		5	12	19	26	
Thu	2	9	16	23	30		6	13	20	27	
Fri	3	10	17	24	31		7	14	21	28	
Sat	4	11	18	25		1	8	15	22	29	
Sun	5	12	19	26		2	9	16	23	30	

	December					January					
week	**49**	**50**	**51**	**52**	**1**	**1**	**2**	**3**	**4**	**5**	22-12 till 02-01 Christmas Break, no lessons
Mon	1	8	15	22	29		5	12	19	26	
Tue	2	9	16	23	30		6	13	20	27	
Wen	3	10	17	24	31		7	14	21	28	
Thu	4	11	18	25		1	8	15	22	29	
Fri	5	12	19	26		2	9	16	23	30	
Sat	6	13	20	27		3	10	17	24	31	
Sun	7	14	21	28		4	11	18	25		

	February					March						
week	**5**	**6**	**7**	**8**	**9**	**9**	**10**	**11**	**12**	**13**	**14**	23-02 till 27-02 Carnaval, no lessons
Mon		2	9	16	23		2	9	16	23	30	
Tue		3	10	17	24		3	10	17	24	31	
Wen		4	11	18	25		4	11	18	25		
Thu		5	12	19	26		5	12	19	26		
Fri		6	13	20	27		6	13	20	27		
Sat		7	14	21	28		7	14	21	28		
Sun	1	8	15	22		1	8	15	22	29		

	April					May					
week	**14**	**15**	**16**	**17**	**18**	**18**	**19**	**20**	**21**	**22**	10-04 till 13-04 Easter Break, no lessons
Mon		6	13	20	27		4	11	18	25	30-04 Queen's Birthday, no lessons
Tue		7	14	21	28		5	12	19	26	01-05 no lessons
Wen	1	8	15	22	29		6	13	20	27	04-05 no lessons
Thu	2	9	16	23	30		7	14	21	28	05-05 Liberation Day, no lessons
Fri	3	10	17	24		1	8	15	22	29	21-05 Ascension, no lessons
Sat	4	11	18	25		2	9	16	23	30	22-05 no lessons
Sun	5	12	19	26		3	10	17	24	31	

	June					July					
week	**23**	**24**	**25**	**26**	**27**	**27**	**28**	**29**	**30**	**31**	01-06 With Monday, no lessons
Mon	1	8	15	22	29		6	13	20	27	
Tue	2	9	16	23	30		7	14	21	28	
Wen	3	10	17	24		1	8	15	22	29	
Thu	4	11	18	25		2	9	16	23	30	
Fri	5	12	19	26		3	10	17	24	31	
Sat	6	13	20	27		4	11	18	25		
Sun	7	14	21	28		5	12	19	26		

Table of Contents

Introductory Note

Central to our faculty is the training of Bachelor and Master students in Biological and Cognitive Psychology. Students will benefit from the comprehensiveness of our curriculum and will have ample opportunities to conduct research with faculty members who work on the cutting edge of their fields.

Our psychology curriculum consists of a three-year Bachelor programme and two separate Master's programmes. As far as the latter are concerned, the regular Master's programme comprises several one-year tracks, while the Research Master consists of two-year tracks.

Tracks within the regular Master focus on exciting themes that bear strong relevance to practical problems. In the field of Applied Cognitive Psychology, these are: *Health and Social Psychology, Psychology and Law,* and *Work and Organisational Psychology.* In the field of Biological Psychology, there are the following tracks: *Developmental Psychology, Cognitive Neuroscience* and *Neuropsychology*.

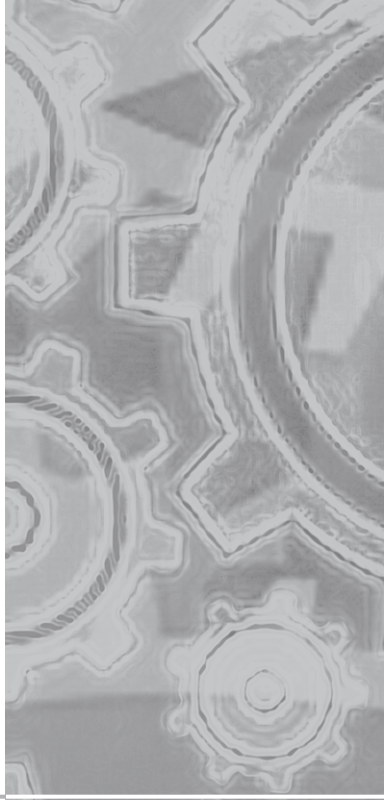
The aim of the Research Master is to train students who want to pursue a career as a researcher. Within this master, four specializations are offered: *Cognitive Neuroscience, Fundamental Neuroscience, Neuropsychology* and *Psychopathology*.

This prospectus gives a detailed description of the various courses that form the building blocks of our Master's programmes. A brief summary of the main issues in each course is given, but also more practical information (e.g., books, course coordinators etc.). In addition, all the important dates are included, such as the beginning and the end of the academic year, holidays, courses, exams, and internships. Furthermore, the prospectus provides an overview of the organisation of the faculty and the rules and regulations relating to exams. Finally, this prospectus may serve as a reference book for students and staff.

The faculty wishes all students a productive and academically inspiring year!

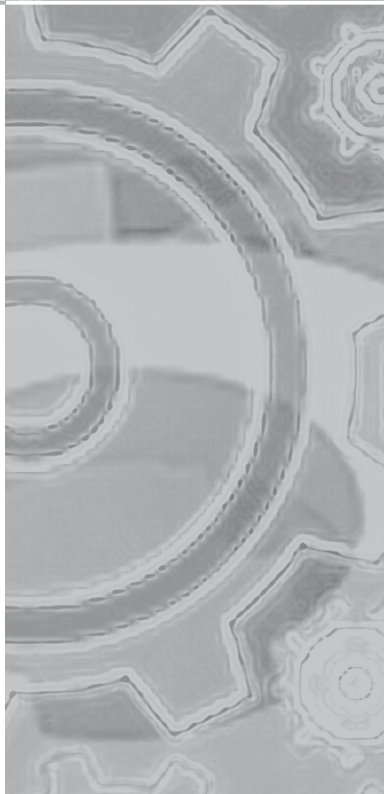
Maastricht, July, 2008
Prof. dr. Harald Merckelbach,
Dean of the Faculty of Psychology and Neuroscience

For more information, go to: www.psychology.unimaas.nl



Research Master at Maastricht University

Research Master in Cognitive Neuroscience, Neuropsychology and Psychopathology



General

The two-year Research Master's (MSc) programme has specializations in Cognitive Neuroscience, Fundamental Neuroscience, Neuropsychology and Psychopathology. This interfaculty programme (Faculty of Psychology and Neuroscience (FPN); Faculty of Health, Medicine and Life Sciences(FHML)) is designed for excellent students who want to continue their studies at a graduate school that prepares them for a career in the field of research. The programme is internationally oriented and all courses are given in English. Students will become acquainted with the most important theories, models, techniques, and analytic methods in their respective specialization. At the same time, it is deemed of utmost importance to provide students with a stimulating scientific environment that will enable them to develop as independent thinkers with a broad curiosity in the various aspects of the multidisciplinary research domain. The curriculum enables students to gain knowledge of cutting-edge scientific models and theories, while at the same time acquiring experience in a variety of research methods. The programme stimulates scientific insight and a critical attitude through active participation in the form of discussions, presentations, and written papers. Scientific growth is further promoted by intensive contact and collaboration with senior researchers and PhD students from the affiliated research institutes.

The Approach to Instruction: Problem-Based Learning (PBL)

The particular character of what is offered at the Maastricht Faculty of Psychology and Neuroscience is not only determined by Cognitive and Biological Psychology but also by the specific approach to instruction: Problem-Based Learning (PBL). PBL is generally characterized by the following main features:

1. *Student-Centred*

As opposed to other traditional educational approaches, Problem-Based Learning is not centred on the transfer of information from the lecturer to the student, but is rather based on the learning process of the student. Not the lecturer, but the student is central.

2. *Problems Form the Basis for Learning*

Problems form the starting point for the learning process. Students discuss these in depth in small groups. These problems are formulated in such a way that students are led to pose all types of questions pertaining to explanations for these problems. Based on this, students will formulate more pinpointed questions on the subject matter, which they will attempt to find answers to by studying the relevant literature.

3. *Tutorial Groups*

Instruction takes place in tutorial groups of approximately 10 members who meet once or twice weekly. Individual cases are worked with during these meetings based on what has

been taught in the courses. The tutorial groups are led by tutors who guide and monitor the learning process.

4. Self-motivation
The problem-based approach and group discussions stimulate students to acquire relevant knowledge, insight and skills fairly independently and the emphasis is on self-motivation.

5. Progress Test
There is an examination or a paper at the end of each course. In addition, there will be progress tests arranged according to the various disciplines and which form part of the examination system. The progress test assesses students on the final level of knowledge that needs to be achieved. This allows students to evaluate their progress for the final aim of the course and compare results of the entire year group. The result will provide insight into the level of knowledge that has been reached in the various (sub-)disciplines.

Learning Resources

The principles of Problem-Based Learning have numerous consequences for the way learning resources are used. It is, for instance, not absolutely necessary that all students in a tutorial group use the same textbook to familiarize themselves with the basic knowledge on a particular theme or section in the field of psychology. There are various courses for which not one, but a variety of mutually comparable basic textbooks are recommended.
PBL stimulates students to consult a variety of sources in addition to the basic information that can be found in the prescribed textbooks. These other sources can be found in the Learning Resources Centre. From the outset, it is important that students learn to deal with different and sometimes conflicting sources of information and learn to draw conclusions independently about the value of the various insights gained. An essential learning resource, mentioned separately here, is the course manual.

Course Manuals

The subject matter is divided over a number of courses. Each course in problem-based education has a course manual. This is put together by a team of lecturers and students under the guidance of the course coordinator, and comprises all the essential information on the instruction for the course period; i.e. the person responsible for the course, what the course is about, what students need to know by the end of the course, skills taught during the course period, essential and recommended literature, and what lectures are given. The course manual also contains the problems or tasks that are guidelines for studying the subject matter. It is always handed out to students shortly before the course period begins. The data that are gathered from the evaluation of the tuition at the end of the course are in turn used to improve the course manual for the following year.

Internationalization

One of the features of Maastricht University's study profile is internationalization. Scientific developments and the labour market do not stop at Dutch borders and a number of graduates will find employment on the international labour market. In order to prepare students for this, certain courses will be run in English and also opportunities for studying or doing an internship abroad will increase. Furthermore, well-known guest lecturers from elsewhere will be invited to do certain aspects of the programme.

The faculty has started various exchange programmes for students over the past number of years. In future, it will be possible to have an exchange programme for lecturers and possibly also joint research projects as well.
A recent report of exchange programmes can be obtained from the International Office, Phone (043) 38 81920, 40 Universiteitssingel East, Room 5.749, e-mail: international@psychology.unimaas.nl .

Organization of the Faculty of Psychology and Neuroscience

The following gives a survey of the way in which the Faculty of Psychology and Neuroscience (FPN)is organized. The most important governing body is the Faculty Board. The Faculty is supported by a small staff which is located at 40 Universiteitssingel, where one will also find the logistical, organizational and administrative support systems for the education programme. The Education Office is the first place to go for the many practical questions and issues. As a rule, the lecturers are employed within the Faculty of Psychology and Neuroscience, but sometimes in other faculties, e.g. the Faculties of Health Sciences and Medicine. The education programme is located at:

- 40 Universiteitssingel (Uns 40);
- 50 Universiteitssingel (Uns 50);
- 5 Universiteitssingel (Uns 5);
- 1 Debyeplein (Deb 1).

Faculty Board

The Faculty Board, referred to as The Board, is the most important governing body of the Faculty of Psychology and Neuroscience. It consists of four members: the Dean, who is also the Chairperson, the Portfolio Holder for Research, the Portfolio Holder for Innovation and the Portfolio Holder for Education. Two students who have an advisory vote also attend Board meetings. The Board consists of the following persons:

- Chairperson:
  Harald Merckelbach (Dean), Portfolio Holder for General Affairs, Development, Personnel, Finance, Emancipation Affairs, Internal and External Relations, Internationalization, ICT, Accommodation/new buildings, Phone (043) 38 81945, 40 Universiteitssingel East, Room 5.731;

- Portfolio Holder for Research:
  Rainer Goebel, Phone (043) 38 84014, 40 Universiteitssingel East, Room 4.753;
- Portfolio Holder for Innovation:
  Bernadette Jansma, Phone (043) 38 81934, 40 Universiteitssingel East, Room 4.742;
- Portfolio Holder for Education:
  Arie van der Lugt, Phone (043) 38 82347, 40 Universiteitssingel East, Room 2.732;
- Student Members:
  André de Zutter (ID 297607);
  Marjolein de Nooijer (ID 356859);
- Secretary:
  Ed Sprokkel (Director Faculty Office). Phone (043) 38 82174, 40 Universiteitssingel East, Room 5.735.

Faculty Council

The Faculty Council is a democratically chosen co-management body that advises the Board and regularly consults with it, with or without having been asked to do so. The Council consists of 10 members, four of whom are chosen from the academic personnel, one from the supporting members of staff and five from the students registered at the FPN. The Faculty Council chooses a chairperson either from its members or from elsewhere.

The Faculty Council comprises the following persons for the 2008-2009 academic year:
Academic Personnel:

- Chairperson:
  Saskia van Bergen, Phone (043) 38 84536, 40 Universiteitssingel East, Room 3771;
- Supporting Staff:
  Ellen Blaauw, Phone (043) 38 84002, 40 Universiteitssingel East, Room 5.773;
- Staff-members:
  Ellen Jongen, Phone (043) 38 84525, 40 Universiteitssingel East, Room 4.737;
  Anton de Vries, Phone (043) 38 84043, 40 Universiteitssingel East, Room 5.742;
  Elke Smeets, Phone (043) 38 84325, 40 Universiteitssingel East, Room 3.753;
- Student Members:
  Caroline Beelen (ID 281301);
  Carsten Bours (ID 346233);
  Hanneke Poort (ID 410276);
  Thomas Meyer (ID 281123);
  Jo Stevens (ID 5000467);
- Secretary:
  Ed Sprokkel, Phone (043) 3882174, 40 Universiteitssingel East, Room 5.735.

Faculty Departments and Faculty Office

Anyone employed by the Faculty of Psychology and Neuroscience falls under one of the following five groups: the Department of Clinical Psychological Science, The

Department of Work and Social Psychology, The Department of Cognitive Neuroscience, The Department of Neuropsychology and Psychopharmacology and the Faculty Office. Most of the people who have been appointed to one of the Departments are scientific staff members: people who conduct research or provide education. Personnel who provide immediate secretarial support to these members of staff, also belong to one of the Departments. Most support personnel fall under the Faculty Office. This has various sections, each of which has its own field of interest, such as the Education Office, Financial Management, ICT and the research support. In total there are about 150 employees at the FPN.

Commissions Supporting the Educational Programme of the Research Master

Research Master's Coordinator

Coordinator is Bernadette Jansma, Cognitive Neuroscience, Phone (043) 38 81934, 40 Universiteitssingel East, Room 4.742, E-mail: b.jansma@psychology.unimaas.nl
Tasks: The Coordinator is responsible for the organization and coordination of the activities connected with the execution of the entire course and examination programme.

Track Coordinators

Cognitive Neuroscience Coordinator: Alex Sack, Cognitive Neuroscience, Phone (043) 38 84267, 40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl

Fundamental Neuroscience Coordinator: Jos Prickaerts, Neuropsychology & Psychopharmacology, Phone (043) 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Neuropsychology Coordinator: Jan Ramaekers, Neuropsychology & Psychopharmacology, Phone (043) 38 81951, 40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl

Psychopathology Coordinator: Nancy Nicolson, Psychiatry & Neuropsychology, Phone (043) 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl

Research Master's Office

Communication Officer: Sabine Filla, Phone (043) 38 81747, 40 Universiteitssingel East, Room 4.753, E-mail: sabine.filla@psychology.unimaas.nl

Examination Board

Chairperson: Hanneke van Mier, Phone (043) 38 84010, 40 Universiteitssingel East, Room 4.744. Tasks: Responsible for the execution of the education and examination regulations. This Committee also deals with requests for exemptions and related issues.

Admission Board

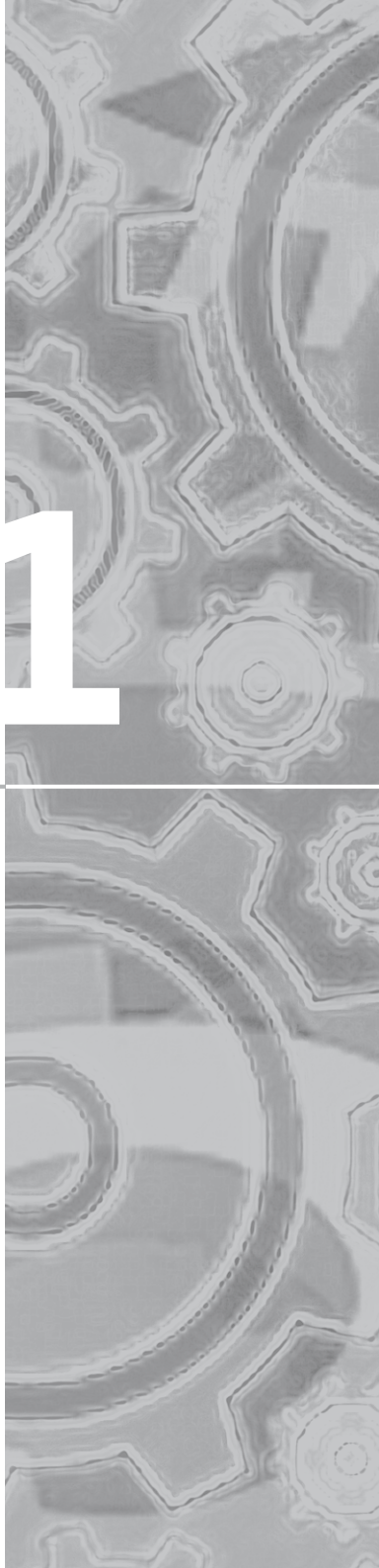
Chairperson: Hans Stauder, Cognitive Neuroscience, Phone (043) 38 81933, 40 Universiteitssingel East, Room 4.736.
Task: Reviewing the applications for the Research Master's Programme.

Education Office

Head: Irma Kokx, Phone (043) 38 81883, 40 Universiteitssingel East, Room 5.771.
The Education Office supports the Director of Studies and carries out further tasks in the field of policy, administration, organization, logistics and planning of the education. More specifically, the Education Office sees to matters such as the division of tutorial groups, processing study results, reservation of halls, maintaining EleUM, the evaluation of the tuition, etc. It provides information for students on all these matters. It is important that students direct their questions to the appropriate departments or persons. The person in charge is the Head Education Office who sees to the day-to-day coordination of any further curriculum development and aligning the different parts of the programme, both organizationally and content-wise.

Discount on Books

It is possible to purchase study books at a discount through the Faculty Association, 'Luna-tik'. To qualify for this, you have to be a member (costs of membership is € 25, - for the full duration of your study). The telephone number for 'Luna-tik' is (043) 38 81957. It is based at 40 Universiteitssingel East, Room 1.765. The postal address is: Faculty Association Luna-tik, Faculty of Psychology and Neuroscience, P.O. Box 616, 6200 MD Maastricht.



1

The Curriculum

The curriculum includes theoretical courses, colloquia, skill trainings, and workshops followed throughout year 1 and the beginning of year 2. These ensure that students acquire a broad intellectual foundation before choosing a research topic for the remainder of the programme. Core courses form the backbone of the chosen specialization. To increase awareness and appreciation of the value of different research approaches, the course 'Interdisciplinary Perspectives' addresses two broad topics each year, from the perspective of each of the four specializations. Colloquia are designed to integrate topics that are of general interest to the fields of psychology and neuroscience. The colloquia are open to all students, thus fostering interdisciplinary interaction. Skill trainings provide students with the necessary practical knowledge for research in experimental and applied settings, whereas specialized workshops provide the necessary foundation for conducting the Master's thesis research and advanced skills for a future scientific or any other related career.

The Research Master's (MSc) programme is equivalent to 120 European credits.

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, Fundamental Neuroscience, Neuropsychology, and Psychopathology. The courses are given in a Problem-Based learning (PBL) or seminar format. Under the guidance of an experienced faculty member, students meet in groups for in-depth discussion of current research issues pertinent to the central theme of the course, based on assigned readings of cutting-edge articles. Course credits (2 to 4 credits per course, depending on its length) and grades are assigned on the basis of assessments that may include participation, written papers and/or presentations or exams.
Two Advanced Statistics courses (with a total of 5 credits) are shared by all specializations. They consist of a mixture of lectures, hands-on training, and student-centered meetings, designed to acquaint the student with the most important advanced methods with widespread research applications. The final grade is based on a multiple-choice format exam.

Interdisciplinary Perspectives course

This course, required for all students, consists of two series of four lectures each. The lectures on each topic are given by faculty members from the four specializations, with the aim of illustrating different perspectives on a shared research theme. The course will demonstrate the richness of hypotheses, research designs, and methods that can be brought to bear on a given research theme, thus stimulating students to combine these different perspectives in their future research. Required readings, assigned by each lecturer, will be made available prior to the first lecture on a new theme. The final grade is the average score obtained on two exams, one following each series of four lectures (3 credits).

Colloquia

The weekly colloquia focus in depth on one of a wide range of topics, with issues transcending the courses and even the specializations. Students will attend colloquia offered by all specialization in order to fostering interdisciplinary knowledge and interaction among students of different specializations and interests. Course credits (5 credits in total) are assigned (pass/fail) at the end of the first year on the basis of attendance, and on the writing of a research proposal and a peer review.

Skills trainings

Skill trainings provide the necessary hands-on experience for research in experimental and applied settings. For Neuropsychology and Psychopathology tracks, training in basic clinical skills is also part of the programme. Each training extends over 4 or 8 weeks, depending on the topic. Some skill trainings will be given to students of multiple specializations. Course credits (1 to 2 credits per training) will be assigned on the basis of attendance and practical exercises.

Workshops

Methodological and technical workshops provide both the necessary basis for conducting the Master's thesis research and advanced skills for a future scientific career. The teaching format varies depending on the topic of the workshop. Many emphasize hands-on experience and practical aspects. Some workshops are mandatory for all specializations, some are shared by two tracks, and some are track-specific. Course credits (1 to 2 credits per workshop) are assigned on the basis of attendance and either exams or practical exercises.

Research internship and Master's thesis

In year 2, from week 9 onwards, students spend most of their time on the preparation and execution of their research project and their Master's thesis. Students from all three specializations conduct their own research project and thereafter report it in the form of a Master's thesis. Course credits will be assigned on the basis of both the research conducted as well as the thesis. The final grade is based on the thesis. For students who do not complete a clinical internship and Minor's thesis (see below), the Master's research and thesis will be assigned 50 credits.

For practical information about organising international research internships, contact the International Office, Phone (043) 38 81920, 40 Universiteitssingel East, Room 5.749, E-mail: international@psychology.unimaas.nl.

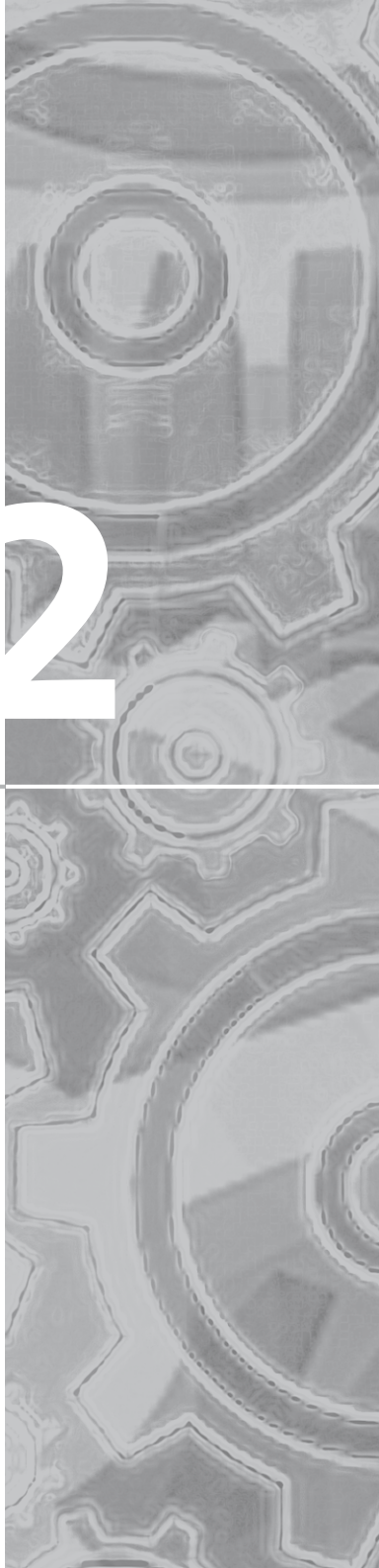
Clinical internship and Minor's thesis

Students specialising in *Psychopathology* are required 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 research proposal and scientific report (the Minor's thesis), based on client/patient-based investigations performed during the clinical internship. Students following the *Neuropsychology* specialization may also electively choose to do a clinical internship and Minor's thesis as an elective. For all students who are either required or choose to do a clinical internship, the Minor's internship and thesis will be assigned 20 credits and the Master's internship and thesis 30 credits.

Mentor

Students in the Research Master will have regular interactions with a mentor, who helps guide the learning process and supports the student in career planning as well as in finding solutions to possible personal or study problems. Close monitoring of student performance and progression will help ensure that students complete the Master's programme on schedule. During the introductory week of the first year, each student is assigned a faculty mentor, who is a senior researcher in the student's specialization. Students are responsible for scheduling meetings with their mentors. Meetings are to take place at least once a month and are generally short (about 30 minutes or less). The student should inform the mentor in advance about issues to be discussed during the meeting.

In addition to the mentor, faculty student advisors are available for support and guidance.



2

Specialization
Cognitive Neuroscience (CN)

The specialization in Cognitive Neuroscience provides students with an extensive and in-depth theoretical background on all the hot topics of neuroimaging and brain research. The conceptual range includes core courses on perception and attention, as well as on somatosensory and motor processes. Additional topics include higher cognitive functions such as language comprehension and production, self-monitoring, and mental imagery. The Cognitive Neuroscience group is known for combining content and methodology to improve answers obtained and questions asked in current and future neuroscientific research. Students are provided with the unique opportunity to be trained in all essential research methods of Cognitive Neuroscience. Maastricht University has its own 3-Tesla MRI research scanner and hosts fully equipped EEG as well as TMS laboratories. Students thus gain a thorough understanding of the theoretical background of these most advanced techniques for imaging, recording and manipulating neuronal activation in the human brain. In addition, they acquire hands-on experience in how to operate and use these techniques in the context of empirical neuroscience.

Cognitive Neuroscience Coordinator:

Alex Sack, Cognitive Neuroscience, Phone 38 84267,
40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl

Colloquia Coordinator:

Joel Reithler, Cognitive Neuroscience, Phone 38 81896,
40 Universiteitssingel East, Room 4.761, E-mail: j.reithler@psychology.unimaas.nl

2.1 Interdisciplinary Perspectives

405RM Interdisciplinary Perspectives – 3 credits
Coordinators: Nancy Nicolson, Psychiatry & Neuropsychology (FHML), Phone 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl;
Jan Ramaekers, Neuropsychology & Psychopharmacology (FPN), Phone 38 81951, 40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl;
Alexander Sack, Cognitive Neuroscience (FPN), Phone 38 84267, 40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl;
Jos Prickaerts, Neuropsychology & Neuropsychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course
This lecture course, attended by all first-year students, is designed to highlight selected research topics from the perspectives of cognitive neuroscience, fundamental neuroscience, neuropsychology and psychopathology. The aim is to illustrate how the distinct but inter-related approaches to questions in the field of brain and behaviour can enrich our understanding of underlying mechanisms as well as cognitive, emotional and behavioural outcomes in health and disorder.

Instructional Approach
A series of four lectures for each of two broad themes. Faculty members from each of the four specializations will present lectures in successive weeks.
Required readings, assigned by each lecturer, will be made available prior to the first meeting of a new theme.

Form of Assessment
Following each series of four lectures, an open book exam will be given, covering material from all of the assigned readings and lectures for that theme. A final pass/fail score is based on the average grade obtained on the two exams.

2.2 Core courses

411CN Neural Correlates of Selection in Language Processing – 4 credits
Coordinator: Bernadette Jansma, Cognitive Neuroscience (FPN), Phone 38 81934, 40 Universiteitssingel East, Room 4.742, E-mail: b.jansma@psychology.unimaas.nl

Description of the Course
Whereas 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 some milestones for gaining better understanding about how our brain manages these tasks. We see this knowledge as very important because hearing and communicating with the environment and with others is one of the most essential human cognitive skills.
This course aims to develop knowledge about the human auditory and speech system. We will start with basic neural anatomy and how this might constrain but also help auditory processing. We will then learn about the basics of sound segregation and perception, and higher order spoken word recognition. In addition to these bottom-up processes we will address top-down processes, i.e. how the human mind manipulates auditory perception or how it generates speech from intentions and thoughts. We will address the link between speech perception and production in terms of speech monitoring. We will also learn about cross modal integration between vision and audition. This integration is a crucial source of information to understand how we select for relevance and optimize processing efficiency.

The objective of this course is to provide:
- knowledge of the basic cognitive and neural principles of auditory and speech processing;
- knowledge of cross modal integration;
- critical thinking with regard to recent and ongoing research in the domain of auditory/speech processing and cross modal integration, including event-related potential (ERP) and fMRI studies.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Written exam with open questions.

412CN Perception and Attention – 4 credits

Coordinator: Peter De Weerd, Cognitive Neuroscience (FPN), Phone 38 845 13, 40 Universiteitssingel East, Room 4.754, E-mail: p.deweerd@psychology.unimaas.nl

Description of the Course
The objective of the course is to present current neuro-cognitive theories and experimental methods in the field of visual attention. Background information on the visual system's organization will also be covered.

Vision is a complex cognitive process, which provides us with a richer stream of information than any other sense. Primate visual cortex is composed 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 relatively 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, each of which is composed of regions specialized for representation of more complex visual content (including motion, faces and places).

This network of functionally specialized perceptual regions can adapt to the task the organism is faced with. This is the case, for example, when looking for someone in a crowd, attending to one face at a time. There are different kinds of attention, but attention can be generally described as involving some type of selection of information. When the attentional selection of information is accompanied by a behaviour (such as an eye-movement towards an interesting stimulus), attention is called 'overt'. However, there are also internal, covert forms of attention that do not require motor activity. Attention can be voluntary (controlled, top-down) or involuntary (automatic, bottom-up). Furthermore, attention can be directed to locations in space or to objects, or to features within objects.

In this course, neural mechanisms underlying these various types of attention will be studied. We will focus on recent neuroscientific research in visual perception and attention involving different empirical methods including psychophysics, neurophysiology, functional brain imaging, and evoked potentials, with an emphasis on neurophysiology.

Literature
Journal articles and book chapters.

Instructional Approach
Group discussions, lectures.

Form of Assessment
Written exam with open questions.

413CN Neuroimaging – 4 credits

Coordinator: Elia Formisano, Cognitive Neuroscience (FPN), Phone 38 84040, 40 Universiteitssingel East, Room 4.738, E-mail: e.formisano@psychology.unimaas.nl

Description of the Course
The investigation of human brain functions using a range of imaging methods represents the most influential development in Cognitive Neuroscience in the last years. You will learn essential facts about all major brain mapping techniques, including scalp-recorded Electroencephalography (EEG) and Magnetoencephalography (MEG), transcranial magnetic stimulation (TMS), Positron Emission Tomography (PET) and

functional Magnetic Resonance Imaging (fMRI). Each of these methods provides a picture of the brain at a different spatial and temporal scale and has unique strengths and weaknesses.

In this course we will focus on 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. Whereas in the other courses of the Cognitive Neuroimaging program you are confronted with several applications of fMRI in specific cognitive domains (visual perception and attention, sensorimotor integration, auditory perception), during Brain imaging methods you 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 doing a good fMRI measurement? How are "activation maps" created? Some of the tasks are directly linked to the 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 data acquisition and/or analysis of fMRI data of cognitive functions such as auditory and visual processing as well as mental imagery will be integrated in the group meetings.

Literature
- Huettel, S.A., Song, A.W., & McCarthy, G. (2004). *Functional Magnetic Resonance Imaging*. Sunderland, MA: Sinauer, Associates, Inc. Publishers;
- Jezzard, P., Matthews, P.M., & Smith, S.S. (2001). *Functional MRI - An Introduction to Methods*. Oxford, UK: Oxford University Press;
- Journal articles and book chapters.

Instructional Approach
Tutorial group meetings, lectures

Form of Assessment
Written exam with open questions.

414CN The Cognitive Neuroscience of Sensory and Motor Systems – 4 credits

Coordinators: Alard Roebroeck, Cognitive Neuroscience (FPN), Phone 38 84039, 40 Universiteitssingel East, Room 4.749, E-mail: a.roebroeck@psychology.unimaas.nl; Joel Reithler, Cognitive Neuroscience (FPN), Phone 38 81896, 40 Universiteitssingel East, Room 4.761, j.reithler@psychology.unimaas.nl

Description of the Course
Most of the things we do every day (riding a bicycle, typing a summary, drinking a cup of coffee) require the continuous interaction of brain systems that serve sensory

perception and systems that control our muscles. In other words, most of the things we do require sensorimotor integration. In this course we will study a couple of important aspects of sensorimotor integration in the brain, particularly in the context of visual perception. Since sensory perception (visual as well as auditory) is covered extensively in other courses, we will focus mainly on the motor system and the transformation and processing of sensory information to serve motor control. We start with basic processes such as: types of motor control (since visual perception takes a little time, how should you use past information to control future actions?), the representations used by primary and secondary motor areas (what is the parameter that is under ultimate control: muscle contractions, joint angles, or whole movements?) and coordinate transformations (how do you get from visual information, coded relative to the point you are looking at, to motor commands that are coded relative to your body or the object you are grasping?). Later, we will focus on higher level issues such as motor learning, predicting the actions of others, and reacting to errors in performance. All topics will be discussed in the context of cognitive neuroscience research to learn how these topics can be investigated both with classical behavioural experiments as also with modern techniques such as functional Magnetic Resonance Imaging.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings, lectures

Form of Assessment
Written exam with open questions.

415CN Advanced fMRI – 3 credits

Coordinator: Rainer Goebel, Cognitive Neuroscience (FPN), Phone 38 84014,
40 Universiteitssingel East, Room 4.753, E-mail: r.goebel@psychology.unimaas.nl

Building on the course 'Neuroimaging', this course will examine advanced topics of fMRI methodology and applications. In the first week, models of the BOLD response and its relation to neural activity will be discussed. In the second week, details of deconvolution analysis for rapid event-related paradigms will be presented. Furthermore, procedures to optimize stimulus presentation will be presented followed by a discussion about limitations of rapid event-related designs. In the third week, principles of real-time fMRI will be presented followed by an overview of fMRI neurofeedback studies. In addition, machine learning techniques for the real-time decoding of mental states will be discussed. In the fourth week, advanced methods to establish correspondence between brains of different subjects are examined. The importance of brain normalization for random-effects statistical analysis, creation of probabilistic atlases and meta-analyses will be discussed. In the context of high-resolution fMRI, an integrated view of the addressed advanced topics will be finally presented.

The objective of this course is to provide:
- knowledge of recent models about the relationship between neural activity and the BOLD fMRI signal;
- detailed knowledge of deconvolution analysis for rapid event-related paradigms and approaches to generate optimal experimental designs;
- knowledge on how to read, analyze and visualize fMRI brain signals in real-time during an ongoing experiment;
- possibilities and limitations of fMRI-based neurofeedback and real-time decoding of mental states;
- knowledge of advanced methods of brain normalization and its importance for random-effects group analyses;
- overview about opportunities and challenges of high-resolution fMRI.

Literature
Journal articles and book chapters will be provided in the first meeting

Instructional Approach
Practicals, lectures, tutorial group meetings.

Form of Assessment
Written exam with open questions and presentation of an advanced fMRI method or application.

416CN Magnetic Brain Stimulation (TMS) – 3 credits

Coordinator: Alexander Sack, Cognitive Neuroscience (FPN), Phone 38 84267, 40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl

Description of the Course
Since the very beginning of experimental brain research it has always been a dream of neuroscientists to not only watch the brain at work, but actually to change and modulate the neuronal activity in the brain without harming patient or subject. With the aim of Transcranial Magnetic Stimulation (TMS) we are now able to non-invasively reach into the skull of a patient or healthy subject and to temporarily alter brain activity at a specific location and a specific moment in time.
This possibility opens the door to a wide range of experimental and clinical applications. In combination with methods of functional imaging, we can now not only passively measure the brain activity during the execution of a particular function, but moreover use TMS to increase or decrease the neuronal activity in the task-related brain area in order to reveal the behavioural changes in the actual task performance. This enables us to experimentally identify those brain areas that are functionally relevant to perform a particular function. In a clinical context, TMS has also been used to treat neurological and psychiatric diseases that are accompanied by a pathologically increased or decreased activity in a specific brain region. Since TMS offers the possibility to increase or decrease neuronal activity even beyond the stimulation itself, it might in

the future become a powerful therapeutic tool to help treating diseases like depression or schizophrenia.

Literature
Journal articles in the form of electronic readers on EleUM.

Instructional Approach
Tutorial group meetings and presentations. The presentations will be given by the students. Prior to each meeting students are assigned to different topics and prepare a short introductory lecture. After this, a classical PBL tutorial meeting follows with the assigned student acting as discussion leader.

Form of Assessment
30% of the final assessment will be based on the lecture and presentation performance; 70% on a written final exam with open questions. The exam will cover all topics and literature discussed during the course.

417CN Tracking the Time-Course of Cortical Processing Using MEG and EEG – 3 credits

Coordinator: Milene Bonte, Cognitive Neuroscience (FPN), Phone 38 84036,
40 Universiteitssingel East, Room 4.777, E-mail: m.bonte@psychology.unimaas.nl

Description of the Course
Cognitive neuroscientists nowadays have the choice to use a range of different imaging methods to investigate human brain functions. Each of these methods has its own strengths and limitations, which have to be taken into account when investigating a particular research question. Both magnetoencephalography (MEG) and electroencephalography (EEG) have been important in characterizing the time course of neural systems involved in different aspects of perceptual and cognitive processes including those related to auditory and visual perception, attention, language, memory and development. MEG and EEG reflect complementary aspects of brain activity with an advantage of MEG over EEG in the localisation of underlying neural sources.

This course intends to provide detailed knowledge on MEG and EEG that have clear advantage over the other methods in terms of temporal resolution. We will combine practical experience in designing MEG/EEG experiments, MEG/EEG data acquisition, and data analysis with detailed literature discussions on theoretical and methodological issues in MEG/EEG research. Inspired by different types of experimental questions we will discuss a range of available methods for advanced EEG/MEG analysis, including analysis in the time and frequency domains, source localization, the combination of EEG/MEG and fMRI data, independent component analysis and dynamic imaging of coherent sources.

Literature
Electronic reader consisting of journal articles and book chapters.

Instructional Approach
Lectures, student presentations.

Form of Assessment

Presentation and paper.

418CN The Auditory System – 3 credits

Course coordinator: Francesco di Salle, Cognitive Neuroscience, Phone 38 84038,
40 Universiteitssingel East, Room 4.759, E-mail: francesco.disalle@psychology.unimaas.nl

Description of the Course
This advanced course will provide in-depth knowledge on the auditory system and will discuss latest developments in the field of auditory processing. The exact focus will thus be influenced by most current research, but possible topics include:

- The issue of gradient noise in functional Magnetic Resonance Imaging (fMRI) experiments investigating the auditory cortex. Gradient noise is a major problem in the functional analysis of the auditory system. It is one of the reasons why relatively little is known about the auditory system compared to the visual system. However, progress in the effectiveness of active attenuation of gradient noise seems promising in reducing this problem.
- Besides circumventing gradient noise production or its effects on auditory perception, auditory experiments require the solution of many specific methodological problems deriving from the particular functional anatomy of the central auditory system. This issue will be analyzed together with the most promising way to address the problem.
- It is known for some time now that the auditory cortex is organized tonotopically. However, why the auditory cortex is organized in this way, and why there are multiple tonotopic maps in the auditory cortex, remains largely unknown;
- Besides tonotopy, a second organizational dimension of the auditory cortex can be expected. What is this dimension? Amplitude and bandwidth seem to be good candidates, but other possibilities such as pitch and latency can not be fully excluded yet either. New developments in the field of fMRI might be able to provide an answer to this question;
- How are music and rhythm processed in the brain? And why are they so important to humans? This question becomes even more interesting when considering the universal importance of music, and its link to, e.g., dance and speech;
- After the early visual areas, visual stimuli are processed in two different pathways. Features concerning 'what' are processed in the ventral stream, whereas features concerning 'where' are processed in the dorsal stream. Is this segregation also present in the auditory system? Evidence supporting and disproving this idea will be discussed.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
A review paper on one of the topics discussed in the course.

419CN Neural Correlates of Consciousness – 3 credits

Coordinator: Rob de Vries, Cognitive Neuroscience (FPN), Phone 38 81894,
40 Universiteitssingel East, Room 4.767, E-mail: r.devries@psychology.unimaas.nl

Description of the Course
Consciousness research is a booming business nowadays. During the nineties of the twentieth century, consciousness experienced a revival in science. Theoretical and experimental psychologists and neuroscientists did empirical research revealing new aspects of the conscious mind. Split brain research, blindsight, the experimental discovery of the ' What and the where system' in visual perception were the first impulses to a new science of consciousness as were Kornhuber's and Libet's experiments on consciousness, free will and the readiness potential.

Many scientists who are involved in research into consciousness nowadays are optimistic about solving the mysteries of consciousness. Philosophers have a more detached attitude. They are less euphoric than most scientists about the progress of scientific research in this area. In his book 'The Conscious Mind: In search of a Fundamental Theory', the philosopher and mathematician David J. Chalmers distinguishes two types of problems: simple and difficult problems. The distinction itself is trivial and yet illuminating. Simple problems are those questions that appear to deal with consciousness but are reformulated in such terms as: "How does the brain process external stimuli?" "How does the brain integrate incoming information into a whole?" "How does introspective and retrospective reporting of our inner psyche occur, and how reliable is it?" "What are the cognitive effects of hard and soft drugs on our cognitive functioning?" and "What factors influence the content of our dream reporting?" Note that this does not mean that the simple problems are not sufficiently difficult to solve. Difficult questions are, for example: "Why do the above mentioned information processing and information production involve conscious experiences?" "Do conscious experiences play a causal part in our actions and our mental life, and if so, what part do they play?" and "How can a physical system create such a 'thing' as conscious experience?"

This course reflects the above mentioned division. It is about the minimal problem every science of consciousness has to answer: What are the neuronal correlates of consciousness? And what does the finding of those neuronal correlates tell us about

the solution of the difficult problem. The first question is a scientific one. The second is still a philosophical question. The course will assess the neurocognitive ins and outs of the binding problem. We will look into the proposed neuronal correlates of Bernard Baars global workspace theory of consciousness and into Victor Lamme's theory of feedforward and recurrent processes as neuronal correlate of consciousness. But we won't eschew to pose the 'difficult' questions in this course: the philosophical ones. We will discuss the significance of the whole enterprise. We will ask ourselves question as: do we know more now about our consciousness than before? Will the things we learnt help us to solve the difficult problem? If so, how? If not, is that a problem?

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Take home exam with open questions.

406RM Advanced Statistics I – 2 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN) Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread.

During the first semester, participants will be given an in-depth training in standard statistical methods such as factorial ANOVA for between- and within-subject designs, multivariate ANOVA, discriminant analysis, and multiple regression. Background knowledge of balanced two-way factorial ANOVA and multiple regression will be assumed, and these methods will be briefly reviewed. The following advanced topics will be covered in six units: unbalanced factorial designs, repeated measures ANOVA for within-subject designs, covariates in between-subject and within-subject designs, contrast analysis in ANOVA, interaction, nonlinearity and dummy coding in regression, collinearity and residuals checks, data transformation, multivariate ANOVA and discriminant analysis.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM. Howell (2007), Fox (1997) and Kleinbaum (1998) give a fair impression of the content and level of Part 1 of the course.

References

- Fox, J. (1997). *Applied regression analysis, linear models, and related methods*. Thousand Oaks (CA): Sage;
- Howell, D.C. (2007). *Statistical methods for psychology* (6 th Ed.). Belmont (CA): Thomson/ Wadsworth;
- Kleinbaum, D.G., Kupper, L.L., Muller, K.E., & Nizam, A. (1998). *Applied regression analysis and other multivariable methods* (3rd Ed.). Pacific Grove (CA): Brooks/Cole.

Practical training

Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach

Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment

Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

407RM Advanced Statistics II – 3 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course

Throughout the course, the General Linear Model will serve as a continuous thread.

During the second semester, five units give an introduction to two advanced methods of analysis that are becoming increasingly important in psychological research. The first three units are devoted to mixed (multilevel) linear regression for nested designs and longitudinal studies, starting with so-called marginal models for repeated measures as a flexible alternative to repeated measures ANOVA in case of missing data or within-subject covariates, and ending with random effects models for repeated measures and nested designs. Structural equation modelling (SEM, sometimes called LISREL) is covered by two units, with an emphasis on causal modelling in nonrandomized studies. Finally, the topic of optimal design and sample size is introduced in a sixth unit.

Literature

For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS or LISREL) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach

Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

511CN Neurocognition of Literacy and Numeracy – 3 credits

Coordinator: Leo Blomert, Cognitive Neuroscience (FPN), Phone 38 81949,
40 Universiteitssingel East, Room 4.748, E-mail: l.blomert@psychology.unimaas.nl

Description of the Course
Learning to read and write is an indispensable skill in literate societies. It is therefore surprising that research into the brain mechanisms enabling literacy acquisition has hardly started. It is even more surprising if we consider that 4% of the population suffers from a specific problem in learning to read and write, despite a normal intelligence. This state of affairs may be contributed to the fact that learning to read and write and the failure thereof have been perceived for a long time as an educational and not a neurocognitive problem. But the deeper reason may be that our brains are evolutionary not prepared for learning a written language. Our brains are probably for a large part hardwired for perceiving and producing speech. Since written language connects symbols (letters) to speech sounds, it is tentative to assume that written language skills develop by building on the already established spoken language system. Development of numeracy may be an even more indispensable skill in our technological society. Again surprisingly brain research in this area of neurocognition has only very recently started. Although learning arithmetic may look as artificial as learning to read it has in fact a different evolutionary background. Animals possess basic numeracy skills, so our brains may have available basic numeracy networks, but it is as yet unclear how they contribute to the development of arithmetic and math skills. The course will focus on brain studies of literacy development and failure, e.g., developmental dyslexia and on the development of numeracy skills and failure, i.e., developmental dyscalculia.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings and lectures.

Form of Assessment
Written exam with open questions.

512CN Modeling – 3 credits

Coordinator: Eric Postma, Computer Science (FHS), Phone 38 83493, 8-10 Bouillonstraat, Room 1.007, E-mail: postma@micc.unimaas.nl

Description of the Course
In present day cognitive neuroscience, psychological experiments generate large amounts of data on processes in the brain. Since the brain is a very complex dynamical system, the interpretation of these data is far from trivial. This course provides students with the basic modelling skills to induce or create models from psychological data acquired in behavioural experiments using EEG or fMRI.

The course starts with an overview of dynamical systems that can be interpreted as models of brain functioning. Examples of such models are: connectionist (or PDP) models, attractor networks, self-organizing feature maps, synfire networks, and liquid-state machines (a.k.a. echo-state networks). The latter models exhibit complex brain-like dynamics that can be read out using trainable classifiers (e.g., perceptrons).

The remainder of the course covers pre-processing, unsupervised, and supervised techniques for the analysis and the automatic classification of brain data. The main pre-processing techniques treated are Fourier transforms and multi-scale wavelet transforms. The unsupervised techniques covered range from principal component analysis to Gaussian mixtures. The supervised learning techniques include neural networks and support vector machines.

Throughout the course, the relations between techniques and known brain mechanisms are explained. Wherever possible, the techniques are related to well-known principles in cognitive neuroscience to facilitate the understanding of the underlying principles. For instance, in the practical sessions, students learn to generate V1-like receptive-field responses from natural images, analyze oscillatory and synchronization properties of interconnected systems of integrate-and-fire neurons, generate topographical "similarity" mappings akin to cortical maps, and train classifiers to perform coordinate transforms similar to those obtained in parietal systems.
In addition, students get acquainted with a wide variety of analysis and learning techniques by applying them to real EEG or fMRI data.

At the end of the course, students perform an individual analysis and/or classification study, preferably of relevance to ongoing research. The results are reported in a brief scientific paper.

Prerequisites
Some experience with basic mathematics is helpful. Completion of Matlab skills training.

Literature
Journal articles.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Written exam with open questions and a written report on a practical assignment.

2.3 Skills trainings

421CN ERP – 2 credits

Coordinator: Fren Smulders, Cognitive Neuroscience (FPN), Phone 38 81909, 40 Universiteitssingel East, Room 3.744, E-mail: f.smulders@psychology.unimaas.nl

Description of the Course
The aim of this training is to give the students hands-on experience with the experimental design, data acquisition and analysis of EEG/ERP experiments. First, students will be introduced into the possibilities and limitations of EEG and ERP research: how to set up a proper experimental paradigm, and how to interpret the resulting data. Furthermore, students receive a general introduction into basic signal analysis, and into some specific analyses of EEG and ERP, such as artifact management, spectral analysis, filtering, ERP averaging, etc. After that, there will be a hands-on training in smaller groups in running an ERP experiment, including electrode application, minimizing artifact, and hygiene and safety in the lab. A simple experimental paradigm will be used that gives interesting and reliable results. Data processing will include various EEG analyses that are commonly used, e.g., analyses in the time and frequency domain. Each group will report and discuss their findings.

Literature
Handbook and journal articles.

Practical
Practical sessions for EEG measurement and data analysis.

Instructional Approach
Tutorial group meetings, lectures, a lab session, and computer sessions.

Form of Assessment
Short report (2-4 pages) in abbreviated article form.

422CN FMRI – 2 credits

Coordinators: Elia Formisano, Cognitive Neuroscience (FPN), Phone 38 84040, 40 Universiteitssingel East, Room 4.738, E-mail: e.formisano@psychology.unimaas.nl; Alard Roebroeck, Cognitive Neuroscience (FPN) , Phone 38 84039, 40 Universiteitssingel East, Room 4.749, E-mail: a.roebroeck@psychology.unimaas.nl

Description of the Course
The primary goal is to get hands-on experience with the experimental design, acquisition and analysis of functional Magnetic Resonance Imaging (fMRI) experiments. Students get a general experimental question/hypothesis, which should be suitably refined to be testable in an fMRI experiment. They will then design and prepare the experiment. Their designs and experimental setups will be discussed. One/two designs will be actually implemented and scanned. Students engage in the statistical analysis of the scanned datasets. Help and prior preparation, especially in the implementation stage (stimulus programming) and data analysis stage (preparation of data in usable format for analysis in BrainVoyager QX), will be provided by tutors. The tutorial/practicum groups will be left free to test a different hypothesis, and conduct different types of analysis. Each group will report (also to each other) and discuss their findings.

Literature
- Jezzard, P., & Smith, S.M. (2002) (Eds). *Functional MRI: An introduction to Methods.* Oxford: University Press;
- Additional assigned papers

Instructional Approach
Tutorial group meetings, lab sessions and computer sessions. Some additional work outside the sessions is expected.

Form of Assessment
Short report (4-6 pages) in abbreviated article form.

408RM Neuroanatomy – 1 credit

Coordinator: Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course
The aim of the training is to become acquainted with the neuroanatomical terminology and to gain insight into the spatial and functional organization 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 one to directly link specific neurological or psychiatric disorders to particular brain areas. After a short theoretical introduction the students 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.

Instructional Approach
Almost exclusively practical: dissection of sheep brain, studying of microscopical slices of rat brain, working with plastic human brain models, CD-ROM programs and textbook.

Form of Assessment
Pass/fail score based on written exam with open questions.

424CN Programming in Matlab Basic Course– 2 credits

Coordinator: Giancarlo Valente, Cognitive Neuroscience (FPN) , Phone 38 82469, 40 Universiteitssingel East, Room 4.747, E-mail: giancarlo.valente@psychology.unimaas.nl

Description of the Course
Matlab is a powerful environment for numerical computation, data analysis and visualization. It is, in essence, a programming language that has built in primitives for common scientific tasks that require many operations in other languages, such as C or Pascal. Examples are tasks such as matrix algebra (used in statistical analysis of data), Fourier transforms (used in signal processing), or 2D or 3D plots for visualization 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 visualization is needed that is not offered by existing packages, developing such new functionality in Matlab is often the most convenient option. The first part of the course will deal with algebra and matrix decompositions as an introduction to how Matlab primarily represent and processes data: as matrices. Subsequently, we study in detail the usage of the environment: the prompt, the workspace, getting help, loading, saving and visualizing data. We introduce the principles behind programming, with particular emphasis on neuroimaging applications.

Instructional Approach
Lectures, computer sessions combined in an interactive format.

Form of Assessment
Programming exercises throughout the training and assignments.

425CN Programming in Matlab Advanced Course– 1 credit

Coordinator: Giancarlo Valente, Cognitive Neuroscience (FPN), Phone 38 82469,
40 Universiteitssingel East, Room 4.747, E-mail: giancarlo.valente@psychology.unimaas.nl

Description of the Course
This course deals with advanced topics in Matlab programming. In particular, we will study how to implement efficient and re-usable programs for neuroimaging applications. We will learn how to use existing Matlab toolboxes for neuroimaging. The students will learn the principles of efficient programming, such as debugging and profiling. Advanced topics in graphics and user interfaces will be discussed.

Instructional Approach
Lectures, computer sessions combined in an interactive format.

Form of Assessment
Programming exercises throughout the training and assignments.

426CN Presentation – 1 credit

Coordinator: Francesco Gentile, Cognitive Neuroscience (FPN), Phone 38 84212,
40 Universiteitssingel East, Room 4.761, E-mail: f.gentile@psychology.unimaas.nl

Description of the Course
Presentation is a stimulus delivery and experimental control system for neuroimaging and behavioural research. Presentation does not require high programming skills and offers a very friendly way of designing a test paradigm. Whether you are planning to do behavioural research or physiological research measuring fMRI, EEG, MEG or single neuron recording, Presentation is able to present, control and register your stimuli in synchrony with your measuring device. During the training you will learn to program your own experiment in PCL-language using both visual and auditory stimuli that will be presented randomly. Additionally, the same experiment will be programmed differently to run a) an fMRI experiment and b) an EEG experiment. Having finished this training you will be able to test your own research ideas in reality.

Literature
Handouts with exercises.

Instructional Approach
Computer sessions.

Form of Assessment
Programming exercises throughout the training.

521CN Diffusion Weighted Imaging and Fiber Tracking – 1 credit

Coordinator: Alard Roebroeck, Cognitive Neuroscience (FPN), Phone 38 84039, 40 Universiteitssingel East, Room 4.749, E-mail: a.roebroeck@psychology.unimaas.nl

Description of the Course

Diffusion weighted imaging and fiber tracking are a set of techniques that use the Magnetic Resonance (MR) scanner to probe fiber-bundles that 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 fiber-tracts is imaged indirectly, by measuring the diffusion of water in the brain. Water diffuses more easily parallel to the direction of surrounding axon-bundles, than perpendicular to it. Thus, by measuring the direction of local diffusion of water, we can infer something about the trajectories of fiber-bundles. After completing this training, the 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 them, iii) fiber tracking or tractography: how to get from local models of water diffusion to measures of global connectivity between brain regions. Furthermore, the student will get hands-on experience in analyzing and visualizing actual diffusion weighted MR-data, and in using tractography algorithms and assessing the results.

Literature

- Handouts;
- Journal articles.

Instructional Approach

Lectures, computer sessions, combined in an interactive format.

Form of Assessment

Analysis exercises throughout the training.

522CN Data Management – 1 credit

Coordinator: Arjan Blokland, Neuropsychology & Psychopharmacology (FPN), Phone 388 1903, 40 Universiteitssingel East, Room 2.731, E-mail: a.blokland@psychology.unimaas.nl

Description of the Course

The aim of this skills training is to acquire basis skills in data management. After doing your scientific research, data have to be prepared for data analysis. Usually, the format of the data acquisition software does not match the requirements of sophisticated statistical software packages (e.g., SPSS or SAS). In this skills training, students will be familiarized with the software package Excel. This program has many features that

can be very helpful to overcome time-consuming formatting of databases. First, an introduction of the basic features of Excel will be presented. Being familiar with these basic aspects is necessary to understand copying of values and formulas (relative or absolute). Also, Excel enables you to make various types of graphs, which can be very helpful for quickly visualizing your data. A fourth aspect that will be dealt with is pivot tables, a very helpful tool to organise your data in any manner you find most suitable for your further data handling. A final option that will be dealt with is the use of macros. These are especially helpful when repetitious changes in layout or recalculations have to be made.

Instructional Approach
Group meetings in which direct demonstrations are given via PC/beamer. Students may provide the instructor with data to be used as examples.

Form of Assessment
Written assignment.

2.4 M&T workshops

431CN Real Time fMRI and Neurofeedback – 1 credit

Coordinator: Rainer Goebel, Cognitive Neuroscience (FPN), Phone 38 84014,
40 Universiteitssingel East, Room 4.753, E-mail: r.goebel@psychology.unimaas.nl

Recent progress in computer hard- and software allows the real-time analysis of fMRI data providing the basis for 'neurofeedback' experiments. In such experiments, subjects see their own brain activity from selected brain regions while they are measured in the scanner. Neurofeedback is thus a way to create a "Brain-Computer Interface" (BCI), which offers interesting basic and clinical applications. Neurofeedback is performed by reading, analyzing and visualizing the fMRI 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 analyzed hours or days after the experiment.

fMRI neurofeedback applications are discussed, which have demonstrated that with sufficient practice, subjects are indeed able to learn to modulate activity in many brain areas. These results are very important for basic neuroscience research because they allow to study the degree to which the brain can modulate its own 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 the activity in relevant brain areas.

This workshop provides a thorough introduction in the principles of real-time fMRI and includes participation in a real-time fMRI neurofeedback scanning sessions using the 3T Allegra MRI machine. A practical data analysis session provides insights in the details of the fMRI signal, especially the role of the hemodynamic delay in the context of neurofeedback. This delay might make it difficult to learn to modulate brain activity at the beginning of neurofeedback training because the brain signals measured with fMRI follow subjects' mental activity with a delay of four to six seconds.

Prerequisite
Completion of the core course on fMRI.

Literature
A reference list of some of the literature cited in the lecture will be made available (in print).

Instructional Approach
A demonstration session and a practical session at two days: The first day includes an introductory lecture about real-time fMRI and the software "Turbo-BrainVoyager". In addition, you will attend a real-time fMRI scanning session with one or two students serving as subjects. At the second day, you learn to use Turbo-BrainVoyager to analyze yourself the real-time data obtained from the scanning session of the first day.

Form of Assessment
Report of 3-5 pages about the conducted real-time fMRI experiment and the steps performed during the data analysis session.

433CN Methods of Deactivation – 1 credit

Coordinators: Teresa Schuhmann, Cognitive Neuroscience (FPN), Phone 38 82467, 40 Universiteitssingel East, Room 4.767, E-mail: t.schuhmann@psychology.unimaas.nl; Peter de Weerd, Cognitive Neuroscience (FPN), Phone 38 84513, 40 Universiteitssingel East, Room 4.754, E-mail: p.deweerd@psychology.unimaas.nl

Description of the Course
The objective of this workshop is to train students in using Transcranial Magnetic Stimulation (TMS). In three consecutive practical sessions, students will acquire direct hands-on experience with non-invasive magnetic brain stimulation. We will learn how to use the brain stimulator devices, how to evoke muscle responses, and how to induce visual experiences. Students will act as both the experimenter, applying the brain stimulation, as well as 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 transcranial magnetic stimulation (TMS) in human subjects.

The workshop will end with a lecture that gives an overview of these different methodologies, including a discussion of the advantages and limitations of the different techniques, and issues related to data interpretation.

Literature
The lecture, which includes relevant references, will be made available upon request.

Instructional Approach
Three practical sessions, followed by a lecture in an interactive format.

Form of Assessment
Active participation in the practical sessions.

409RM Research Ethics – 1 credit

Coordinator: Eef Theunissen, Neuropsychology & Psychopharmacology (FPN), Phone 38 81940, 40 Universiteitssingel East, Room 2.743, E-mail: e.theunissen@psychology.unimaas.nl

Description of the Course
Students will learn to think critically about ethical dilemmas that psychologists encounter when exercising their profession. This workshop will discuss legal and ethical conflicts that are involved in psychological research and clinical practice. Students will be introduced to the ethical and legal rules and boundaries in human research, and to the organizations and institutes supervising the application of these rules.

Psychologists always need to make sure that they carry out their work in an ethical and legally sound way. However, there is often a conflict of interests of the involved parties. In all circumstances, however, it is the psychologist's primary task to secure the patients/participants welfare and to keep risks at a minimum. Therefore psychologists should know which ethical aspects are of importance and which laws and rules need to be applied and also which institutions supervise on the application of these rules. In addition, these aspects should be taken into consideration when writing and submitting a research proposal to an ethical commission.
The following topics will be discussed:
- Examples of ethical and legal failings
- Necessity of ethical and legal rules
- Different guidelines: declaration of Helsinki, guidelines for Good Clinical Practice, etc.
- Working with participants/patients: rights and duties, confidentiality, data processing and storage, etc.

- Applying ethical and legal rules in e.g., protocol, case report form, informed consent, etc.
- Ethical and legal reviews

Instructional Approach
Lectures, discussion groups.

Form of Assessment

Individual presentation.

435CN & 436CN Signal Analysis I & II – 4 credits

Coordinators: Fabrizio Esposito, Cognitive Neuroscience (FPN), Phone 38 84064, 40 Universiteitssingel East, Room 1.773, E-mail: fabrizio.esposito@psychology.unimaas.nl; Giancarlo Valente, Cognitive Neuroscience (FPN), Phone 38 82469, 40 Universiteitssingel East, Room 4.747, E-mail: giancarlo.valente@psychology.unimaas.nl.

Description of the Course
Traditional and advanced statistics provide essential knowledge and tools for the correct formulation of scientific inferences and to summarize a research work. Nonetheless, modern techniques in neuroscience research have strongly enriched the amount of information that is possible to extract and analyze from experimental data, especially because 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. The two "Signal Analysis" courses introduce the practical implementation of the traditional and latest research approaches to time and space signal analysis in the context of neuroscience research.

The first course (Signal Analysis I) focuses on time series analysis from one- and multi-dimensional data, with special emphasis to image time-series processing. 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 operational understanding of the classical signal analysis techniques like pre-processing, analysis in the frequency, time and amplitude domains, Fourier series, Fourier Transform and FFT, spectral analysis, auto- and cross-correlation analysis, convolution and deconvolution analysis. Practical demonstrations from real world data will reinforce concepts introduced in the lectures, and concise mathematical tutorials will be provided to simplify further readings from the technical literature. MATLAB implementation of these techniques will also be addressed throughout the meetings

The second course (Signal Analysis II) introduces the participants to emerging advanced signal analysis techniques, including multivariate component-based analysis and multiresolution wavelet-based time and space signal processing. The course will also deal with state of the art predictive modelling and machine learning for fMRI data analysis, including Bayesian approaches. Lab sessions in MATLAB will be held during the meetings.

Literature
Journal articles and book chapters.

Instructional Approach
Lectures, tutorial group meetings with integrated practical sessions.

Form of Assessment
Written exam with open questions, and assignment.

501RM Protocol Writing – 2 credits
Coordinator: Caroline van Heugten, Psychiatry & Neuropsychology (FHML), Phone 38 84091, 12 Dr. Tanslaan, Room 4.E3.017, E-mail: c.vanheugten@np.unimaas.nl

Description of the Course
This training course addresses the different phases of writing scientific protocols and research reports. The course covers all of the stages involved in the creation of a piece of writing; from rough working documents and prewriting, to editing draft texts and making final revisions. Since the course precedes the Master's research and thesis stage, the primary focus is on the development of skills that will enable the writing of a research proposal and Master's thesis. The course covers a variety of topics related to scientific writing, such as different protocol types, the IMRAD-format, APA style and format, citations and references, plagiarism, project planning and applying on-line writing guides.

Instructional Approach
A combination of lectures, take home writing assignments and take home review assignments.

Form of Assessment
Written research proposal.

2.5 Research internship and Master's thesis

502RM Research internship and Master's thesis – 50 credits
Coordinator: Arie van der Lugt, Cognitive Neuroscience (FPN), Phone (043) 38 82347, Universiteitssingel 40 east, Room 2.741, E-mail: arie.vanderlugt@psychology.unimaas.nl

Description of the internship
The second part of the year of the Research Master's programme is devoted to arranging and conducting a research internship. As a result of the many international research contacts our faculty members have established, a substantial number of

students will conduct their research internship abroad. Students finalize the Master's programme by writing a thesis on their internship.

The internship can be done at Maastricht University or at external research institutes. In all cases, the research proposal and Master's thesis will be evaluated by two assessors. At least one assessor has to be a member of Maastricht University. The other assessor might be a researcher at, for example, the institute where the data are collected.

A detailed guide on research internships and Master's thesis can be found on Blackboard: EleUM.unimaas.nl/Students Research Master Faculty of Psychology and Neuroscience.

For possible internships abroad contact the research internship coordinator. For practical information about international research internships (e.g., scholarship, visa), contact the International Office, Phone (043) 38 81920, 40 Universiteitssingel East, Room 5.749, E-mail: international@psychology.unimaas.nl

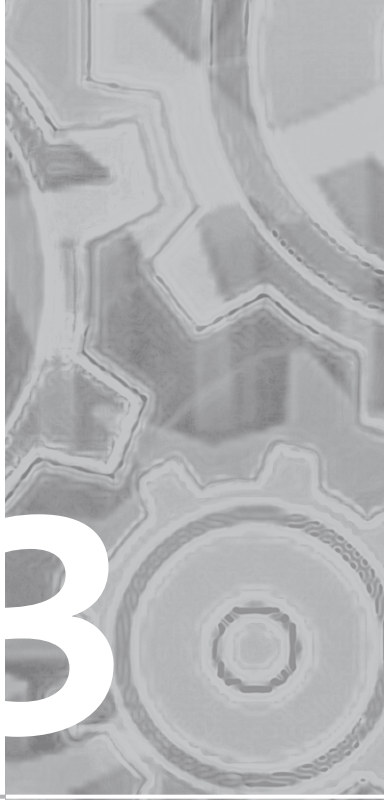
Form of Assessment
Credits will be assigned on the basis of the proposal and research activities (36 credits, pass/fail assessment) as well as the thesis (14 credits, graded assessment).

2.6 Schedule Cognitive Neuroscience

Period	YEAR 1
Period 0, 1 week 1th September – 5th September 2008	Introduction Week
Period 1, 7 weeks 8th September – 24th October 2008	**405RM Interdisciplinary Perspectives** (total of 3 credits)
	Core Courses: 411CN Neural Correlates of Selection in Language Processing (4 credits), 412CN Perception and Attention (4 credits) & 406RM Advanced Statistics I (total of 2 credits)
	Skills Training: 421CN ERP (2 credits)
	404RM Colloquia (total of 5 credits)
Period 2, 7 weeks 27th October – 12th December 2008	**405RM Interdisciplinary Perspectives**
	Core courses: 413CN Neuroimaging (4 credits), 414CN The Cognitive Neuroscience of Sensory and Motor Systems (4 credits) & 406RM Advanced Statistics I
	Skills training: 422CN fMRI (2 credits)
	404RM Colloquia
Christmas break	

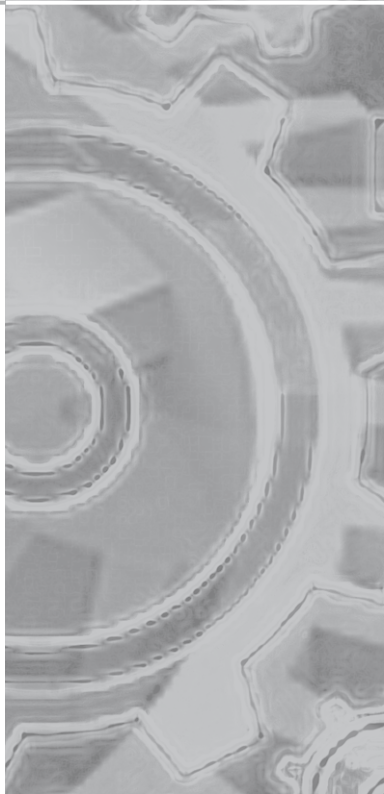
Period 3, 4 weeks 5th January – 30th January 2009	**Core course:** 415CN Advanced fMRI (3 credits) & 406RM Advanced Statistics I
	Workshop: 431CN Real-time fMRI and Neurofeedback (1 credit)
	Skills training: 408RM Neuroanatomy (1 credit)
	404RM Colloquia
Period 4, 4 weeks 2nd February – 6th March 2009	**Core course:** 416CN Magnetic Brain Stimulation (TMS) (3 credits) & 407RM Advanced Statistics II (total of 3 credits)
	Workshop: 433CN Methods of Deactivation (1 credit)
	Skills training: 424CN Programming in Matlab Basic Course (2 credits)
	404RM Colloquia
Period 5, 4 weeks 9th March – 3rd April 2009	**Core course:** 417CN Tracking the time-course of cortical processing using MEG and EEG (3 credits) & 407RM Advanced Statistics II
	Workshop: 409RM Research Ethics (1 credit)
	Skills training: 425CN Programming in Matlab Advanced Course (1 credit)
	404RM Colloquia
Period 6, 4 weeks 6th April – 15th May 2009	**Core course:** 418CN The Auditory System (3 credits) & 407RM Advanced Statistics II
	Workshop: 435CN Signal Analysis I (2 credits)
	Skills training: 426CN Presentation (1 credit)
	404RM Colloquia
Period 7, 4 weeks 18th May – 19th June 2009	**Core course:** 419CN Neural Correlates of Consciousness (3 credits)
	Workshop: 436CN Signal Analysis II (2 credits)
	404RM Colloquia

Period	**YEAR 2**
Period 1, 4 weeks dates to be announced	**Core course:** 511CN Neurocognition of Literacy and Numeracy (3 credits)
	Workshop: 501RM Protocol Writing (total of 2 credits)
	Skills training: 521CN Diffusion Weighted Imaging and Fiber Tracking (1 credit)
Period 2, 4 weeks dates to be announced	**Core course:** 512CN Modeling (3 credits)
	Workshop: 501RM Protocol Writing
	Skills training: 522CN Data Management (1 credit)
32 weeks	**Research internship & Master's thesis** (50 credits)



3

Specialization
Fundamental Neuroscience (FN)



The specialization in fundamental neuroscience provides students with both the theoretical background and practical experience of researchers at the interface between neuroscience and psychology. The other specializations within the Research Master offer a formal education in brain imaging at a macro level (observing brain activity), as well as neuropsychology (brain-behaviour relationships) and psychopathology (mental health). Fundamental neuroscience adds the cellular micro level (investigations into single brain cells) and offers interdisciplinary cross-integration in a neuroscience context. 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 specialization 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 field of neuroinflammation is also studied. Main research topics include cell signalling, brain plasticity, neurodegeneration, regeneration, genetics and epigenetics in a translational, that is both animal and human, setting. Teaching is presented 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 specialization 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.

Fundamental Neuroscience Coordinator:

Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl and Psychiatry & Neuropsychology (FHML), Phone 38 81168, Universiteitssingel 50, Room 1.108, E-mail: jos.prickaerts@np.unimaas.nl

Colloquia Coordinator:

Joel Reithler, Cognitive Neuroscience, Phone 38 81896, 40 Universiteitssingel East, Room 4.761, E-mail: j.reithler@psychology.unimaas.nl

3.1 Interdisciplinary Perspectives

405RM Interdisciplinary Perspectives – 3 credits

Coordinators: Nancy Nicolson, Psychiatry & Neuropsychology (FHML), Phone 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl;
Jan Ramaekers, Neuropsychology & Psychopharmacology (FPN), Phone 38 81951, 40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl;

Alexander Sack, Cognitive Neuroscience (FPN), Phone 38 84267, 40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl;
Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course
This lecture course, attended by all first year students, is designed to highlight selected research topics from the perspectives of cognitive neuroscience, fundamental neuroscience, neuropsychology and psychopathology. The aim is to illustrate how the distinct but inter-related approaches to questions in the field of brain and behaviour can enrich our understanding of underlying mechanisms as well as cognitive, emotional and behavioural outcomes in health and disorder.

Instructional Approach
A series of four lectures for each of two broad themes. Faculty members from each of the four specializations will present lectures in successive weeks.
Required readings, assigned by each lecturer, will be made available prior to the first meeting of a new theme.

Form of Assessment
Following each series of four lectures, an open book exam will be given, covering material from all of the assigned readings and lectures for that theme. The final pass/fail score is based on the average grade obtained on the two exams.

3.2 Core courses

411FN Advanced Molecular Biology Techniques – 5 credits

Coordinator: Pilar Martínez - Martínez, Psychiatry & Neuropsychology (FHML), Phone 38 81263, 50 Universiteitssingel, Room 1.136, E-mail: p.martinez@np.unimaas.nl

Description of the Course
This course in molecular biology techniques is designed to provide students with a conceptual and practical understanding of several of the most advanced techniques in molecular neuroscience. In this course, the laboratory portion will include topics such as: the use of small interfering RNAs (siRNA) for regulating the expression of specific genes in neurons; practical exercises in gene delivery systems including mammalian cell transfection protocols and gene electroporation techniques for targeted gene transfer in vivo; an introduction to overall strategies, cloning, whole genome expression analyses using DNA microarray technologies; quantitative real time RT-PCR analyses from small numbers of cells (probes design, RNA purification, PCR optimization, interpretation of results). Students will also be introduced to bioinformatics and a wide range of internet resources which are available to molecular neuroscientists.

Literature
Recent journal articles and book chapters.

Instructional Approach
Theoretical and practical meetings.

Form of Assessment

Written examination and evaluation of practical performance.

412FN Advanced Biochemical Techniques – 5 credits

Coordinator: Mario Losen, Psychiatry & Neuropsychology (FHML), Phone 38 81042, 50 Universiteitssingel, Room 1.136, E-mail: m.losen@np.unimaas.nl

Description of the Course
This course of biochemical and histochemical techniques comprises detailed theoretical and practical training in basic and advanced biochemical tools for analyzing proteins. These include -but are not limited to- enzyme-linked immunosorbent assay (ELISA); radio immuno assay (RIA), electrophoretic and chromatographic analysis such as polyacrylamide gel electrophoresis and fast protein liquid chromatography (FPLC). Students will learn general proteomic approaches such as 2D electrophoresis, difference gel electrophoresis (DIGE) and matrix-assisted laser desorption/ionization time-of-flight (Maldi-Tof) mass spectrometry.

Literature
Recent journal articles and book chapters.

Instructional Approach
Theoretical and practical meetings.

Form of Assessment
Written examination and evaluation of practical performance.

413FN Advanced Brain Anatomy and Histochemical Techniques – 4 credits

Coordinator: N.N.

Description of the Course
The aim of the training is to become acquainted with the neuroanatomical terminology and to gain insight into the spatial and functional organization of the brain. It is essential to have a basic knowledge of the brain anatomy when working in the field of molecular neuroscience. Many specific brain areas can be linked to particular functions. Thus, knowledge of the brain anatomy and its main functions allows one to directly link specific neurological or psychiatric disorders to particular brain areas. After a theoretical introduction the students will study whole brains

and brain material of mammals at both the macroscopical (visual inspection) and microscopical level. For the latter this course introduces the principles of multi-colour fluorescent labeling of tissue sections using antibodies and fluorescent receptor ligands. In addition, various other methods of modern brain imaging (both in vivo and ex vivo) will be discussed.

Literature
The students will be provided with selected chapters from a textbook.

Instructional Approach
The instructional approach will comprise some systematic lectures and various practical elements such as dissection of sheep brains, studying of microscopical slices of the rat brain and working with plastic human brain models.

Form of Assessment
Written examination and evaluation of practical performance.

414FN Neurodegeneration and Brain Damage - 4 credits

Coordinator: Fred van Leeuwen., Psychiatry & Neuropsychology (FHML), Phone 38 31044 , 50 Universiteitssingel, Room 1.116, E-mail: f.vanleeuwen@np.unimaas.nl

Description of the Course
This course provides an in depth description of neurodegenerative processes that occur during the development of neurodegenerative diseases, some of the most debilitating disorders that include Alzheimer's Disease, Parkinson's Disease, Huntington's disease and Amyotrophic Lateral Sclerosis and also during brain damage. Although clinical manifestations of these neurodegenerative diseases are different, they share common features in neuropathology and in the underlying molecular mechanisms. The aim of this course is to gain insight into the neurodegenerative processes, such as the deposition of aggregated proteins, the loss of neurons and synapses, alterations in neurogenesis and inflammatory processes, and alterations in metabolic/oxidative state, and whether these are cause or consequence of the disease. Moreover, it will cover the influences of genetic and environmental factors on disease progression and strategies for therapy. Major emphasis will be on the molecular, that is neurochemical and neurobiological, mechanisms that affect disease progression, using transgenic animal models as well as brain cell cultures.

Literature
Recent journal articles and book chapters.

Instructional Approach
Lectures, group meetings and practical sessions.

Form of Assessment
Written assignment and evaluation of practical performance.

415FN Biopsychological Neuroscience – 4 credits

Coordinator: Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course
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 on the macro- and microanatomy of the brain and on molecular, that is neurochemical and neurobiological, mechanisms related to neurotransmission, hormones and drug action. With respect to 'function', an elaboration will be given of processes underlying sexual behaviour, affective behaviour, motivated behaviour and cognitive processes.

Literature
Recent journal articles and book chapters.

Instructional Approach
Small lectures, group meetings and practical sessions.

Form of Assessment
Presentation, written assignment and evaluation of practical performance.

406RM Advanced Statistics I – 2 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread.

During the first semester, participants will be given an in-depth training in standard statistical methods such as factorial ANOVA for between- and within-subject designs, multivariate ANOVA, discriminant analysis, and multiple regression. Background knowledge of balanced two-way factorial ANOVA and multiple regression will be assumed, and these methods will be briefly reviewed. The following advanced topics will be covered in six units: unbalanced factorial designs, repeated measures ANOVA for within-subject designs, covariates in between-subject and within-subject designs, contrast analysis in ANOVA, interaction, nonlinearity and dummy coding in regression, collinearity and residuals checks, data transformation, multivariate ANOVA and discriminant analysis.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM. Howell (2007), Fox (1997) and Kleinbaum (1998) give a fair impression of the content and level of Part 1 of the course.

References

- Fox, J. (1997). *Applied regression analysis, linear models, and related methods*. Thousand Oaks (CA): Sage;
- Howell, D.C. (2007). *Statistical methods for psychology* (6 th Ed.). Belmont (CA): Thomson/Wadsworth;
- Kleinbaum, D.G., Kupper, L.L., Muller, K.E., & Nizam, A. (1998). *Applied regression analysis and other multivariable methods* (3rd Ed.). Pacific Grove (CA): Brooks/Cole.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach
Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

407RM Advanced Statistics II – 3 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread.

During the second semester, five units give an introduction to two advanced methods of analysis that are becoming increasingly important in psychological research. The first three units are devoted to mixed (multilevel) linear regression for nested designs and longitudinal studies, starting with so-called marginal models for repeated measures as a flexible alternative to repeated measures ANOVA in case of missing data or within-subject covariates, and ending with random effects models for repeated measures and nested designs. Structural equation modelling (SEM, sometimes called LISREL) is covered by two units, with an emphasis on causal modelling in nonrandomized studies. Finally, the topic of optimal design and sample size is introduced in a sixth unit.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS or LISREL) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach
Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

416FN Neurological Disorders – 4 credits

Coordinator: Govert Hoogland, Psychiatry & Neuropsychology (FHML), Phone 38 81024, 50 Universiteitssingel, Room 1.130, E-mail: g.hoogland@np.unimaas.nl

Description of the Course
Neurological disorders such as epilepsy and movement disorders arise from a primary event (e.g. trauma, disrupted brain development) followed by a chronic process of neuronal network reorganization. Once this process has reached a critical stage the patient will manifest clinically observable symptoms. Treatment strategies aim at restoring the function of the pathologic neuronal network by: i) modulating the pathologic network by electrical stimulation, ii) disrupting the pathologic network by resective surgery, and iii) building new networks by stem cell transplantation or induction of cytogenesis. The course will focus on the underlying molecular mechanisms as well as the (lack of) rationale behind the treatment options. Students will receive hands-on experience with neurological tests and molecular assays used to detect these disorders.

Literature
Recent journal articles and book chapters.

Instructional Approach
Small lectures, group meetings and practical sessions.

Form of Assessment
Written examination and evaluation of practical performance.

417FN Neuroimmunology and Inflammation – 4 credits

Coordinator: Mario Losen, Psychiatry & Neuropsychology (FHML), Phone 38 81042, 50 Universiteitssingel, Room 1.136, E-mail: m.losen@np.unimaas.nl

Description

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, contributing 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 in Alzheimer's disease, multiple sclerosis, Parkinson's disease and mood disorders. A special focus will be on the molecular basis of novel treatment approaches of these diseases and regulation of the inflammatory mediators in neurodegeneration.

Literature

Recent journal articles and book chapters.

Instructional Approach

Group meetings and invited lectures by clinical and research specialists in neuroimmunology, practical sessions.

Form of Assessment

Written examination and evaluation of practical performance.

418FN Gene x Environment Interactions – 4 credits

Coordinator: Gunter Kenis, Psychiatry & Neuropsychology (FHML), Phone 38 81168, 50 Universiteitssingel, Room 1.108, E-mail: g.kenis@np.unimaas.nl

Description of the Course

Although 'genes for psychiatric disorders' do not exist, it has become clear that variations in many genes are predisposing factors for mental Illness. These variations or polymorphisms often interact with subtle environmental insults to alter a person's vulnerability to develop psychiatric and neurological diseases. Imaging studies have revealed the neurobiological substrates for these disorders and show how their activity is moderated by genetic variations. From DNA to neurological networks, this course will focus on the mechanisms that underlie the influence of genetic polymorphisms on different facets of human behavior, including emotional processing and cognitive functioning. In addition, the interaction between genes and environment on neuronal processes relevant for the pathophysiology of schizophrenia, major depression and addiction will be studied. In training sessions, the student will gain insight into the design and implementation of genetic studies, including polymorphism determinations and statistics.

Literature
Recent journal articles and book chapter.

Instructional Approach
Lectures, group meetings and practical sessions.

Form of Assessment

Presentation, written examination and evaluation of practical performance.

419FN Stress, Emotions and Affective Disorders – 4 credits

Coordinator: Daniël van den Hove, Psychiatry & Neuropsychology (FHML),
Phone 38 84120, 50 Universiteitssingel, Room 1.110, E-mail: d.vandenhove@np.unimaas.nl

Description of the Course
Almost everybody knows what it is like to feel nervous or anxious: for instance the tension one feels before an examination or the way the heart pounds when one is in danger. Stress rouses the mind and body for (re)action so the individual is able to face a threatening situation. If the reaction is appropriate one can cope with the stressor. Yet chronic and/or excessive stress may lead to the development of psychiatric conditions such as depression and anxiety, in which the 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. This course focuses on the psychobiology of stress, emotions and associated disorders such as depression and anxiety. It will cover various neuroscientific areas like molecular neurobiology, but also functional neuroanatomy, neurophysiology and neuropsychopharmacology. Major focus will be on the limbic system, the sympathetic nervous system and the hypothalamo-pituitary-adrenal axis as key players of emotional regulation in health and disease. Further, the role of different neurotransmitter systems such as the serotonergic system will be discussed in depth.

Literature
Recent journal articles and book chapters.

Instructional Approach
Lectures, group meetings and practical sessions.

Form of Assessment
Written examination and evaluation of practical performance.

511FN Electrophysiology: From Single Cell Activity to 'Cognitive' Markers – 3 credits

Coordinator: Anke Sambeth, Neuropsychology & Psychopharmacology (FPN), Phone 38 81757, 40 Universiteitssingel East, Room 2.741, E-mail: anke.sambeth@psychology.unimaas.nl

Description of the Course
Our brain is busy all the time, whether we are awake or asleep and thousands of neurons are communicating with each other. Neurotransmitters and electrical currents are conveying the information from one cell to another. This course is an introduction into the field of brain electricity. There will be literature discussions on how currents develop (i.e., role of molecules, ion channels, or membrane), how these currents are perceived in the EEG, what the differences are in measurements of various species, and what these currents mean in terms of e.g., event-related potentials or (de)synchronization measures. Furthermore, we will talk about the practical issues when doing EEG recordings. Next to the presentation of pictures and short videos on how measurements in animals are done, students will acquire hands-on experience with EEG recordings in humans.

Literature
For the general information, several recent book chapters and reviews will be used. Furthermore, several in-depth articles about specific topics in electrophysiology will be used to evaluate the current standard procedures used.

Instructional Approach
Lectures, group meetings and practical sessions.

Form of Assessment
Written assignment and presentation.

512FN In Vitro and in Vivo Neuroscience: Models and Tests – 4 credits

Coordinator: Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course
Neuroscience research involves the use of a wide variety of techniques and tools for investigations at the molecular level up to the behavioural level and even further as environmental factors also have to be taken into consideration. How does a neuroscientist plan his/her experiments to test the hypothesis? Which techniques and tools are necessary and what should be done first? Is it best always to start in vitro or should one start more upstream with in vivo experiments? Why work with animals? Eventually all collected data have to be analyzed, integrated and interpreted. What is important and what of lesser importance? Examples are given from the field of

cognitive and affective disorders. For example, what does long-term potentiation tell you about cognitive functioning in an Alzheimer patient? Or what does a cell culture tell you about depression?

Literature
Recent journal articles and book chapters.

Instructional Approach
Lectures, group meetings and demonstrations of different neuroscience experiments.

Form of Assessment
Presentation, written assignment and evaluation of practical performance.

3.3 Skills trainings

521FN ERP– 2 credits
Coordinator: Fren Smulders, Cognitive Neuroscience (FPN), Phone 38 81909, 40 Universiteitssingel East, Room 3.744, E-mail: f.smulders@psychology.unimaas.nl

Description of the Course
The aim of this training is to give the students hands-on experience with the experimental design, data acquisition and analysis of EEG/ERP experiments. First, students will be introduced into the possibilities and limitations of EEG and ERP research: how to set up a proper experimental paradigm, and how to interpret the resulting data. Furthermore, students receive a general introduction into basic signal analysis, and into some specific analyses of EEG and ERP, such as artefact management, spectral analysis, filtering, ERP averaging, etc. After that, there will be a hands-on training in smaller groups in running an ERP experiment, including electrode application, minimizing artefacts, and hygiene and safety in the lab. A simple experimental paradigm will be used that gives interesting and reliable results. Data processing will include various EEG analyses that are commonly used, e.g., analyses in the time and frequency domain. Each group will report and discuss their findings.

Literature
- Handbook;
- Various journal articles.

Practical
Practical sessions for EEG measurement and data analysis.

Instructional Approach
Lectures, tutorial group meetings, a lab session, and computer sessions.

Form of Assessment
Short report (2-4 pages) in abbreviated article form.

522FN Data management– 1 credit

Coordinator: Arjan Blokland, Neuropsychology & Psychopharmacology (FPN), Phone 38 81903, 40 Universiteitssingel East, Room 2.731, E-mail: a.blokland@psychology.unimaas.nl

Description of the Course
The aim of this skills training is to acquire basis skills in data management. After doing your scientific research, data have to be prepared for data analysis. Usually, the format of the data acquisition software does not match the requirements of sophisticated statistical software packages (e.g., SPSS or SAS). In this skills training, students will be familiarized with the software package Excel. This program has many features that can be very helpful to overcome time-consuming formatting of databases. First, an introduction of the basic features of Excel will be presented. Being familiar with these basic aspects is necessary to understand copying of values and formulas (relative or absolute). Also, Excel enables you to make various types of graphs, which can be very helpful for quickly visualizing your data. A fourth aspect that will be dealt with is pivot tables, a very helpful tool to organise your data in any manner you find most suitable for your further data handling. A final option that will be dealt with is the use of macros. These are especially helpful when repetitious changes in layout or recalculations have to be made.

Instructional Approach
Group meetings in which direct demonstrations are given via PC/beamer. Students may provide the instructor data to be used as examples.

Form of Assessment
Written assignment.

3.4 M&T workshops

431FN Molecular Genetics – 1 credit

Coordinator: Fred van Leeuwen, Psychiatry & Neuropsychology (FHML), Phone 38 81044, 50 Universiteitssingel, Room 1.116, E-mail: f.vanleeuwen@np.unimaas.nl

Description of the Course
Currently, the role of genes in causing vulnerability for psychiatric and neurological disorders is prominent. This workshop focuses on which genetic alterations play a role in this respect. Epigenetic phenomena such as DNA methylation and histone deacetylation will be discussed. In addition more traditional gene alteration will be discussed, including single nucleotide polymorphisms, insertion/deletion, repeats,

copy/insert variations and frame shift mutations. Students will gain insight, by use of theoretical models, into how these DNA alterations can occur and affect DNA transcription.

Instructional Approach
Lectures, discussion groups.

Form of Assessment
Written assignment.

432FN Surgery for Intractable Movement and Psychiatric Disorders – 1 credit

Coordinator: Yasin Temel, Psychiatry & Neuropsychology (FHML), Phone 38 81024, 50 Universiteitssingel, Room 1.130, E-mail: y.temel@np.unimaas.nl

Description of the Course
The aim of this course is to guide the participants through the first key steps of neuroscience experiments related to movement and psychiatric disorders. The participants will receive relevant knowledge via lectures and will have the opportunity to apply this in practice via a hands-on setup. General neurosurgical techniques will be shown that are used to selectively lesion brain areas, to chronically infuse drugs to brain areas, to deep brain stimulate and electrophysiologically record from brain areas. Also, behavioural tests used to study the functional consequences of the neurosurgical interventions will be demonstrated and discussed.

Instructional Approach
Lectures, discussion groups and hands-on experience.

Form of Assessment
Written assignment.

409RM Research Ethics – 1 credit

Coordinator: Eef Theunissen, Neuropsychology & Psychopharmacology (FPN), Phone 38 81940, 40 Universiteitssingel East, Room 2.743, E-mail: e.theunissen@psychology.unimaas.nl

Description of the Course
Students will learn to think critically about ethical dilemmas that psychologists encounter when exercising their profession. This workshop will discuss legal and ethical conflicts that are involved in psychological research and clinical practice. Students will be introduced to the ethical and legal rules and boundaries in human research, and to the organizations and institutes supervising the application of these rules. Psychologists always need to make sure that they carry out their work in an ethical and legally sound way. However, there is often a conflict of interests of the involved

parties. In all circumstances, however, it is the psychologist's primary task to secure the patients/participants welfare and to keep risks at a minimum. Therefore psychologists should know which ethical aspects are of importance and which laws and rules need to be applied and also which institutions supervise on the application of these rules. In addition, these aspects should be taken into consideration when writing and submitting a research proposal to an ethical commission.

The following topics will be discussed:
- Examples of ethical and legal failings
- Necessity of ethical and legal rules
- Different guidelines: declaration of Helsinki, guidelines for Good Clinical Practice, etc.
- Working with participants/patients: rights and duties, confidentiality, data processing and storage, etc.
- Applying ethical and legal rules in e.g., protocol, case report form, informed consent, etc.
- Ethical and legal reviews

Instructional Approach
Lectures and discussion groups.

Form of Assessment
Individual presentation.

433FN Epidemiology – 1 credit

Coordinator: Marcus Huibers, Clinical Psychological Science (FPN), Phone 38 81487, 40 Universiteitssingel East, Room 1.349, E-mail: m.huibers@DMKEP.unimaas.nl

Description of the Course
Epidemiology often is referred to as 'quantative medicine'. In general, epidemiology deals with methodology issues in the field of health research, including mental health. Students in this workshop will be introduced to the principles of epidemiological research. Topics that are covered in the workshop include: frequency measures, association measures, sources of bias, validity issues, cohort studies, clinical trials, and systematic reviews. The theory of epidemiology will be studied and applied in interactive workshop sessions.

Instructional Form
Format of the workshop is a series of four 2-hour sessions and a final presentation session. Starting each session, the lecturer will give a 30-minute presentation of the topics covered in that session, followed by a 30-minute discussion of these topics. The second hour will be spent on group assignments under supervision of the lecturer.

Literature
Required reading will consist of several chapters from a clinical epidemiology textbook and additional research papers combined in an e-reader. In addition to the workshops

sessions, students are expected to spend at least 5 hours a week on reading and homework assignments.

Form of Assessment
Group presentation of research proposal

434FN Imaging – 2 credits

Coordinator: Vincent van de Ven, Cognitive Neuroscience (FPN), Phone 38 84510, 40 Universiteitssingel East, Room 4.761, E-mail: v.vandeven@psychology.unimaas.nl

Description of the Course
This workshop is intended to provide:
- introductory knowledge of the basic principles underlying the most common imaging methods
- appreciation of potentialities and limitations of various neuroimaging methods in studying human brain functions and dysfunctions.

The investigation of human brain anatomy and functions using a range of imaging methods represents the most influential development in Psychology in the last years. In this workshop, essential facts about all major structural and brain mapping techniques, including Positron Emission Tomography (PET) and SPECT, structural and functional Magnetic Resonance Imaging (fMRI) will be reviewed. The focus will be on the strengths and weaknesses of each of these methods and on the description of relevant applications in the normal and pathological brain.

Instructional Approach
Lectures, paper discussion, and demonstration visit to the MRI scanner.

Form of Assessment
Written exam with open questions.

435FN Psychopharmacology – 1 credit

Coordinator: Wim Riedel, Neurospsychology & Psychopharmacology (FPN), Phone 38 84270, 40 Universiteitssingel East, Room 2.755, E-mail: w.riedel@psychology.unimaas.nl

Description of the Course
The workshop aims to present Psychopharmacology in a broad sense. The multidisciplinary nature of psychopharmacology encompasses pharmacology, molecular biology, genetics, physiological psychology, experimental, clinical and cognitive neuropsychology and biological psychiatry. The emphasis will be on understanding drug development, drug action, drug research, animal and human pharmacological models of clinical disorders, experimental / clinical trial design and the development of biomarkers, real measures and surrogate measures of drug efficacy.

The course will focus on major areas in Psychopharmacology such as Addiction, Depression, Anxiety, Psychosis and Cognition. These areas will be illuminated form both the perspectives of basic neuroscience including animal subjects as well as experimental and clinical human psychopharmacology.

Instructional Approach
Each half-day the programme will consist of a sequence of three elements:
- Key note Lectures by internationally renowned speakers in the morning
- Presentations of recent research by PhD students or junior researchers
- Forum report by students about the poster-presentations

The workshop offers plenty of opportunity for the Master's student to interact with PhD students, junior and senior staff and the invited guest speakers.

Form of Assessment
Short presentation in the forum discussion.

501RM Protocol Writing – 2 credits

Coordinator: Caroline van Heugten, Psychiatry & Neuropsychology (FHML),
Phone 38 84091, 12 Dr. Tanslaan, Room 4.E3.017, E-mail: c.vanheugten@np.unimaas.nl

Description of the Course
This training course addresses the different phases of writing scientific protocols and research reports. The course covers all of the stages involved in the creation of a piece of writing; from rough working documents and prewriting, to editing draft texts and making final revisions. Since the course precedes the Master's research and thesis stage, the primary focus is on the development of skills that will enable the writing of a research proposal and Master's thesis. The course covers a variety of topics related to scientific writing, such as different protocol types, the IMRAD-format, APA style and format, citations and references, plagiarism, project planning and applying on-line writing guides.

Instructional Approach
A combination of lectures, take home writing assignments and take home review assignments.

Form of Assessment
Written research proposal.

3.5 Research internship and Master's thesis

502RM Research internship and Master's thesis – 50 credits
Coordinator: Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone (043) 38 81026, Universiteitssingel 40, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the internship
The second part of the year of the Research Master's programme is devoted to arranging and conducting a research internship. As a result of the many international research contacts our faculty members have established, a substantial number of students will conduct their research internship abroad. Students finalize the Master's programme by writing a thesis on their internship.

The internship can be done at Maastricht University or at external research institutes. In all cases, your research proposal and Master's thesis will be evaluated by two assessors. At least one assessor has to be a member of Maastricht University. The other assessor might be a researcher at, for example, the institute where your data are collected.
A detailed guide on research internships and Master's thesis can be found on Blackboard: EleUM.unimaas.nl/Students Research Master Faculty of Psychology and Neuroscience.

For possible internships abroad contact the research internship coordinator. For practical information about international research internships (e.g., scholarship, visa), contact the International Office, Phone (043) 38 81920, 40 Universiteitssingel East, Room 5.749, E-mail: international@psychology.unimaas.nl

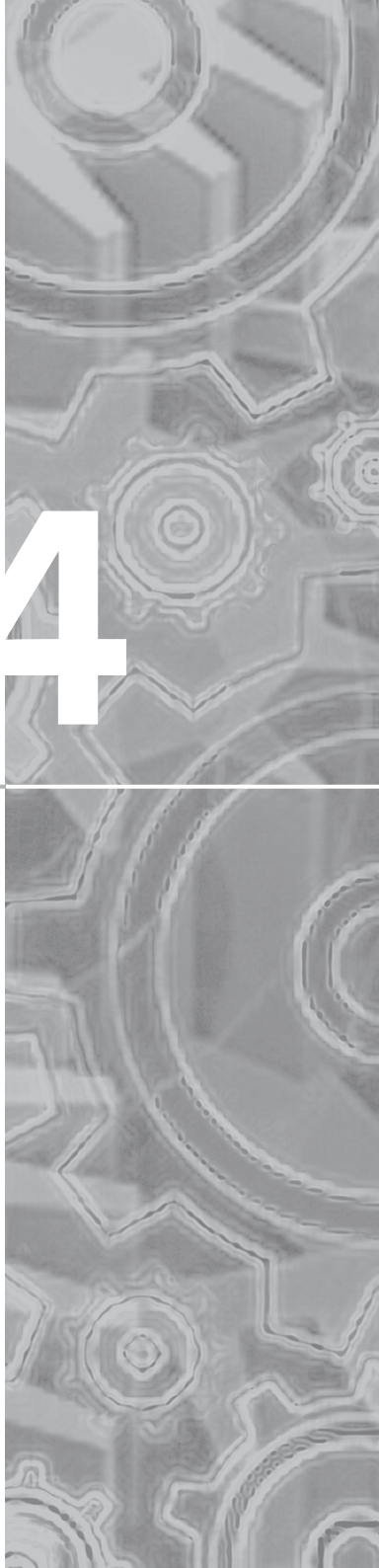
Form of Assessment
Credits will be assigned on the basis of the proposal and research activities (36 credits, pass/fail assessment) as well as the thesis (14 credits, graded assessment).

3.6 Schedule Fundamental Neuroscience

Period	YEAR 1
Period 0, 1 week 1th September – 5th September 2008	Introduction Week
Period 1, 7 weeks 8th September – 24th October 2008	**405RM Interdisciplinary Perspectives** (total of 3 credits)
	Core Courses: 411FN Advanced Molecular Biology Techniques (5 credits), 412FN Advanced Biochemical Techniques (5 credits) & 406RM Advanced Statistics I (total of 2 credits)
	404RM Colloquia (total of 5 credits)

Period 2, 7 weeks 27th October – 12th December 2008	**405RM Interdisciplinary Perspectives**
	Core courses: 413FN Advanced Brain Anatomy and Histochemical Techniques (4 credits), 414FN Neurodegeneration and Brain Damage (4 credits) & 406RM Advanced Statistics I
	404RM Colloquia
Christmas break	
Period 3, 4 weeks 5th January – 30th January 2009	**Core course:** 415FN Biopsychological Neuroscience (4 credits) & 406RM Advanced Statistics I
	Workshop: 431FN Molecular Genetics (1 credit)
	404RM Colloquia
Period 4, 4 weeks 2nd February – 6th March 2009	**Core course:** 416FN Neurological Disorders (4 credits) & 407RM Advanced Statistics II (total of 3 credits)
	Workshop: 432FN Surgery for Intractable Movement and Psychiatric Disorders (1 credit)
	404RM Colloquia
Period 5, 4 weeks 9th March – 3rd April 2009	**Core course:** 417CN Neuroimmunology and Inflammation (4 credits) & 407RM Advanced Statistics II
	Workshop: 409RM Research Ethics (1 credit)
	404RM Colloquia
Period 6, 4 weeks 6th April – 15th May 2009	**Core course:** 418FN Gene x Environment Interactions (4 credits) & 407RM Advanced Statistics II
	Workshop: 433FN Epidemiology (1 credit)
	404RM Colloquia
Period 7, 4 weeks 18th May – 19th June 2009	**Core course:** 419FN Stress, Emotions and Affective Disorders (4 credits)
	Workshop: 434FN Imaging (2 credits) & 435FN Psychopharmacology (1 credit)
	404RM Colloquia

Period	**YEAR 2**
Period 1, 4 weeks dates to be announced	**Core course:** 511FN Electrophysiology: From Single Cell Activity to 'Cognitive Markers' (3 credits)
	Workshop: 501RM Protocol Writing (total of 2 credits)
	Skills training: 521FN ERP (total of 2 credits)
Period 2, 4 weeks dates to be announced	**Core course:** 512FN In Vitro and in Vivo Neuroscience: Models and Tests (4 credits)
	Workshop: 501RM Protocol Writing
	Skills training: 521FN ERP & 522FN Data Management (1 credit)
32 weeks	**Research internship & Master's thesis** (50 credits)



4

Specialization Neuropsychology (NP)

The specialization in Neuropsychology focuses on the relationship between brain and behaviour. In this perspective, behaviour is a broadly defined term and includes cognitive functions (e.g., memory, language, perception, planning, and psychomotor functions) as well as affective functions. These so-called 'brain-behaviour' relationships are addressed on a continuum ranging from 'normal' to 'deviant' in children, adolescents and patient populations. Neurological (e.g., Parkinson disease) and psychiatric disorders (e.g., ADHD, schizophrenia, dementia) will be studied thoroughly. In addition, in the context of psychopharmacology, biological mechanisms are studied which pertain to neurotransmitters, hormones, and drugs that act upon cognitive function and behaviour. Central is the relation between manipulating brain neurochemistry by means of psychoactive substances and cognitive function, in animal and human models. An integrated programme will be presented that includes most aspects of basic and applied neuroscience. Students will have the opportunity to work in a multidisciplinary team consisting of psychologists, biologists and psychiatrists.

Neuropsychology Coordinator:

Jan Ramaekers, Neuropsychology & Psychopharmacology, Phone 38 81951,
40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl

Colloquia Coordinator:

Eef Theunissen, Neuropsychology & Psychopharmacology, Phone 38 81940,
40 Universiteitssingel East, Room 2.735, E-mail: e.theunissen@psychology.unimaas.nl

4.1 Interdisciplinary Perspectives

405RM Interdisciplinary Perspectives – 3 credits

Coordinators: Nancy Nicolson, Psychiatry & Neuropsychology (FHML), Phone 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl;
Jan Ramaekers, Neuropsychology & Psychopharmacology (FPN), Phone 38 81951, 40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl;
Alexander Sack, Cognitive Neuroscience (FPN), Phone 38 84267, 40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl;
Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course

This lecture course, attended by all first-year students, is designed to highlight selected research topics from the perspectives of cognitive neuroscience, fundamental neuroscience, neuropsychology and psychopathology. The aim is to illustrate how the distinct but inter-related approaches to questions in the field of brain and behaviour can enrich our understanding of underlying mechanisms as well as cognitive, emotional and behavioural outcomes in health and disorder.

Instructional Approach
A series of four lectures for each of two broad themes. Faculty members from each of the four specializations will present lectures in successive weeks.
Required readings, assigned by each lecturer, will be made available prior to the first meeting of a new theme.

Form of Assessment
Following each series of four lectures, an open book exam will be given, covering material from all of the assigned readings and lectures for that theme. The final pass/fail score is based on the average grade obtained on the two exams.

4.2 Core courses

441NP Brain Damage – 4 credits

Coordinator: Martin van Boxtel, Psychiatry & Neuropsychology (FHML), Phone 38 81028, 12 Dr. Tanslaan, Room 4.E3.017, E-mail: m.vanboxtel@psychology.unimaas.nl

Description of the Course
Students are introduced to the fields of Behavioural Neurology and Neuropsychology: what do pathological conditions in brain structure and function tell us about the relationship between brain and behaviour? Much of what we know about cognitive processes and affective functioning has been learned from close observation of patients with damage to the central nervous system. This course reviews mechanisms of the relationship between brain and behaviour that are the basis of neuropsychological dysfunctions in persons who suffer from brain damage. Students acquire knowledge about the causes and neurobiological effects of brain lesions, and get acquainted with the taxonomy of common neurological and neuropsychological syndromes. Functional disturbances that occur after focal or diffuse lesions in different cortical areas, in connecting tracts, in limbic and other subcortical brain structures are discussed, together with the neurocognitive assessment procedures that are necessary to identify such deficits, including disorders of memory, praxis, language, visual spatial abilities and executive function. After completion of the course the students will have a broad overview of functional brain anatomy (including lobar anatomy and cerebral vascularization), the neurophysiology of brain repair, and the neurological diseases (e.g. brain trauma, stroke, and epilepsy) that are relevant for Neuropsychology, both as a clinical and a research discipline. Finally, the student will be familiar with the fundamental processes involved in functional brain plasticity. This knowledge is essential to understand the principles of neuropsychological rehabilitation in order to support or even improve residual function after brain damage and to ameliorate the life quality of neurological patients.

Literature
- Selected readings from neuropsychological and neurological handbooks;
- Course syllabus (e-reader).

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Written exam with open questions.

442NP Behavioural Disorders – 4 credits

Coordinator: Dymphie Scholtissen-In de Braek, Psychiatry & Neuropsychology (FHML), Phone 38 72445, 12 Dr. Tanslaan, Room 4.G3.049, E-mail: d.indebraek@np.unimaas.nl

Description of the Course
This course is intended to impart knowledge about the cognitive dysfunctions that accompany severe neuropsychiatric and neurological disorders and to provide insight into the biological mechanisms and intervention possibilities for these disorders. The course is concerned with the changes in psychological functioning that occur in connection with a number of frequently occurring brain disorders. The intention is to gain insight into the characteristic manifestations of behavioural problems and cognitive functional disturbances along with the brain and behavioural mechanisms that lie at the foundation of these. The emphasis in this course is on the problems associated with such neuropsychiatric phenomena as schizophrenia, compulsive symptoms, ADHD, apathy and autism. The neuropsychiatric problems associated with a number of the neurological phenomena important for psychologists will also be considered. Attention will be paid to the psychological problems associated with cerebral disturbances and light brain trauma. With respect to the mechanisms that lie at the basis of behavioural and cognitive disorders, both the relevant biological and psychological factors will be considered. Also, neurodevelopmental aspects of behavioural disorders will be discussed. Finally, the principle of vulnerability, protective/risk factors and psychopharmacology in the aetiology of behavioural disorders will be touched upon.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Written exam with open questions.

443NP Arousal and Attention – 4 credits

Coordinator: Annemiek Vermeeren, Neuropsychology & Psychopharmacology (FPN), Phone 38 81952, 40 Universiteitssingel East, Room 2.738,
E-mail: a.vermeeren@psychology.unimaas.nl

Description of the Course
This course familiarizes students with key concepts and controversies in the study of arousal and attention, with an emphasis on the role of neurotransmitters and the effects of stimulating and sedating drugs. Several psychological and psychiatric disorders are associated with a lack of energy or a state of hyperarousal, e.g. insomnia and ADHD. Moreover arousal and alertness can vary between and within days, depending for example on the amount of sleep, time of day, or use of drugs (e.g. caffeine, methylphenidate, sleeping pills). Such variations in arousal and alertness can affect human cognitive functioning, in particular attention. The nature and mechanisms underlying the relation between arousal, attention and performance has been the subject of extensive research in psychology. In addition to a critical discussion of the classic Arousal Theory, this course will review current knowledge on subcortical arousal systems, attentional networks and the neurotransmitters involved. Throughout the course psychopharmacological studies will be presented that illustrate the role of different neurotransmitters in arousal and attention.
The following issues will be discussed: psychophysiological correlates of arousal; unidimensional Arousal Theory (inverted U model, Yerkes Dodson law); multi-dimensional models; Posner's attentional networks (alerting, orienting, and executive attention); intrinsic alertness, vigilance and sustained attention; underlying neurobiological mechanisms of attention; ascending reticular activating system (ARAS); brainstem and hypothalamic systems regulating sleep and waking; the role of noradrenaline, dopamine and acetylcholine in alertness and attention; the interaction of noradrenaline, serotonin, acetylchline, histamine, adenosine, orexin and GABA in sleep-wake regulation; disorders such as insomnia and ADHD; some sedative and stimulating drugs, such as sleeping pills and caffeine.

Literature
Journal articles and book chapters will be available via electronic reader at EleUM.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Written exam with open questions.

444NP Cognitive Aging – 4 credits

Coordinator: Pascal van Gerven, Neuropsychology & Psychopharmacology (FPN),
Phone 38 84512, 40 Universiteitssingel East, room 2.742,
E-mail: p.vangerven@psychology.unimaas.nl

Description of the Course
This course covers a broad range of topics in the field of cognitive aging. A thorough understanding of normal cognitive aging is considered essential before issues in abnormal aging can be addressed. Important questions are: What is cognitive aging?

What neurobiological and cognitive mechanisms determine whether a person ages pathologically, normally, or successfully? How can this aging process be influenced? Students will critically reflect on influential theories, state-of-the-art research, established research methods, and clinical interventions to address these questions. Themes will be physical (somatic) aging, brain aging (biological perspective), cognitive aging (behavioural perspective), pathological aging (mild cognitive impairment, dementias, Alzheimer's disease, Parkinson's disease), intervention strategies, and methodological issues in aging research.

Literature
An e-reader will be provided. The course will not be accompanied by a textbook, but useful reference books will be recommended in the course manual.

Instructional Approach
Tutorial group meetings, lectures.

Form of Assessment
Written exam with open questions.

445NP Biopsychology – 3 credits

Coordinator: Anke Sambeth, Neuropsychology & Psychopharmacology (FPN),
Phone 38 81757, 40 Universiteitssingel East, Room 2.741,
E-mail: anke.sambeth@psychology.unimaas.nl

Description of the Course
This course provides an in depth description of biopsychological concepts which have been presented in the bachelor program in the first and third year. It will cover elements from functional neuroanatomy, neurophysiology and psychopharmacology, as applied to brain and behaviour research. Major emphasis will be on the macro- and microanatomy of the brain, neurochemical and neurobiological mechanisms related to neurotransmission, hormones and drug action. With respect to 'function', an elaboration will be given of processes underlying sexual behaviour, affective behaviour, motivated behaviour and cognitive processes.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written assignment, presentation, and active participation.

446NP Brain, Learning, and Memory – 3 credits

Coordinator: Arjan Blokland, Neuropsychology & Psychopharmacology (FPN), Phone 38 81903, 40 Universiteitssingel East, Room 2.731, E-mail: a.blokland@psychology.unimaas.nl

Description of the Course
There has been a rapid increase in our understanding of the basic mechanisms underlying the consolidation of new information and its later 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 both in terms of biology and cognition. Also, the influences of drugs and circumstances that lead to decreased efficiency of information processing are discussed in depth.

Literature
Recent journal articles and book chapters.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written exam with open questions.

447NP Executive Functions and Control of Action – 3 credits

Coordinator: Eric Vuurman, Psychiatry & Neuropsychology (FHML) , Phone 38 81046, 40 Universiteitssingel East, Room 2.747, E-mail: e.vuurman@psychology.unimaas.nl

Description of the Course
The course presents multidisciplinary information from experimental psychology, neuropsychology, cognitive neuroscience and related disciplines. Various techniques and theoretical models are presented and evaluated, and the neuroscientific basis of the behavioural and cognitive functions is discussed. A key element in our current understanding of behavioural organization is cognitive control. At present, a redefinition of related concepts (such as inhibition, working memory and executive functioning) is taking place, based on insights from cognitive neuroscience. Throughout the course, emphasis will be on mechanisms of attention, working memory, cognitive shifting, preparation for action, sensorimotor integration, behavioural planning, and monitoring. Various experimental approaches are evaluated. Experts in the field of executive and motor control research will present their current work and students will be able to discuss prepared papers and topics with them.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written assignment.

448NP Neuropsychiatric Disorders – 3 credits

Coordinator: Bart Scholtissen, Psychiatry & Neuropsychology (FHML), Phone 38 84100, 12 Dr. Tanslaan, Room 4.E3.007, E-mail: b.scholtissen@np.unimaas.nl

Description of the Course
The course covers main findings and controversies related to neuropsychiatric disorders with emphasis on brain mechanisms, behavioural and cognitive dysfunction. Both measures used to evaluate biological variables, techniques relevant for assessment of behavioural and cognitive problems are presented. Disorders on the interface between neuropsychiatry and cognitive/behavioural neurology are discussed. Theories related to dysfunctional brain structures and their relations are presented, with an emphasis on circuits in which prefrontal and temporal structures participate. Dysfunctions on the level of neurotransmitter are presented as well as neuroimaging methods (PET, SPECT, fMRI) used to evaluate changes in metabolism.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written assignment.

449NP Neuropsychopharmacology – 3 credits

Coordinator: Jan Ramaekers, Neuropsychology & Psychopharmacology (FPN), Phone 38 81951, 40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl

Description of the Course
This course addresses the influence of drugs upon normal functioning and disease states.
Neurobiological and neurochemical mechanisms are presented with the aim to deepen the insight into the various mechanisms of drug action. Major drug classes are reviewed which are used frequently in the treatment of mental disorders and neurological disease, but also other classes of drugs which have side-effects on the central nervous system. Other topics in this course are pharmaco-epidemiology,

pharmaco-fMRI, experimental designs used in treatment studies, drugs of abuse, and recreational drugs.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written assignment.

406RM Advanced Statistics I – 2 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread.

During the first semester, participants will be given an in-depth training in standard statistical methods such as factorial ANOVA for between- and within-subject designs, multivariate ANOVA, discriminant analysis, and multiple regression. Background knowledge of balanced two-way factorial ANOVA and multiple regression will be assumed, and these methods will be briefly reviewed. The following advanced topics will be covered in six units: unbalanced factorial designs, repeated measures ANOVA for within-subject designs, covariates in between-subject and within-subject designs, contrast analysis in ANOVA, interaction, nonlinearity and dummy coding in regression, collinearity and residuals checks, data transformation, multivariate ANOVA and discriminant analysis.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM. Howell (2007), Fox (1997) and Kleinbaum (1998) give a fair impression of the content and level of Part 1 of the course.

References

- Fox, J. (1997). *Applied regression analysis, linear models, and related methods*. Thousand Oaks (CA): Sage;
- Howell, D.C. (2007). *Statistical methods for psychology* (6 th Ed.). Belmont (CA): Thomson/Wadsworth;
- Kleinbaum, D.G., Kupper, L.L., Muller, K.E., & Nizam, A. (1998). *Applied regression analysis and other multivariable methods* (3rd Ed.). Pacific Grove (CA): Brooks/Cole.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach

Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

407RM Advanced Statistics II – 3 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread.

During the second semester, five units give an introduction to two advanced methods of analysis that are becoming increasingly important in psychological research. The first three units are devoted to mixed (multilevel) linear regression for nested designs and longitudinal studies, starting with so-called marginal models for repeated measures as a flexible alternative to repeated measures ANOVA in case of missing data or within-subject covariates, and ending with random effects models for repeated measures and nested designs. Structural equation modelling (SEM, sometimes called LISREL) is covered by two units, with an emphasis on causal modelling in nonrandomized studies. Finally, the topic of optimal design and sample size is introduced in a sixth unit.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS or LISREL) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach
Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

541NP Cognitive Development – 3 credits

Coordinator: Petra Hurks, Neuropsychology & Psychopharmacology (FPN), Phone 38 84269, 40 Universiteitssingel East, Room 2.747, E-mail: pm.hurks@psychology.unimaas.nl

Description of the Course
This course focuses on brain-behaviour relationships in children and adolescents. It addresses the range from 'normal', 'borderline pathology', via focused and selective problems, to children with neurodevelopmental or neuropsychiatric diseases. A thorough understanding of normal cognitive development is essential before issues in abnormal development may be considered. What neurobiological or psychosocial mechanisms can be identified that may lie at the basis of this difference between normal and abnormal development? Relevant theories, state-of-the-art research, and clinical approaches (e.g., treatment protocols) will be evaluated while addressing this question. In addition, students will be broadly acquainted with typical research methods that are custom in the area of cognitive development, such as cross-sectional and longitudinal designs, and the statistical strategies that are used to make inferences from such studies.

Literature
Journal articles and book chapters.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written assignment and oral presentation.

542NP Stress, the Brain and Psychopathology– 3 credits

Coordinator: Rob Markus, Neuropsychology & Psychopharmacology (FPN), Phone 38 82474, 40 Universiteitssingel East, Room 3.777a, E-mail: r.markus@psychology.unimaas.nl

Description of the Course
It has become increasingly clear that stress is one of the most important triggers for cognitive-affective and/or psychiatric disorders including depression, anxiety, schizophrenia and dementia. In addition, a tremendous amount of biological and cognitive-psychological research has been conducted on the onset and course of such stress-related disorders. Cognitive-oriented psychologists have shown that the chance of developing stress-related complaints is amplified by the utilization of negative and

dysfunctional -stress-inducing- thoughts, whereas biological-oriented psychologists and psychiatrists particularly emphasize the importance of biochemical brain dysfunction. Yet, in spite of intensive research during the past decades, unidirectional biological and cognitive achievements did not yet lead to sufficient conclusions about critical psychobiological risk factors involved in stress-related psychopathology. In addition, and contrary to a one-dimensional approach, this course will concentrate on mutual interactions between stress and the human brain in explaining and defining enhanced susceptibility for stress related cognitive-affective complaints and psychiatric disorders.

Literature
Journal articles and book chapters, available on EleUM.

Instructional Approach
Weekly lectures by experts in this field, tutorial group meetings (oriented around different themes and each kicked off by means of an oral presentation by students), theme based research excursions.

Form of Assessment
Written exam with open questions.

4.3 Skills training

451NP Neuropsychological Assessments – 2 credits

Coordinator: Jeanette Dijkstra, Psychiatry & Neuropsychology (FHML), Phone 38 74117, 12 Dr. Tanslaan, Room 4.G4.034, E-mail: j.dijkstra@np.unimaas.nl

Description of the Course
The aim of this skills training is to acquire basic skills necessary for collecting neuropsychological data from subjects and patients.

The courses Brain Damage and Behavioural Disorders run parallel and offer one combined practical: Neuropsychological Assessment I. Elements of psychological research in relation to 1) intellect, 2) cognition, 3) mood, 4) personality and 5) behaviour will be discussed. It starts with an introductory lecture in which the principles and interpretation of neuropsychological diagnostics are discussed, illustrated with case studies. Tests used in the practical are demonstrated, including their interpretation and how to report the outcomes. Next, students are trained in neuropsychological history taking, which they will perform on trained actors who simulate different kinds of neurological or neuropsychiatric pathology. Furthermore, students are trained in behavioural observation by watching the neuropsychological examination of different patients on video. Finally, using data from the patient history, test observation and examination results, each student writes a comprehensive neuropsychological report,

which is graded. In a final tutorial group meeting, specific problems of the assessments and the individual reports are discussed.

Instructional Approach
Tutorial group meetings.

Form of Assessment
Written patient report.

452NP Basic Cognitive Psychological Skills – 2 credits

Coordinator: Eric Vuurman, Psychiatry & Neuropsychology (FHML), Phone 38 81046, 40 Universiteitssingel East, Room 2.747, E-mail: e.vuurman@psychology.unimaas.nl

Description of the Course
This course focuses on the acquisition of basic skills needed in cognitive performance research. The course is centred around a psychological experiment studying the detrimental effects of arousal manipulation (environmental noise) on cognitive processing. Students will learn how to perform a field experiment and go through the various stages necessary to acquire the data and analyse and report the results. Students will be required to recruit a small number of subjects and 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. Furthermore, an overview of techniques and tests will be given that are currently used to evaluate performance in a number of cognitive domains, such as language, perception, attention and executive functions.

Instructional Approach
Formal introduction in the first week, followed by 6 weeks in which the experiment is carried out and reported. This will be done by pairs of students. Three meetings Each week a 2 hour meetings will be staged with the entire group to discuss data analysis and report writing and to provide feedback and discussion of the results.

Form of Assessment
Research report on the experiment.

408RM Neuroanatomy – 1 credit

Coordinator: Jos Prickaerts, Neuropsychology & Pharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course
The aim of the training is to become acquainted with the neuroanatomical terminology and to gain insight into the spatial and functional organization 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 one to directly link specific neurological or psychiatric disorders to particular brain areas. After a short theoretical introduction the students 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.

Instructional Approach
Almost exclusively practical: dissection of sheep brain, studying of microscopical slices of rat brain, working with plastic human brain models, CD-ROM programs, and textbook.

Form of Assessment
Pass/fail score based on written exam with open questions.

454NP E-prime – 1 credit

Coordinator: Anita van Oers, Neuropsychology & Psychopharmacology (FPN), Phone 38 81035, 40 Universiteitssingel East, Room 2.735, E-mail: anita.vanoers@np.unimaas.nl

Description of the Course
E-Prime is a comprehensive suite of applications offering audited millisecond-timing precision, enabling researchers to develop a wide variety of simple to complex experiments in a user-friendly environment that can be implemented with randomized or fixed presentation of text, pictures and sounds (individual or simultaneous). During the training you will learn to program your own experiment in using both visual and auditory stimuli that will be presented randomly. Having finished this training you will be able to test your own research ideas in reality.

Literature
Handouts with literature and exercises.

Instructional Approach
Practical computer sessions.

Form of Assessment
Programming exercises throughout the training.

455NP Psychophysiological Skills – 1 credit

Coordinators: Pascal van Gerven, Neuropsychology & Psychopharmacology (FPN), Phone 38 84512, 40 Universiteitssingel East, Room 2.742, E-mail: p.vangerven@psychology.unimaas.nl; Eric Vuurman, Psychiatry & Neuropsychology (FHML), Phone 38 81046, 40 Universiteitssingel East, Room 2.747, E-mail: e.vuurman@psychology.unimaas.nl

Description of the Course
The goal of this training is to acquire basic skills in major peripheral psychophysiological measures. The relation between cognitive and psychophysiological variables, such as memory load, mental effort, and attention, will be made clear. In addition, general methodological concepts and issues, such as tonic (baseline) activity, phasic activity, and the so-called 'law of initial value', will be discussed.

The training consists of four meetings. In the first meeting, an overview will be presented of the psychophysiological methods that are relevant to neuropsychology. The second meeting is devoted to major domains in psychophysiology, such as heart rate (variability), blood pressure, galvanic skin responses, and pupillometry (i.e., pupil dilation). In this meeting, students acquire basic hands-on experience in the laboratory. The third and fourth meetings are practical sessions, in which an existing dataset will be provided to analyze and report on.

Instructional Approach
Lecture, demonstrations and practical sessions.

Form of Assessment
Short written research report.

458NP Neuropsychology in Practice: From Test Results to Report and Advice – 2 credits

Coordinators: Bart Scholtissen, Psychiatry & Neuropsychology (FHML), Phone 38 84100, 12 Dr. Tanslaan, Room 4.E3.007, E-mail: b.scholtissen@np.unimaas.nl;
Renate de Groot, Psychiatry & Neuropsychology (FHML), Phone 38 81038, 12 Dr. Tanslaan, Room 4.E3.007, E-mail: rhm.degroot@np.unimaas.nl;
Rudolf Ponds, Psychiatry & Neuropsychology (FHML, University Hospital Maastricht, Maastro Clinic), 12 Dr. Tanslaan, Room 4.G3.061, Phone 38 76044 ,
E-mail: r.ponds@np.unimaas.nl

Description of the Course
The aim of this skills training is to learn to integrate several aspects of a neuropsychological examination. This kind of examination can be used both in the clinical setting as well as 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, theoretical and practical knowledge will be presented in the current skills training in order to achieve the above-mentioned aim. Note that the major focus of this skills training is not testing a patient or a subject participating in a study, but interpretation of the acquired 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 practice with performing and interpreting several 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 than can be expected will also be addressed.
During meetings three to eight, clinical experts will lead the sessions; 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 lie on the interpretation of the observed patient material.

Instructional Approach
Interactive lectures, video material, and group discussions.

Form of Assessment
Report writing, presentations and active participation.

551NP ERP (Course Option A) – 2 credits

Coordinator: Fren Smulders, Cognitive Neuroscience (FPN), Phone 38 81909, 40 Universiteitssingel East, Room 3.744, E-mail: f.smulders@psychology.unimaas.nl

Description of the Course
The aim of this training is to give the students hands-on experience with the experimental design, data acquisition and analysis of EEG/ERP experiments. First, students will be introduced into the possibilities and limitations of EEG and ERP research: how to set up a proper experimental paradigm, and how to interpret the resulting data. Furthermore, students receive a general introduction into basic signal analysis, and into some specific analyses of EEG and ERP, such as artefact management, spectral analysis, filtering, ERP averaging, etc. After that, there will be a hands-on training in smaller groups in running an ERP experiment, including electrode application, minimizing artefacts, and hygiene and safety in the lab. A simple experimental paradigm will be used that gives interesting and reliable results. Data processing will include various EEG analyses that are commonly used, e.g., analyses in the time and frequency domain. Each group will report and discuss their findings.

Literature
- Handbook;
- Various journal articles.

Practical
Practical sessions for EEG measurement and data analysis.

Instructional Approach
Tutorial group meetings, lectures, a lab session, and computer sessions.

Form of Assessment
Short report (2-4 pages) in abbreviated article form.

552NP Neuropsychological Rehabilitation (Course Option B) – 1 credit

Coordinator: Caroline van Heugten, Psychiatry & Neuropsychology (FHML), Phone 38 84091, 12 Dr. Tanslaan, Room 4.E3.017, E-mail: c.vanheugten@np.unimaas.nl

Description of the Course
The aim of this training is to provide an overview of designs used in clinical and experimental neuropsychological rehabilitation and into the diverse possibilities with respect to clinical rehabilitation and research into the effectiveness of rehabilitation.

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'. Through the meetings, an elaboration will be given on the basic premises, and the basic 'pitfalls' in this type of research and the possibilities to circumvent these problems by proper choice of approach and design. Various designs are compared with 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 (e.g. cognitive training, psycho education etc) will be discussed and practical skills will be trained with respect to rehabilitation principles.

Instructional Approach
Group meetings including lectures, demonstrations, practicals and working group discussions.

Form of Assessment
Presentation and 2 short papers.

553NP Data management (Course Option B) – 1 credit

Coordinator: Arjan Blokland, Neuropsychology & Psychopharmacology (FPN), Phone 38 81903, 40 Universiteitssingel East, Room 2.731, E-mail: a.blokland@psychology.unimaas.nl

Description of the Course
The aim of this skills training is to acquire basis skills in data management. After doing your scientific research, data have to be prepared for data analysis. Usually, the format of the data acquisition software does not match the requirements of sophisticated statistical software packages (e.g., SPSS or SAS). In this skills training, students will be familiarized with the software package Excel. This program has many features that can be very helpful to overcome time-consuming formatting of databases. First, an introduction of the basic features of Excel will be presented. Being familiar with these basic aspects is necessary to understand copying of values and formulas (relative

or absolute). Also, Excel enables you to make various types of graphs, which can be very helpful for quickly visualizing your data. A fourth aspect that will be dealt with is pivot tables, a very helpful tool to organise your data in any manner you find most suitable for your further data handling. A final option that will be dealt with is the use of macros. These are especially helpful when repetitious changes in layout or recalculations have to be made.

Instructional Approach
Group meetings in which direct demonstrations are given via PC/beamer. Students may provide the instructor data to be used as examples.

Form of Assessment
Written assignment.

4.4 M&T workshops

461NP Research Theory and Designs – 1 credit

Coordinator: Bart Scholtissen, Psychiatry & Neuropsychology (FHML), Phone 38 84100, 12 Dr. Tanslaan, Room 4.E3.007, E-mail: b.scholtissen@np.unimaas.nl

Description of the Course
The aim is to provide the student with a basic understanding of theoretical and practical issues that are important for the execution of 'evidence-based' (intervention) research in the domain of brain & behaviour. This workshop will elaborate on basic issues of research theory and methodology of scientific research with a focus upon the domain of brain and behaviour. The student will get insight into issues involving 'the empirical cycle' and basic issues of science. Several methodological approaches in the domain of neuropsychology, neuropsychiatry, cognitive and behavioural neuroscience are presented and discussed. There are four sessions. The first three meetings of the workshop will be led by different senior researchers, who will each focus on different aspects of theory and methodology in the domain of brain and behaviour research. These three meetings will have an identical format, each consisting of two main parts. The first part is a lecture, which will focus on aspects of approaches, conceptualizations, and theoretical background in the various domains of neuropsychological research (e.g. cognitive, experimental, clinical, medical, developmental neuropsychology, cognitive neuroscience, basic neuroscience and clinical neuroscience). Furthermore, issues related to causality (e.g., causal or correlative inferences), issues related to the multifactorial nature of cognitive and behavioural functioning (e.g., biological versus environmental determinants), and issues related to possibilities for execution of neuropsychological research (designs, short overview of statistical approaches) will be discussed. During the second part, the focus will concern practical aspects of research theory and design. During the final session, students' presentations will form the basis of a group discussion on research theory and design.

Instructional Approach
Lectures, discussion groups, formal presentations, use of research reports and publications as 'discussion material'.

Form of Assessment
Individual presentation.

463NP Neuropsychological Assessment in Children – 1 credit

Coordinators: Peter Stiers, Neuropsychology & Psychopharmacology, Phone 38 81514, 40 Universiteitssingel East, Room 2.755, E-mail: peter.stiers@psychology.unimaas.nl

In this workshop the aim 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. Cognitive tests for children will be presented during the workshop. Models of cognitive psychology will be reviewed in the context of developmental disorders, including models of memory, attention, language, information processing, and intelligence. The focus is on test paradigms from the field of child neuropsychology used to probe domain-specific functions.

Instructional Approach
Practical in neuropsychological assessment.
Distinguishing neurological, psychiatric and test-taking conditions: presentations by clinical neuropsychologists, discussing clinical cases.

Form of Assessment
Interpretation of neuropsychological test-data in a short paper.

409RM Research Ethics – 1 credit

Coordinator: Eef Theunissen, Neuropsychology & Psychopharmacology (FPN), Phone 38 81940, 40 Universiteitssingel East, Room 2.743, E-mail: e.theunissen@psychology.unimaas.nl

Description of the Course
Students will learn to think critically about ethical dilemmas that psychologists encounter when exercising their profession. This workshop will discuss legal and ethical conflicts that are involved in psychological research and clinical practice. Students will be introduced to the ethical and legal rules and boundaries in human research, and to the organizations and institutes supervising the application of these rules.

Psychologists always need to make sure that they carry out their work in an ethical and legally sound way. However, there is often a conflict of interests of the involved parties. In all circumstances, however, it is the psychologist's primary task to secure the

patients/participants welfare and to keep risks at a minimum. Therefore psychologists should know which ethical aspects are of importance and which laws and rules need to be applied and also which institutions supervise on the application of these rules. In addition, these aspects should be taken into consideration when writing and submitting a research proposal to an ethical commission.
The following topics will be discussed:

- Examples of ethical and legal failings
- Necessity of ethical and legal rules
- Different guidelines: declaration of Helsinki, guidelines for Good Clinical Practice, etc.
- Working with participants/patients: rights and duties, confidentiality, data processing and storage, etc.
- Applying ethical and legal rules in e.g., protocol, case report form, informed consent, etc.
- Ethical and legal reviews

Instructional Approach
Discussion groups, lectures.

Form of Assessment
Individual presentation.

465NP Epidemiology – 1 credit

Coordinator: Marcus Huibers, Clinical Psychological Science (FPN), Phone 38 81487, 40 Universiteitssingel East, Room 1.349, E-mail: m.huibers@DMKEP.unimaas.nl

Description of the Course
Epidemiology often is referred to as 'quantative medicine'. In general, epidemiology deals with methodology issues in the field of health research, including mental health. Students in this workshop will be introduced to the principles of epidemiological research. Topics that are covered in the workshop include: frequency measures, association measures, sources of bias, validity issues, cohort studies, clinical trials, and systematic reviews. The theory of epidemiology will be studied and applied in interactive workshop sessions.

Instructional Form
Format of the workshop is a series of four 2-hour sessions and a final presentation session. Starting each session, the lecturer will give a 30-minute presentation of the topics covered in that session, followed by a 30-minute discussion of these topics. The second hour will be spent on group assignments under supervision of the lecturer.

Literature
Required reading will consist of several chapters from a clinical epidemiology textbook and additional research papers combined in an e-reader. In addition to the workshops sessions, students are expected to spend at least 5 hours a week on reading and homework assignments.

Form of Assessment
Group presentation of research proposal

466NP Imaging – 2 credits

Coordinator: Vincent van de Ven, Cognitive Neuroscience (FPN), Phone 38 84510, 40 Universiteitssingel East, Room 4.761, E-mail: v.vandeven@psychology.unimaas.nl

Description of the Course
This workshop is intended to provide:
- introductory knowledge of the basic principles underlying the most common imaging methods
- appreciation of potentialities and limitations of various neuroimaging methods in studying human brain functions and dysfunctions.

The investigation of human brain anatomy and functions using a range of imaging methods represents the most influential development in Psychology in the last years. In this workshop, essential facts about all major structural and brain mapping techniques, including Positron Emission Tomography (PET) and SPECT, structural and functional Magnetic Resonance Imaging (fMRI) will be reviewed. The focus will be on the strengths and weaknesses of each of these methods and on the description of relevant applications in the normal and pathological brain.

Instructional Approach
Lectures, paper discussion, and demonstration visit to the MRI scanner.

Form of Assessment
Written exam with open questions.

467NP Psychopharmacology – 1 credit

Coordinator: Wim Riedel, Neuropsychology & Psychopharmacology (FPN), Phone 38 84270, 40 Universiteitssingel East, Room 2.755, E-mail: w.riedel@psychology.unimaas.nl

Description of the Course
The workshop aims to present Psychopharmacology in a broad sense. The multidisciplinary nature of psychopharmacology encompasses pharmacology, molecular biology, genetics, physiological psychology, experimental, clinical and cognitive neuropsychology and biological psychiatry. The emphasis will be on understanding drug development, drug action, drug research, animal and human pharmacological models of clinical disorders, experimental / clinical trial design and the development of biomarkers, real measures and surrogate measures of drug efficacy.

The course will focus on major areas in Psychopharmacology such as Addiction, Depression, Anxiety, Psychosis and Cognition. These areas will be illuminated form

both the perspectives of basic neuroscience including animal subjects as well as experimental and clinical human psychopharmacology.

Instructional Approach
Each half-day the programme will consist of a sequence of three elements:
- Key note Lectures by Internationally renowned speakers in the morning
- Presentations of recent research by PhD students or junior researchers
- Forum report by students about the poster-presentations

The workshop offers plenty of opportunity for the Master's student to interact with PhD students, junior and senior staff and the invited guest speakers.

Form of Assessment
Short presentation in the forum discussion.

501RM Protocol Writing – 2 credits

Coordinator: Caroline van Heugten, Psychiatry & Neuropsychology (FHML),
Phone 38 84091, 12 Dr. Tanslaan, Room 4.E3.017, E-mail: c.vanheugten@np.unimaas.nl

Description of the Course
This training course addresses the different phases of writing scientific protocols and research reports. The course covers all of the stages involved in the creation of a piece of writing; from rough working documents and prewriting, to editing draft texts and making final revisions. Since the course precedes the Master's research and thesis stage, the primary focus is on the development of skills that will enable the writing of a research proposal and Master's thesis. The course covers a variety of topics related to scientific writing, such as different protocol types, the IMRAD-format, APA style and format, citations and references, plagiarism, project planning and applying on-line writing guides.

Instructional Approach
A combination of lectures, take home writing assignments and take home review assignments.

Form of Assessment
Written research proposal.

4.5 Research and Clinical internship and Master's and Minor's thesis

502RM Research internship and Master's thesis – 30 or 50 credits
Coordinator: Arie van der Lugt, Cognitive Neuroscience, Phone (043) 38 82347, Universiteitssingel 40 east, Room 2.741, E-mail: arie.vanderlugt@psychology.unimaas.nl

Description of the internship
The second part of the year of the Research Master's programme is devoted to arranging and conducting a research internship. As a result of the many international research contacts our faculty members have established, a substantial number of students will conduct their research internship abroad. Students finalize the Master's programme by writing a thesis on their internship.

The internship can be done at Maastricht University or at external research institutes. In all cases, your research proposal and Master's thesis will be evaluated by two assessors. At least one assessor has to be a member of Maastricht University. The other assessor might be a researcher at, for example, the institute where your data are collected.
A detailed guide on research internships and Master's thesis can be found on Blackboard: EleUM.unimaas.nl/Students Research Master Faculty of Psychology and Neuroscience.

For possible internships abroad contact the research internship coordinator. For practical information about international research internships (e.g., scholarship, visa), contact the International Office, Phone (043) 38 81920, 40 Universiteitssingel East, Room 5.749, E-mail: international@psychology.unimaas.nl

Form of Assessment
NP student can also choose to conduct both a research and a clinical internship, preferably at the same institution (see Clinical internship and Minor's thesis below). In this case, the research internship will be assigned 30 credits: 20 for the practical activities and research proposal (pass/fail) and 10 for the Master's thesis (graded). For students who do not complete a clinical internship and Minor's thesis (see below), the research internship will be assigned 50 credits: 36 credits (assessed pass/fail) for the research activities, including the proposal, and 14 credits (graded assessment) for the Master's thesis.

503RM Clinical internship and Minor's thesis – 20 credits

Coordinator: Peter Stiers, Neuropsychology & Psychopharmacology, Phone 38 81514, 40 Universiteitssingel East, Room 2.755, E-mail: peter.stiers@psychology.unimaas.nl

Description of the internship

Students specializing in Neuropsychology may choose to conduct a 13 week clinical internship in an approved setting, as an elective. The clinical internship can be conducted in conjunction with the research internship or separately. Students are required to submit an additional 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 organization and practice of mental health care, as well as basic experience in clinical diagnosis and therapeutic interventions. For neuropsychology students who choose to do a clinical internship, the Minor's internship and thesis will be assigned 20 credits and the research internship and thesis 30 credits.

A detailed guide on clinical internships and Minor's thesis can be found on Blackboard: EleUM.unimaas.nl/Students Research Master Faculty of Psychology and Neuroscience. Although not required to do so by 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 2 weeks.

Form of Assessment

The Minor's internship and thesis will together be assigned 20 credits:16 credits for clinical activities and clinical research proposal (pass/fail assessment) and 4 credits for the Minor's thesis (graded assessment)

4.6 Schedule Neuropsychology

Period	YEAR 1
Period 0, 1 week 1th September – 5th September 2008	Introduction Week
Period 1, 7 weeks 8th September – 24th October 2008	**405RM Interdisciplinary Perspectives** (total of 3 credits)
	Core Courses: 441NP Brain Damage (4 credits), 442NP Behavioural Disorders (4 credits) & 406RM Advanced Statistics I (total of 2 credits)
	Skills Training: 451NP Neuropsychological Assessments (2 credits)
	404RM Colloquia (total of 5 credits)

Period 2, 7 weeks 27th October – 12th December 2008	**405RM Interdisciplinary Perspectives**
	Core courses: 443NP Arousal and Attention(4 credits), 444NP Cognitive Aging (4 credits), & 406RM Advanced Statistics I
	Skills training: 452NP Basic Cognitive Psychological Skills (2 credits)
	404RM Colloquia
Christmas break	
Period 3, 4 weeks 5th January – 30th January 2009	**Core course:** 445NP Biopsychology (3 credits) & 406RM Advanced Statistics I
	Workshop: 461NP Research Theory and Designs (1 credit)
	Skills Training: 408RM Neuroanatomy (1 credit)
	404RM Colloquia
Period 4, 4 weeks 2nd February – 6th March 2009	**Core course:** 446NP Brain, Learning and Memory (3 credits) & 407RM Advanced Statistics II (total of 3 credits)
	Workshop: 463NP Neuropsychological Assessment in Children (1 credit)
	Skills training: 454NP E-prime (1 credit)
	404RM Colloquia
Period 5, 4 weeks 9th March – 3th April 2009	**Core course:** 447NP Executive Function and Control of Action (3 credits) & 407RM Advanced Statistics II
	Workshop: 409RM Research Ethics (1 credit)
	Skills training: 455NP Psychophysiological Skills (1 credit)
	404RM Colloquia
Period 6, 4 weeks 13th April – 15th May 2009	**Core Course:** 448NP Neuropsychiatric Disorders (3 credits) & 407RM Advanced Statistics II
	Workshop: 465NP Epidemiology (1 credit)
	Skills training: 458NP Neuropsychology in Practice: From Test Results to Report and Advice (total of 2 credits)
	404RM Colloquia
Period 7, 4 weeks 18th May – 19th June 2009	**Core course:** 449NP Neuropsychopharmacology (3 credits)
	Workshop: 467NP Psychopharmacology (1 credit) & 466NP Imaging (2 credits)
	Skills training: 458NP Neuropsychology in Practice: From Test Results to Report and Advice
	404RM Colloquia
Period	**YEAR 2**
Periode 1, 4 weeks dates to be announced	**Core course:** 541NP Cognitive Development (3 credits)
	Workshop: 501RM Protocol Writing (total of 2 credits)
	Skills training: 551NP ERP (course option A, 2 credits) & 552NP Neuropsychological Rehabilitation (course option B, 1 credit)
Period 2, 4 weeks dates to be announced	**Core course:** 542NP Stress, the Brain and Psychopathology (3 credits)
	Workshop: 501RM Protocol Writing
	Skills training: 551NP ERP (course option A) & 553NP Data Management (course option B, 1 credit)
32 weeks	**Research internship & Master's thesis** (30 credits)
	Clinical internship & Minor's thesis (20 credits)

Specialization Psychopathology (PP)

The specialization in Psychopathology provides students the theoretical background and clinical insights necessary for future research in the various fields related to mental health: in particular experimental psychopathology, clinical psychology, and psychiatry. The 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 coverage of specific disorders, 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 research experience in health care settings. The possibility of designing individualized electives or choosing electives from other tracks affords students not only an in-depth understanding of the multidisciplinary approaches to psychopathology but also the opportunity to tailor the programme along the lines of their personal research interests.

Psychopathology Coordinator:

Nancy Nicolson, Psychiatry and Neuropsychology, Phone 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl

Colloquia Coordinator:

Anne Roefs, Clinical Psychological Science, Phone 38 82191, 40 Universiteitssingel East, Room 3.747, E-mail: a.roefs@psychology.unimaas.nl

5.1 Interdisciplinary Perspectives

405RM Interdisciplinary Perspectives – 3 credits

Coordinators: Nancy Nicolson, Psychiatry & Neuropsychology (FHML), Phone 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl;
Jan Ramaekers, Neuropsychology & Psychopharmacology (FPN), Phone 38 81951, 40 Universiteitssingel East, Room 2.736, E-mail: j.ramaekers@psychology.unimaas.nl;
Alexander Sack, Cognitive Neuroscience (FPN), Phone 38 84267, 40 Universiteitssingel East, Room 4.765, E-mail: a.sack@psychology.unimaas.nl;
Jos Prickaerts, Neuropsychology & Neuropsychopharmacology (FPN), Phone 38 81026, 40 Universiteitssingel East, Room 2.737, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course

This lecture course, attended by all first-year students, is designed to highlight selected research topics from the perspectives of cognitive neuroscience, fundamental neuroscience, neuropsychology and psychopathology. The aim is to illustrate how the distinct but inter related approaches to questions in the field of brain and behaviour

can enrich our understanding of underlying mechanisms as well as cognitive, emotional and behavioural outcomes in health and disorder.

Instructional Approach
A series of four lectures for each of two broad themes. Faculty members from each of the four specializations will present lectures in successive weeks.
Required readings, assigned by each lecturer, will be made available prior to the first meeting of a new theme.

Form of Assessment
Following each series of four lectures, an open book exam will be given, covering material from all of the assigned readings and lectures for that theme. The final pass/fail score is based on the average grade obtained on the two exams.

5.2 Core courses

471PP Anxiety Disorders – 3 credits

Coordinator: Arnoud Arntz, Clinical Psychological Science (FPN), Phone 38 81606, 50 Universiteitssingel, Room 1.308, E-mail: arnoud.arntz@MP.unimaas.nl

Description of the Course
This seminar covers the main findings and controversies related to the anxiety disorders. While treatment issues are dealt with, the emphasis of the course is on biological and psychological mechanisms that are involved in the origin and maintenance of the various anxiety disorders.

Both in North America and in West Europe anxiety disorders are the largest group of mental disorders for which patients are referred and anxiety disorders are relatively well studied, well understood and treatment outcome is relatively favourable. As to the etiology the focus will be on the role of life events, genetics and stable personality features in the origin of anxiety disorders. With regards to the maintenance of the disorders the course concentrates first of all on anxiety related aberrations in the processing of negatively valenced information. Such selective processing is studied with regards to perception, attention, memory, reasoning and interpretation. Furthermore students study the maintaining role of 'safety behaviours': attempts to prevent a feared catastrophe with the ironic effects that anxiety is reinforced. Throughout the course the role of the various neurotransmitters in the anxiety disorders are highlighted. Students are trained in the use of various experimental (laboratory) paradigms that are typically employed in the study of the cognitive psychology/biological psychology of anxiety disorders: Carbon dioxide inhalation, dot-probe methodology, various tests to measure interpretation biases etc.

Instructional Approach
The seminar consists of interactive meetings, which consist of lectures, group discussions, and student presentations.

Form of Assessment
Written papers and presentations.

472PP Mood Disorders – 3 credits

Coordinator: Frenk Peeters, Psychiatry & Neuropsychology (FHML), Phone 38 75696, 12 Dr. Tanslaan, Room 4.G4.035, E-mail: f.peeters@sp.unimaas.nl

Description of the Course
This course is intended to give the student an overview of current concepts and research in the field of mood disorders. In the last decades, it has become increasingly clear that mood disorders are chronic psychiatric disorders characterized 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.

Instructional Approach
The seminar consists of interactive meetings, including lectures, group discussions, and student presentations. Additionally, students will write a research proposal that will be presented during the last meeting.

Form of Assessment
Written research proposal and oral presentation of this proposal.

473PP Stress and Trauma – 3 credits

Instructor: Nancy Nicolson, Psychiatry & Neuropsychology (FHML), Phone 36 88684, Vijverdal, Room SN2.068, E-mail: n.nicolson@sp.unimaas.nl

Description of the Course
This seminar familiarizes students with key concepts and controversies in current stress research; with an emphasis on the role stress is thought to play in the etiology, pathophysiology, and the course of psychiatric and psychosomatic disorders. The following issues will be discussed:
- What is stress? Theoretical background and translation of the construct into research design and methods;

- Adaptation to stress: normal psychological and biological processes, allostasis;
- Experimental paradigms;
- Does stress cause psychiatric / psychosomatic disorders? Evidence and possible pathways;
- Long-term effects of adverse early experience: what can we learn from animal models and epidemiological studies?;
- Why are some individuals more vulnerable (or more resilient) to stress than others? Genes and environment;
- Post-traumatic stress disorder: controversies concerning the concept of trauma, epidemiology, biological and psychological processes, treatment and prevention.

Instructional Approach
The seminar consists of interactive meetings, including lectures, group discussions, and student presentations.

Form of Assessment
Participation, editorial review, presentation, and research proposal.

474PP Developmental Psychopathology – 3 credits

Instructor: Kathleen Restifo, Clinical Psychological Science (FPN), Phone 38 81733, 50 Universiteitssingel, Room 1.354, E-mail: k.restifo@dmkep.unimaas.nl

Description of the Course
The aim of this seminar is to introduce students to the field of developmental psychopathology, an interdisciplinary field which employs the framework of normal development to understand psychopathology as it unfolds throughout the lifespan. Developmental psychopathology draws on research from developmental and clinical psychology, behavioural genetics, neurology, neuropsychology, and psychiatry among other fields, and attempts to integrate concepts, methods and findings from these fields into models which attempt to explain how psychopathology develops, including etiological factors and causal pathways. The research methods employed can include cross-sectional or longitudinal designs; normal, high risk or clinical samples, prevention and treatment studies, neurodevelopmental studies, and behavioural genetic studies, to name a few.

The focus of this seminar will be to examine child psychopathology through the lens of developmental psychopathology. It is not possible to systematically cover all aspects of developmental child psychopathology in one seminar. Rather, the aims are as follows:

1) Introduce the major theories and research methods, and the variety of disciplines involved.
2) Critically analyse recent and/or influential research studies in four broad areas of psychopathology: 1) anxiety, 2) depression, 3) conduct disorders and 4) autism. Treatment approaches will be discussed in the last class.
3) Critically examine competing models of the interaction between etiological factors

in development of psychopathology: genetic factors, family factors and parenting.
4) Examine the relationship between normal developmental processes/pathways and development of psychopathology; for example, between attachment and psychopathology.

Literature
- Basic textbooks (available through the Study Landscape);
- Cicchetti, D., & Cohen, D.J. (2006). *Developmental psychopathology* (2nd Ed.). New Jersey: John Wiley and Sons. Volume 1: Theory and method. Volume 2: Developmental neuroscience. Volume 3: Risk, disorder and adaptation;
- Essau, C. (Ed.) (2006). *Child and adolescent psychopathology: Theoretical and Clinical Applications*. London: Routledge.

Instructional Approach
The seminar consists of two 2-hour interactive meetings per week, including group discussions and student presentations.

Form of Assessment
Grading will be based on a presentation, research paper, and participation in the discussions.

475PP Somatoform Disorders – 3 credits

Coordinator: Johan Vlaeyen, Clinical Psychological Science (FPN), Phone 38 81601, 50 Universiteitssingel, Room 1.336, E-mail: j.vlaeyen@dep.unimaas.nl and University of Leuven, E-mail: johan.vlaeyen@psy.kuleuven.be

Description of the Course
This seminar familiarizes the student with key concepts and controversies in current research in somatoform disorders, with an emphasis on the cognitive and behavioural mechanisms that play a role in the aetiology and maintenance of chronic pain and fatigue.

Topics
- Overview of somatoform disorders
- Biomedical and biopsychosocial models of health and illness
- Controversies in the assessment of physical complaints
- Common mechanisms of unexplained complaints: a symptom perception approach
- The role of catastrophic misinterpretations of bodily sensations
- The role of attribution, attention, and affect
- Coping or acceptance
- Cognitive-behavioural treatments of somatoform disorders
- Self-management strategies

Literature
For each meeting and/or topic a selected number of research papers will be suggested, and made available through EleUM.

Instructional Approach
The seminar consists of interactive meetings, which consist of lectures, meetings with international experts, group discussions, and student presentations. Students work in teams of two on an 8-10 page research paper. The final meeting is usually a symposium during which students present their research papers.

Form of Assessment
Participation in discussions, research paper and presentation of the research paper.

476PP Psychosis – 3 credits

Coordinator: Jim van Os, Psychiatry & Neuropsychology (FHML), Phone 38 75443, 12 Dr. Tanslaan, Room 3.G4.044, E-mail: j.vanos@sp.unimaas.nl

This seminar aims to give the student an overview of current thinking and unresolved issues in schizophrenia research. The process of psychotic disorder and psychosis transition has been the subject of intense study in the last decade. Early epidemiological approaches have been complemented with studies of cognition and 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 etiological 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 psychological trauma, and a number of cognitive vulnerabilities in the realm of neuropsychology and social cognition. In addition, it is now increasingly clear that the process of onset of psychosis is associated with neurocognitive changes and progressive sensitization to dopaminergic stimulation, greater quantities of which may predict subsequent brain changes and poorer outcome.

Instructional Approach
The seminar consists of interactive meetings, which consist of lectures, group discussions, and student presentations.

Form of Assessment
Written papers, presentation, and research proposal.

480PP Eating Disorders & Addiction – 4 credits

Coordinator: Anita Jansen, Clinical Psychological Science (FPN), Phone 38 81910, 40 Universiteitssingel East, Room 3.731a, E-mail: a.jansen@psychology.unimaas.nl

Description of the Course

This course aims to give the student a state-of-the-art overview of current thinking and unresolved issues in research on eating disorders and addictive behaviours, with an emphasis on experimental psychopathology research.

Eating disorders and addictive behaviours are among the most prevalent disorders in adolescents and young adults; eating disorders primarily in females and addictive behaviours in males. Eating disorders and addictions share some characteristics, like loss of control and craving. For both types of disorders the exact aetiologies are largely unknown, although it has become evident that a range of factors influence an individual's vulnerability to eating disorders and addictions (ranging from genetic to environmental factors). With respect to these vulnerability factors, some may be specific to one of the disorders, but there may also be more general factors (e.g., behavioural disinhibition, impulsivity, sensation seeking) that make an individual more vulnerable to both eating disorders and addictions.

A first aim of this course is to discuss influential theories and empirical papers about the origin or maintenance of eating disorders and addictions. Second, special attention will be paid to experimental psychopathology research methods as an elegant method to test hypotheses on the origin, maintenance or reduction of these disorders. Third, the gap with clinical practice is scrutinised. What is the best treatment a patient can get? And why is it so difficult to implement the evidence-based treatments in clinical practice?

Instructional Approach

The seminar consists of interactive meetings, which consist of lectures, group discussions, debates and student presentations.

Form of Assessment

Contribution to the group discussions and debates, writing and presentation of 2 short papers (one scientific, one popular science), writing and presenting a review of another student's work.

479PP Psychopathology and the Law – 2 credits

Instructor: Corine de Ruiter, Clinical Psychological Science (FPN), Phone 38 84344, 40 Universiteitssingel East, Room 3.757, E-mail: corine.deruiter@psychology.unimaas.nl

Description of the Course

Psychology and law are fundamentally different disciplines, which have great impact on the work of the forensic psychologist. In this seminar, recent research on forensic psychological issues will be related to actual cases, including video material. Emphasis

will be on the assessment and treatment of mentally disordered offenders, and on the sometimes crucial role the forensic psychologist plays in judicial decision making. In specific, we will pay attention to:
- The concept of criminal responsibility and its assessment
- The relationship between mental disorders and violence; violence risk assessment
- Psychopathy
- Antisocial behaviour in women
- Treatment of sexual offenders

Instructional Approach
The seminar consists of interactive meetings, including lectures, group discussions, and student presentations.

Form of Assessment
Participation in discussions, written paper and presentation with fellow student.

406RM Advanced Statistics I – 2 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread.

During the first semester, participants will be given an in-depth training in standard statistical methods such as factorial ANOVA for between- and within-subject designs, multivariate ANOVA, discriminant analysis, and multiple regression. Background knowledge of balanced two-way factorial ANOVA and multiple regression will be assumed, and these methods will be briefly reviewed. The following advanced topics will be covered in six units: unbalanced factorial designs, repeated measures ANOVA for within-subject designs, covariates in between-subject and within-subject designs, contrast analysis in ANOVA, interaction, nonlinearity and dummy coding in regression, collinearity and residuals checks, data transformation, multivariate ANOVA and discriminant analysis.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM. Howell (2007), Fox (1997) and Kleinbaum (1998) give a fair impression of the content and level of Part 1 of the course.

References

- Fox, J. (1997). *Applied regression analysis, linear models, and related methods.* Thousand Oaks (CA): Sage;
- Howell, D.C. (2007). *Statistical methods for psychology* (6 th Ed.). Belmont (CA): Thomson/Wadsworth;

• Kleinbaum, D.G., Kupper, L.L., Muller, K.E., & Nizam, A. (1998). Applied regression analysis and other multivariable methods (3rd Ed.). Pacific Grove (CA): Brooks/Cole.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach
Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

407RM Advanced Statistics II – 3 credits

Coordinator: Gerard van Breukelen, Methodology and Statistics (FPN), Phone 38 84001, 40 Universiteitssingel East, Room 5.750, E-mail: gerard.vbreukelen@stat.unimaas.nl

Description of the Course
Throughout the course, the General Linear Model will serve as a continuous thread. During the second semester, five units give an introduction to two advanced methods of analysis that are becoming increasingly important in psychological research. The first three units are devoted to mixed (multilevel) linear regression for nested designs and longitudinal studies, starting with so-called marginal models for repeated measures as a flexible alternative to repeated measures ANOVA in case of missing data or within-subject covariates, and ending with random effects models for repeated measures and nested designs. Structural equation modelling (SEM, sometimes called LISREL) is covered by two units, with an emphasis on causal modelling in nonrandomized studies. Finally, the topic of optimal design and sample size is introduced in a sixth unit.

Literature
For each unit we will use the handout of the lecture plus a suitable book chapter or article. Details of these will be provided on EleUM.

Practical training
Each course unit includes a computer practical. The assignment (e.g., analysis of real data with SPSS or LISREL) is discussed in a plenary meeting after the practical. Attendance at practicals and discussion meetings is mandatory (with 100% and 85% attendance rule, respectively).

Instructional Approach
Meetings are arranged into units, consisting of lectures, self tuition sessions, computer exercises, and plenary discussions.

Form of Assessment
Open book, multiple choice exam consisting of questions resembling the exercises (general theory, some elementary computations, and interpretation of computer output).

571PP Personality Disorders – 3 credits

Coordinator: David Bernstein, Clinical Psychological Science (FPN), Phone 38 81483, 50 Universiteitssingel, Room 1.328, E-mail: d.bernstein@dmkep.unimaas.nl

Description of the Course
This seminar aims to give the student a state-of-the-art overview of theories, classification issues, and treatment models of personality disorders, with an emphasis on current scientific debate on these issues.

Topics
- Personality theories relating to personality disorders
- Biological models of personality disorders (including genetic and neurotransmitter models)
- Psychological models of personality disorders (modern psychodynamic, conditioning, cognitive, interpersonal, integrative models)
- Sociological perspectives on personality disorders
- Classifications issues (DSM-IV diagnosis; axis-1 vs. axis-2; categorical vs. dimensional models; polythetic definition; diagnostical techniques)
- Etiological issues
- Epidemiological issues
- Treatment options

Instructional Approach
The seminar consists of interactive meetings, which consist of lectures and group discussions.

Form of Assessment
Written exam with open questions.

572PP Mental Health and Happiness – 3 credits

Instructor: Madelon Peters, Clinical Psychological Science (FPN), Phone 38 81603, 50 Universiteitssingel, Room 1.316, E-mail: madelon.peters@dep.unimaas.nl

Description of the Course
As a closure of the obligatory Psychopathology course trajectory, this course will

familiarize students with concepts and ideas from what is sometimes called "positive psychology". The aim is to provide students with an understanding that even under unfavourable (genetic or environmental) circumstances people can maintain their health and wellbeing.

Topics
- Philosophical views of 'positive psychology'
- Resilience factors for mental and physical health: the role of humour, optimism and positive affect
- Buffering effects of the social environment on the adverse effects of trauma
- Trauma and personal growth
- Determinants of happiness
- Cultural differences in the experience of happiness and well-being

Instructional Approach
The seminar consists of interactive meetings, including lectures, group discussions, and student presentations.

Form of Assessment
Written assignment.

5.3 Skills training

481PP Research Practicum Psychometrics– 2 credits

Coordinator: Jeffrey Roelofs, Clinical Psychological Science (FPN), Phone 38 81607, 50 Universiteitssingel, Room 1.357, E-mail: J.Roelofs@dep.unimaas.nl

Description of the Course
This training will focus on giving students hands-on experience with the application of psychometrics. Students will work together in small groups on psychometric analyses of existing research datasets, supervised by one or two faculty members. In addition to scheduled lectures and discussions with experts in psychometrics, students will have the opportunity to consult a statistician for their analyses. Beyond the primary goal of learning more about how to evaluate and improve the psychometric properties of research instruments, students will also become acquainted with current research on psychopathology being conducted by senior staff, post-docs, and PhD students at the UM.

Form of Assessment
Attendance at required sessions, participation, and a final written report.

482PP Clinical Skills I: Interviewing Skills – 2 credits

Coordinator: Inge Drost, Clinical Psychological Science (FPN), Phone 38 81733, 50 Universiteitssingel, Room 1.354, E-mail: inge.drost@dep.unimaas.nl

Description of the Course

The aim of this training is to teach students basic clinical interview skills needed for interviewing patients with psychopathology. After this training, students should be able to administer semi-structured interviews covering the reason for referral, chief complaint and history of the presented problem(s), mental status, developmental and social assessment, diagnoses, and type of treatment requested.

Instructional Approach

This course consists of seven 2-hour sessions. The first meeting is an introductory lecture. The second meeting will be an SPC (Simulated Patient Contact), during which the entrance level of each student will be assessed. The other meetings are structured as training meetings; as preparation, students study literature and dvd's. The assessment skills are practiced by means of role-playing. The last meeting will again be an SPC. Students complete an assessment and a reflection report for each SPC.

Form of Assessment

Adequate demonstration of interviewing skills, adequate completion of patient assessment reports and reflection reports.

483PP Clinical Skills II: Diagnostic Test Procedures – 2 credits

Coordinators: Petra Hurks, Neuropsychology & Psychopharmacology (FPN), Phone 38 84269, 40 Universiteitssingel East, Room 2.747, E-mail: Pm.Hurks@psychology.unimaas.nl; Rudolf Ponds, Psychiatry & Neuropsychology (FHML, University Hospital Maastricht, Maastro Clinic), 12 Dr. Tanslaan, Room 4.G3.061, Phone 38 76044 , E-mail: r.ponds@np.unimaas.nl

Description of the Course

The aim of this training is to teach students procedures for psychodiagnostic and neuropsychological testing needed for assessing type, severity and extent of psychopathology and neuropsychological problems in individuals with psychiatric disorders. Students will learn to administer a psychodiagnostic interview in adult clients with psychiatric diagnoses as well as in caregivers of children with developmental problems. Also, they will 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 in the main cognitive domains in relation to brain areas and relevant neuropsychological and psychopathological test procedures, the training will focus on five disorders: 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.

Instructional Approach

Seven 3-hour meetings. The sessions will consist of introductory lectures, plenary discussions, and interviews of different patients or caregivers of children. In addition, students will perform a neuropsychological examination on a fellow student.

Form of Assessment

Observation of students' behavior and written reports.

408RM Neuroanatomy –1 credit

Coordinator: Jos Prickaerts, Neuropsychology & Psychopharmacology (FPN), Phone 38 81168, 50 Universiteitssingel, Room 1.108, E-mail: j.prickaerts@psychology.unimaas.nl

Description of the Course

The aim of the training is to become acquainted with the neuroanatomical terminology and to gain insight into the spatial and functional organization 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 one to directly link specific neurological or psychiatric disorders to particular brain areas. After a short theoretical introduction the students 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.

Instructional Approach

Almost exclusively practical: dissection of sheep brain, studying of microscopical slices of rat brain, working with plastic human brain models, CD-ROM programs, and textbook.

Form of Assessment

Pass/fail score based on written exam with open questions.

485PP Psychophysiological Skills – 1 credit

Coordinators: Pascal van Gerven, Neuropsychology & Psychopharmacology (FPN), Phone 38 84512, 40 Universiteitssingel East, Room 2.742, E-mail: p.vangerven@psychology.unimaas.nl; Eric Vuurman, Psychiaty & Neuropsychology (FHML), Phone 38 81046, 40 Universiteitssingel East, Room 2.747, E-mail: e.vuurman@psychology.unimaas.nl

Description of the Course
The goal of this training is to acquire basic skills in major peripheral psychophysiological measures. The relation between cognitive and psychophysiological variables, such as memory load, mental effort, and attention, will be made clear. In addition, general methodological concepts and issues, such as tonic (baseline) activity, phasic activity, and the so-called "law of initial value", will be discussed.

The training consists of four meetings. In the first meeting, an overview will be presented of the psychophysiological methods that are relevant to neuropsychology. The second meeting is devoted to major domains in psychophysiology, such as heart rate (variability), blood pressure, galvanic skin responses, and pupillometry (i.e., pupil dilation). In this meeting, students acquire basic hands-on experience in the laboratory. The third and fourth meeting are practical sessions, in which an existing dataset will be provided to analyze and report on.

Instructional Approach
Lecture, demonstrations, and practical sessions.

Form of Assessment
Short written research report.

486PP Clinical Assessment Instruments – 2 credits

Coordinator: Jill Lobbestael, Clinical Psychological Science (FPN), Phone 38 81611, 50 Universiteitssingel, Room 1.340, E-mail: jill.lobbestael@dmkep.unimaas.nl

Description of the Course
Running parallel to the core seminars throughout year 1, a series of training sessions will familiarize students with the range of rating scales, questionnaires, and interview 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 severity of the disorders covered in the current core seminar. The last sessions will focus on broader measures of personality, psychopathology and adjustment (e.g., MMPI, SCL-90, quality of life, social adjustment and coping scales). Working with case materials, students will learn how to choose appropriate assessment instruments for clarifying individual diagnoses, planning interventions, and monitoring their effects. These training sessions will give students basic background information and hands-on experience in valid and reliable instruments for assessing psychopathology.

Instructional Approach
Group discussions, lectures, demonstrations and practical training.

Form of Assessment
Written assignments.

581PP Clinical Skills III: Clinical Interview for the DSM IV (SCID I and SCID II) – 1 credit

Coordinator: Reinier Kreutzkamp, Clinical Psychological Science (FPN), Phone 38 81605, 50 Universiteitssingel, Room 1.324, E-mail: r.kreutzkamp@dep.unimaas.nl

Description of the Course
The aim of this training is to teach students how to conduct the semi-structured clinical interview for the DSM-IV-Tr Axis I (SCID I) and Axis II (SCID II) diagnoses. Students will learn to interpret the outcome of these interviews, to establish differential diagnoses, and to summarize findings in a written report.

Instructional Approach
Four 2-3 hour practical sessions and demonstrations.

Form of Assessment
Students' skills in the above areas will be assessed on the basis of observation of their interview behaviour as well as on their written reports.

582PP Clinical Skills IV: Intervention Techniques – 1 credit

Coordinator: Marisol Voncken, Clinical Psychological Science (FPN), Phone 38 81253, 50 Universiteitssingel, Room, 1.351, E-mail: m.voncken@dep.unimaas.nl

Description of the Course
Cognitive behavioural therapy (CBT) is a widely used treatment regimen that is seen as the evidence-based treatment for various psychopathological disorders such as 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, in those days trained as a psychoanalytic therapist, was able to treat depression within a few months with his cognitive approach. This was also a breakthrough, as psychoanalytic treatments for depression at that time normally took years. 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 treatment of anxiety disorders and depression.

The aim of this training is to teach students some of the basics of CBT for relatively simple forms of psychopathology. This training will focus on main elements of CBT, that is, 1) making a functional analysis of a case, 2) explaining the rationale of exposure

therapy, 3) applying exposure, 4) explaining the rationale of cognitive therapy and 5) applying cognitive techniques. After this training students should be able to carry out some elementary therapeutic procedures.

Literature
Roth Ledley, D., Marx, B.P., & Heimberg, R.G. (2005). *Making cognitive-behavioural therapy work*. New York: The Guilford Press.

Instructional Approach
Four 3-hour sessions. In this training demonstrations and role-play will be used. Each of the students will 'treat' one case, which is role-played by another student. The students apply the different techniques on this role-played case. First the instructor demonstrates each of the techniques. Subsequently, each of the students will apply these techniques on his/her role-played case. Last, students write out a verbatim of each of the therapy sessions. This verbatim will be used as the assessment of this course. Next to treating their role-played case, student will apply some of the techniques on their own mild fears.

Form of Assessment
The coordinator will grade the individual verbatim of the therapy sessions.

5.4 M&T workshop

491PP Ecological Psychiatry – 1 credit

Coordinator: Philippe Delespaul, Psychiatry & Neuropsychology (FHML),
Phone 36 88685, Vijverdal, Room: SN2.069, E-mail:ph.delespaul@sp.unimaas.nl

Description of the Course
The expression of psychiatric symptoms is reflected in an individual's behaviours and private phenomena such as thoughts, perceptions and emotions. Psychiatric deficits reveal themselves in the ongoing interplay between the patient and the everyday environment, unavailable for direct observations by the clinician. Therefore, crucial diagnostic information has to come from recollections y the patients. Unfortunately, these self-observations are not reliable. To ascertain reliable data, self-ratings should be collected prospectively in the normal daily life of subjects ('ecological validity').

The aim of the workshop is:
- to introduce the field of ecological psychiatry with its scientific roots.
- to discuss the methodological and statistical challenges related to research with self-reports in normal living situations.
- to illustrate the applicability of these research methodologies in basic and applied clinical research (using schizophrenia research as the primary reference).

The students will be subjects in an Experience Sampling study set-up and monitor their own behaviour and emotions. Meanwhile we will introduce the field by discussing historical roots and proposed solutions. We will discuss technical aspects of the 'state of the art' methodology. In small groups, the workshop participants will use these data as the basis for 15-minute presentations, to be given in the final meeting.

Literature

An E-reader will be made available.

Instructional Approach
The workshop will combine traditional teaching, group discussions and practical experiences.

Form of Assessment
Homework assignments and presentation.

492PP The Application of Cognitive Methods in Psychopathology Research – 1 credit

Coordinator: Anne Roefs, Clinical Psychological Science (FPN), Phone 38 82191, 40 Universiteitssingel East, Room 3.747, E-mail: a.roefs@psychology.unimaas.nl

Description of the Course
The goal of this workshop is to introduce the students to the most important paradigms from cognitive psychology that are often used in psychopathology research to study biased cognitive processing. Biased cognitive processes play an important role in many kinds of psychopathology, such as depression, anxiety disorders, and eating disorders. The most intensively studied processes involve attention, memory, interpretation, and associations. To study these processes, experimental paradigms from cognitive psychology have been adapted to the needs of clinical psychology. Most of these experimental tasks involve the measurement of reaction times. Unlike other techniques (e.g., eye-tracking, fMRI, EEG), they are easy to program and often run on a standard PC. This workshop will introduce the students to the most popular tasks in the areas of attention (emotional Stroop task, dot probe task, visual search paradigm), memory, interpretation, and associations (Implicit Association Test, (extrinsic) affective Simon Task, affective priming paradigm). At the end of this course, students should know the pros and cons of each task well enough to choose an appropriate task for a given research question, and they should be able to change the features of the chosen task to fit their own research needs.

Instructional Approach
In the course, students are given a number of introductory papers about the tasks. In the lectures the various paradigms are explained, briefly demonstrated, and applications in several forms of psychopathology are discussed. An important aspect of the lectures will be a discussion of the pros and cons of the various paradigms. Besides

the two lectures, students will do a short practical, consisting of three meetings. During these practical sessions they will work with PsychMate, a program that is especially designed to acquaint students with various computerized paradigms from cognitive and social psychology. Students will work in groups of two. The assessment consists of short assignments that are done during the practical session, and one final paper that consists of a critical evaluation of a paradigm of choice.

Form of Assessment
Short practical assignments.

493PP Research Theory and Designs – 1 credit

Coordinator: Arnoud Arntz, Clinical Psychological Science (FPN), Phone 38 81606, 50 Universiteitssingel, Room 1.308, E-mail: arnoud.arntz@MP.unimaas.nl

Description of the Course
The aim of the workshop is to provide students a good understanding of the theoretical and practical issues of different designs that are used in the domain of psychopathology.

This workshop will elaborate on basic issues of theory and methodology of scientific research in the field of psychopathology. There are four sessions. The first session is devoted to qualitative research methods and advanced small-scaled case series designs. The second session will focus on experimental designs to test causal hypotheses derived from theories of psychopathology. The third session will cover advanced correlational designs, including prospective designs, with special reflection on the issue to what degree such designs can determine causality. The last session deals with the design of treatment outcome studies, focusing mainly on randomized clinical trials.

Instructional Approach
Interactive discussions under the leadership of research faculty with special interest in the topic.

Form of Assessment
Exam with open questions.

409RM Research Ethics – 1 credit

Coordinators: Eef Theunissen, Neuropsychology & Psychopharmacology (FPN), Phone 38 81940, 40 Universiteitssingel East, Room 2.743, E-mail: e.theunissen@psychology.unimaas.nl

Description of the Course
Students will learn to think critically about ethical dilemmas that psychologists encounter when exercising their profession. This workshop will discuss legal and ethical

conflicts that are involved in psychological research and clinical practice. Students will be introduced to the ethical and legal rules and boundaries in human research, and to the organizations and institutes supervising the application of these rules.

Psychologists always need to make sure that they carry out their work in an ethical and legally sound way. However, there is often a conflict of interests of the involved parties. In all circumstances, however, it is the psychologist's primary task to secure the patients/participants welfare and to keep risks at a minimum. Therefore psychologists should know which ethical aspects are of importance and which laws and rules need to be applied and also which institutions supervise on the application of these rules. In addition, these aspects should be taken into consideration when writing and submitting a research proposal to an ethical commission.

The following topics will be discussed:
- Examples of ethical and legal failings
- Necessity of ethical and legal rules
- Different guidelines: declaration of Helsinki, guidelines for Good Clinical Practice, etc.
- Working with participants/patients: rights and duties, confidentiality, data processing and storage, etc.
- Applying ethical and legal rules in e.g., protocol, case report form, informed consent, etc.
- Ethical and legal reviews

Instructional Approach
Discussion groups, lectures.

Form of Assessment
Written assignment.

496PP Epidemiology – 1 credit

Coordinator: Marcus Huibers, Clinical Psychological Science (FPN), Phone 38 81487, 40 Universiteitssingel East, Room 1.349, E-mail: m.huibers@DMKEP.unimaas.nl

Description of the Course
Epidemiology often is referred to as 'quantative medicine'. In general, epidemiology deals with methodology issues in the field of health research, including mental health. Students in this workshop will be introduced to the principles of epidemiological research. Topics that are covered in the workshop include: frequency measures, association measures, sources of bias, validity issues, cohort studies, clinical trials, and systematic reviews. The theory of epidemiology will be studied and applied in interactive workshop sessions.

Instructional Form
Format of the workshop is a series of four 2-hour sessions and a final presentation session. Starting each session, the lecturer will give a 30-minute presentation of the

topics covered in that session, followed by a 30-minute discussion of these topics. The second hour will be spent on group assignments under supervision of the lecturer.

Literature
Required reading will consist of several chapters from a clinical epidemiology textbook and additional research papers combined in an e-reader. In addition to the workshops sessions, students are expected to spend at least 5 hours a week on reading and homework assignments.

Form of Assessment
Group presentation of a research proposal

497PP Imaging – 2 credits

Coordinator: Vincent van de Ven, Cognitive Neuroscience (FPN), Phone 38 84510, 40 Universiteitssingel East, Room 4.761, E-mail: v.vandeven@psychology.unimaas.nl

Description of the Course
This workshop is intended to provide:
- introductory knowledge of the basic principles underlying the most common imaging methods
- appreciation of potentialities and limitations of various neuroimaging methods in studying human brain functions and dysfunctions.

The investigation of human brain anatomy and functions using a range of imaging methods represents the most influential development in Psychology in the last years. In this workshop, essential facts about all major structural and brain mapping techniques, including Positron Emission Tomography (PET) and SPECT, structural and functional Magnetic Resonance Imaging (fMRI) will be reviewed. The focus will be on the strengths and weaknesses of each of these methods and on the description of relevant applications in the normal and pathological brain.

Instructional Approach
Lectures, paper discussion, demonstration visit to the MRI scanner.

Form of Assessment
Written exam with open questions.

498PP Psychopharmacology – 1 credit

Coordinator: Wim Riedel, Neuropsychology & Psychopharmacology (FPN), Phone 38 84270, 40 Universiteitssingel East, Room 2.755, E-mail: w.riedel@psychology.unimaas.nl

Description of the Course
The workshop aims to present Psychopharmacology in a broad sense. The

multidisciplinary nature of psychopharmacology encompasses pharmacology, molecular biology, genetics, physiological psychology, experimental, clinical and cognitive neuropsychology and biological psychiatry. The emphasis will be on understanding drug development, drug action, drug research, animal and human pharmacological models of clinical disorders, experimental / clinical trial design and the development of biomarkers, real measures and surrogate measures of drug efficacy.

The course will focus on major areas in Psychopharmacology such as Addiction, Depression, Anxiety, Psychosis and Cognition. These areas will be illuminated form both the perspectives of basic neuroscience including animal subjects as well as experimental and clinical human psychopharmacology.

Instructional Approach
Each half-day the programme will consist of a sequence of three elements:
- Key note Lectures by Internationally renowned speakers in the morning
- Presentations of recent research by PhD students or junior researchers
- Forum report by students about the poster-presentations

The workshop offers plenty of opportunity for the Master's student to interact with PhD students, junior and senior staff and the invited guest speakers.

Form of Assessment
Short presentation in the forum discussion.

499PP Sexual Disorders – (Elective) 1 credit

Coordinator: Jacques van Lankveld, Clinical Psychological Science (FPN), Phone: 38 81265, Universiteitssingel 50, Room 1.342, E-mail: J.vanLankveld@DEP.unimaas.nl

Description of the Course
The workshop introduces the student to key concepts in current research in sexology, with an emphasis on the cognitive and behavioural mechanisms that play a role in the etiology and maintenance of sexual dysfunction.

Topics are:
- The biopsychosocial model of sexual functioning, including the subjective, physiological, and relational dimensions of sexual functioning
- Gender differences in sexual functioning
- The role of cognitive errors in attribution and expectancy
- The role of attention and affect
- An overview of sexual disorders
- Cognitive-behavioural treatments of sexual disorders

Literature
An electronic reader is made available.

Instructional Approach
Format: Two 3-hour meetings.
The first meeting introduces the students to the topics and consists of an introductory lecture and a question and discussion round. Students are given general reading material and tips on further - more specific – material.
As a preparation for meeting 2, each student chooses a topic for a presentation in which a specific theoretical issue, relevant to the area of sexual disorders will be addressed. The student prepares an individual paper in which the central aim of the presentation is presented, and one or more specific topics for discussion emanating from the presentation's central proposition. The papers are sent in advance to the tutor by email, at least 48 hours before the second meeting.
In the second meeting the presentations are given. The student supports the presentation with PowerPoint. Each student presents and discusses the prepared topics. The tutor expands on the discussed topics. After the presentation, the PowerPoint file is sent to the coordinator.

Form of Assessment
Pass/fail, based on participation, discussion paper and presentation.

501RM Protocol Writing – 2 credits

Coordinator: Caroline van Heugten, Psychiatry & Neuropsychology (FHML), Phone 38 84091, 12 Dr. Tanslaan, Room 4.E3.017, E-mail: c.vanheugten@np.unimaas.nl

Description of the Course
This training course addresses the different phases of writing scientific protocols and research reports. The course covers all of the stages involved in the creation of a piece of writing; from rough working documents and prewriting, to editing draft texts and making final revisions. Since the course precedes the Master's research and thesis stage, the primary focus is on the development of skills that will enable the writing of a research proposal and Master's thesis. The course covers a variety of topics related to scientific writing, such as different protocol types, the IMRAD-format, APA style and format, citations and references, plagiarism, project planning and applying on-line writing guides.

Instructional Approach
A combination of lectures, take home writing assignments and take home review assignments.

Form of Assessment
Written research proposal.

5.5 Research and Clinical internship and Master's and Minor's thesis

502RM Research internship and Master's thesis – 30 credits

Coordinator: Ingrid Candel, Clinical Psychological Science (FPN), Phone 38 81963, 40 Universiteitssingel east, Room 3.738, E-mail: i.candel@psychology.unimaas.nl

Description of the internship
The second part of the year of the Research Master's programme is devoted to arranging and conducting a research internship. As a result of the many international research contacts our faculty members have established, a substantial number of students will conduct their research internship abroad. Students finalize the Master's programme by writing a thesis on their internship.

The internship can be done at Maastricht University or at external research institutes. In all cases, the research proposal and Master's thesis will be evaluated by two assessors. At least one assessor has to be a member of Maastricht University. The other assessor might be a researcher at, for example, the institute where the data are collected.
A detailed guide on research internships and Master's thesis can be found on Blackboard: EleUM.unimaas.nl/Students Research Master Faculty of Psychology and Neuroscience.

For possible internships abroad contact the research internship coordinator. For practical information about international research internships (e.g., scholarship, visa), contact the International Office, Phone (043) 38 81920, 40 Universiteitssingel East, Room 5.749, E-mail: international@psychology.unimaas.nl

Form of Assessment
The research internship will be assigned 30 credits: 20 for the practical activities and research proposal (pass/fail) and 10 for the Master's thesis (graded).

503RM Clinical internship and Minor's thesis – 20 credits

Coordinator: Peter Stiers, Neuropsychology & Psychopharmacology, Phone 38 81514, 40 Universiteitssingel East, Room 2.755, E-mail: peter.stiers@psychology.unimaas.nl

Internship description
Students specializing in *Psychopathology* are required 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 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 organization and practice of mental health care, as well as basic experience in clinical diagnosis and therapeutic interventions.

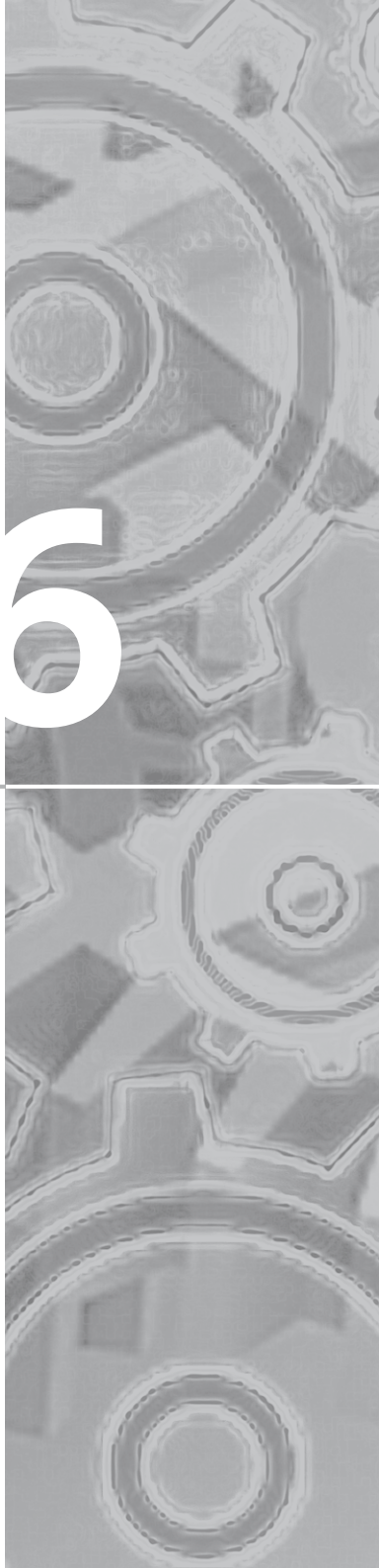
A detailed guide on clinical internships and Minor's thesis can be found on Blackboard: EleUM.unimaas.nl/Students Research Master Faculty of Psychology and Neuroscience. Although not required to do so by the Research Master's programme, students who wish to meet Dutch requirements for admission to advanced clinical training programmes are advised to extend their clinical internship by at least 2 weeks.

Form of Assessment
The Minor's internship and thesis will together be assigned 20 credits:16 credits for clinical activities and clinical research proposal (pass/fail assessment) and 4 credits for the Minor's thesis (graded assessment)

5.6 Schedule Psychopathology

Period	YEAR 1
Period 0, 1 week 1th September – 5th September 2008	Introduction Week
Period 1, 5 weeks 8 September – 10 October 2008	**405RM Interdisciplinary Perspectives** (total of 3 credits)
	Core course: 471PP Anxiety Disorders (3 credits) & 406RM Advanced Statistics I (total of 2 credits)
	Workshop: 496PP Epidemiology (1 credit)
	Skills Training: 482PP Clinical Skills I: Interviewing Skills (total of 2 credits) & 486PP Clinical Assessment Instruments (total of 2 credits)
	404RM Colloquia (total of 5 credits)
	Electives: 5 credits – throughout year 1
Period 2, 4 weeks 13 September – 7 November 2008	**405 RM Interdisciplinary Perspectives**
	Core Course: 472PP Mood Disorders (3 credits) & 406RM Advanced Statistics I
	Skills Training: 482PP Clinical Skills I: Interviewing Skills & 483PP Clinical Skills II: Diagnostic Test Procedures (total of 2 credits)
	404RM Colloquia
Period 3, 5 weeks 10th November – 12th December 2008	**405RM Interdisciplinary Perspectives**
	Core Course: 473PP Stress and Trauma (3 credits) & 406RM Advanced Statistics I
	Skills Training: 481PP Research Practicum Psychometrics (total of 2 credits), 483PP Clinical Skills II: Diagnostic Test Procedures & 486PP Clinical Assessment Instruments
	404RM Colloquia
Christmas break	

Period 4, 4 weeks 5th January – 30th January 2009	**Core Course:** 474PP Developmental Psychopathology (3 credits) & 406RM Advanced Statistics I
	Workshop: 493PP Research Theory and Designs (1 credit)
	Skills training: 408RM Neuroanatomy (1 credit) & 481PP Research Practicum Psychometrics
	404RM Colloquia
Period 5, 4 weeks 2nd February – 6th March 2009	**Core Course:** 475PP Somatoform Disorders (3 credits) & 407RM Advanced Statistics II (total of 3 credits)
	Workshop: 492PP The Application of Cognitive Methods in Psychopathology Research (1 credit)
	Skills training: 486PP Clinical Assessment Instruments
	404RM Colloquia
Perio Period 6, 4 weeks 9th March – 3rd April 2009	**Core Course:** 476PP Psychosis (3 credits) & 407RM Advanced Statistics II
	Workshop: 409RMResearch Ethics (1 credit)
	Skills Training: 485PP Psychophysiological Skills (1 credit) & 486PP Clinical Assessment Instruments
	404RM Colloquia
Period 7, 11 weeks 6th April – 19th June 2009	**Core Course:** 479PP Psychopathology and the Law (2 credits), 4801PP Eating Disorders & Addiction (4 credits), 407RM Advanced Statistics II
	Workshop: 491PP Ecological Psychiatry (1 credit), 497PP Imaging (2 credits), 498PP Psychopharmacology (1 credits) & 499PP Sexual Disorders (Elective,1 credit)
	Skills training: 486PP Clinical Assessment Instruments
	404RM Colloquia
Period	**YEAR 2**
Period 1, 4 weeks dates to be announced	**Core Course:** 571PP Personality Disorders (3 credits)
	Workshop: 501RM Protocol Writing (total of 2 credits)
	Skills Training: 581PPClinical Skills III: Clinical Interview for the DSM IV (SKID I and SCID II) (1 credit)
Period 2, 4 weeks dates to be announced	**Core Course:** 572PP Mental Health and Happiness
	Workshop: 501RM Protocol Writing
	Skills Training: 582PP Clinical Skills IV: Intervention Techniques (1 credit)
32 weeks	**Research internship & Master's thesis** (30 credits)
	Clinical Internship & Minor's thesis (20 credits)



6

Education and Examination Regulations

6.1 Education and Examination Regulations

Cognitive Neuroscience, Fundamental Neuroscience, Neuropsychology, Psychopathology

§ 1 General conditions

Education and Examination Regulations for the 2008-2009 academic year for the Research Master's Study Programme in the Faculty of Psychology and Neuroscience, as meant in article 7.13 of the Law on Higher Education and Scientific Research (WHW).

Article 1.1 Scope of the Regulations

These regulations apply to the education and examinations for the full-time Research Master's Study programme "Cognitive Neuroscience, Neuropsychology, Psychopathology", hereinafter referred to as the study programme.
The study programme is offered by the Faculty of Psychology and Neuroscience in cooperation with the Faculty of Health, Medicine, and Life Sciences, hereinafter referred to collectively as the Faculties.
The Faculty of Psychology and Neuroscience, hereinafter referred to as the Faculty, is responsible for coordinating and administering the study programme. The regulations have been established by the Faculty Board, after the advice from the study Programme Committee and the approval from the Faculty Council had been obtained, and will apply as of 1st September 2008 for the 2008-2009 academic year.

Article 1.2 Definitions

In these regulations the following is understood by:

a. The law: the Law for Higher Education and Scientific Research (WHW);
b. Student: he/she who has been enrolled at Maastricht University as of 1st September 2008, for the purpose of attending the courses and/or fulfilling the formal requirements of the study programme.
c. Academic year: the period from 1st September of a calendar year through 31st August of the following calendar year.
d. Part: a study unit of the study programme as meant by article 7.3 of the law.
e. Course: a study unit of the study programme, as meant by the law.
f. Tutorial Group Meeting: a practical exercise, as meant by article 7.13 paragraph 2, sub t of the law.
g. Practical Training: a practical exercise, as meant by article 7.13, paragraph 2, sub d of the law.
h. Test: the test as part of the examination as meant by article 7.10, paragraph 1 of the law.
i. Examination: all of the formal requirements (a total of 120 European credits) for the Research Master's study programme for a given specialization, including tests, papers, assignments, internships, theses, and other requirements as specified for each course or part of the education.
j. Credit: a study load of 28 hours, in accordance with article 7.4 of the law. The total

study load of the Research Master's study programme amounts to 120 European credits.

k. Board of Examiners: the committee as meant by article 7.12 of the law.
l. Examiner: the person, appointed by the Board of Examiners, who is responsible for assessing student performance.
m. Course Coordinator: an examiner who is responsible for the content of a certain course, workshop, colloquium, skills training, or other part of the study programme.
n. Board of Appeal: the Board of Appeal for Examinations as meant by article 7.60 of the law.
o. Rules and Regulations: the rules drawn up by the Board of Examiners to ensure a smooth running of the assessments, and the regulations governing the way in which the examinee is assessed and how the results of the assessments are arrived at as meant by article 7.12, paragraph 4 of the law.
p. Faculty Board: the Executive Board of the Faculty of Psychology and Neuroscience of Maastricht University as meant by article 9.24 of the law.

Other terms are to be understood in accordance with the meaning assigned to them by the law.

Article 1.3 Purpose of the Study Programme

1. The Research Master's programme Cognitive Neuroscience, Neuropsychology, Psychopathology is a two-year programme designed for students who want to continue their studies at a graduate school that prepares them for a career in the field of research. Therefore, the purpose of the study programme is the following:
   - academic formation within the context of the Maastricht University educational concept and its distinct profile;
   - provide students with a stimulating scientific environment that will enable them to develop as independent thinkers with a broad curiosity in the various aspects of the multidisciplinary research domain;
   - possibility to broaden one's knowledge in other disciplines;
   - acquisition of specialized knowledge, skills, and insight in one of the four specializations, namely, Cognitive Neuroscience, Neuropsychology, Psychopathology;
   - preparation for a PhD trajectory or a research career in a non-academic setting.
2. There are sufficient elements in the study programme to enhance the further development of the academic formation of the student, in particular with regard to:
   - thinking and acting independently and scientifically;
   - communicating scientifically in English;
   - applying specialized scientific knowledge in a broader context.

Article 1.4 Organization of the Study Programme

The study programme will be offered on a full-time basis.

§ 2 Structure of the Study Programme

Article 2.1 Study Load

The two-year study programme has a total study load of 120 European credits (60 credits each year).

Article 2.2 Research Master's Specializations

Specializations in the Research Master's Study Programme
a. Cognitive Neuroscience (CN)
b. Neuropsychology (NP)
c. Psychopathology (PP)
d. Fundamental Neuroscience (FN)

Article 2.3 Composition of the curriculum

1. Cognitive Neuroscience
Interdisciplinary Perspectives: 3 credits
Core Courses:
- Neural Correlates of Selection in Language Processing: 4 credits
- Perception & Attention: 4 credits
- Neuroimaging: 4 credits
- The Cognitive Neuroscience of Sensory and Motor Systems: 4 credits
- Advanced fMRI: 3 credits
- Magnetic Brain Stimulation: 3 credits
- Tracking the Time-course of Cortical Processing Using MEG and EEG: 3 credits
- The Auditory System: 3 credits
- Neural Correlates of Consciousness: 3 credits
- Neurocognition of Literacy and Numeracy: 3 credits
- Modeling: 3 credits
- Advanced Statistics I and II : 2+3 = 5 credits

Skills Trainings: 11 credits
Each training has a study load of either 1 or 2 credits. The skills trainings provided are listed in the programme's Prospectus.

Workshops: 9 credits
Each workshop has a study load of 1 or 2 credits.
The workshops provided are listed in the programme's Prospectus.

Colloquia: 5 credits

Research internship (38 credits) and Master's thesis (12 credits): 50 credits

2. Neuropsychology
Interdisciplinary Perspectives: 3 credits

Core Courses:
- Brain Damage: 4 credits
- Behavioural Disorders: 4 credits
- Cognitive Aging: 4 credits
- Arousal and Attention: 4 credits
- Biopsychology: 3 credits
- Brain, Learning and Memory: 3 credits
- Executive Functions and Control of Action: 3 credits
- Neuropsychiatric Disorders: 3 credits
- Neuropsychopharmacology: 3 credits
- Cognitive Development: 3 credits
- Stress, the Brain and Psychopathology: 3 credits
- Advanced Statistics I and II: 2+3 = 5 credits

Skills Trainings: 11 credits
Each training has a study load of either 1 or 2 credits. The skills trainings provided are listed in the programme's Prospectus. In Year 2, students choose one of the following two options:
- Neuropsychological Treatment Intervention: 1 credit AND
- Data management: 1 credit

OR
- ERP: 2 credits

Workshops: 9 credits
Each workshop has a study load of 1 or 2 credits.
The workshops provided are listed in the programme's Prospectus.

Colloquia: 5 credits

Research internship (38 credits) and Master's thesis (12 credits): 50 credits
(Optional: Research internship (18 credits) and Master's thesis (12 credits): 30 credits, plus Clinical internship (16 credits) and Minor's thesis (4 credits): 20 credits)

3. Psychopathology
Interdisciplinary Perspectives: 3 credits
Core Courses:
- Anxiety Disorders: 3 credits
- Mood Disorders: 3 credits
- Stress and Trauma: 3 credits
- Developmental Psychopathology: 3 credits
- Somatoform Disorders: 3 credits
- Psychosis: 3 credits
- Eating Disorders and Addiction: 4 credits
- Psychopathology and the Law: 2 credits
- Personality Disorders: 3 credits

- Mental Health and Happiness: 3 credits
- Advanced Statistics I and II: 2+3 = 5 credits

Skills Trainings: 12 credits
Each training has a study load of either 1 or 2 credits. The skills trainings provided are listed in the programme's Prospectus.

Workshops: 10 credits
Each workshop has a study load of 1 or 2 credits.
The workshops provided are listed in the programme's Prospectus.

Colloquia: 5 credits

Electives: 5 credits
The electives provided are listed in the programme's Prospectus.

Research internship (18 credits) and Master's thesis (12 credits): 30 credits
Clinical internship (16 credits) and Minor's thesis (4 credits): 20 credits

4. Fundamental Neuroscience
Interdisciplinary Perspectives: 3 credits
Core Courses:
- Advanced Molecular Biology Techniques: 5 credits
- Advanced Biochemical Techniques: 5 credits
- Advanced Brain Anatomy and Histochemical Techniques: 4 credits
- Neurodegeneration and Brain Damage: 4 credits
- Biopsychological Neuroscience: 4 credits
- Neurological Movement Disorders: 4 credits
- Neuroimmunology and Inflammation: 4 credits
- Gene x Environment Interactions: 4 credits
- Stress, Emotions and Affective Disorders: 4 credits
- Electrophysiology: from Single Cell Activity to 'Cognitive' Markers: 3 credits
- In Vitro and In Vivo Neuroscience: Models and Tests: 4 credits
- Advanced Statistics I and II: 2+3 = 5 credits

Skills Trainings: 3 credits
Each training has a study load of either 1 or 2 credits. The skills trainings provided are listed in the programme's Prospectus.

Workshops: 9 credits
Each workshop has a study load of 1 or 2 credits.
The workshops provided are listed in the programme's Prospectus.
Colloquia: 5 credits

Research internship (38 credits) and Master's thesis (12 credits): 50 credits

Article 2.4 The Research Master's Examination

The examination consists of the following parts:

1. The courses, tutorial group meetings, and practical trainings pertaining to the selected Research Master's specialization;
2. The research proposal, research internship, and the Master's thesis;
3. For PP students (elective for NP students), the clinical internship, the proposal of the Minor's thesis, and the Minor's thesis

Article 2.5 Language of Instruction

The education and examination in the Research Master's study programme are conducted in English.

§ 3 Tests and Examinations

Article 3.1 Compulsory Sequencing of Parts

1. The research internship cannot be started until:
   - At least 60 credits have been attained during the programme;
   - In the above mentioned 60 credits, the courses Advanced Statistics Part I and Part II must be included.
2. The clinical internship cannot be started until:
   - At least 60 credits have been attained during the programme;
   - In the above mentioned 60 credits, courses Advanced Statistics Part I and II, and for students following the Psychopathology specialization all Clinical Skills (I–IV) trainings must be included; for students following the Neuropsychology specialization the following skills trainings must have been completed:
     - Neuropsychological Assessments
     - Basic Cognitive Psychological Skills
     - Psychophysiological Skills
     - Neuropsychological and Neuropsychiatric Instruments I and II
3. If a student deviates from the sequencing as described under 1 and, if applicable, 2 without permission from the Board of Examiners, the result of the part in question can be declared invalid.

Article 3.2 Periods and Frequency

1. Assessments take place twice each academic year for each unit, at times determined by the Board of Examiners: i.e. once during or immediately following the period in which the relevant unit was done and once later in the same academic year.
2. In special cases, the Board of Examiners can decide that an assessment can take place at a time different from that set in accordance with the previous point.

Article 3.3 Form of the Assessments

1. As a rule, assessments are in written form. This includes tests done on a computer. An examiner needs to receive approval by the Board of Examiners to conduct assessments in a form other than open questions or papers.
2. For written examinations, students will be admitted and can take the test for up to

30 minutes after the test has started. After this, admission will be refused and no extension of the duration of the test will be granted. Students are not allowed to leave the room where the test is taken, until at least 30 minutes after the test has started.

3. A condition for taking course examinations is the compliance with the minimum requirements for participation in the group meetings as laid down in article 4 of section 5.2.

4. The Board of Examiners can draw up guidelines for written papers or other forms of assesment. These guidelines will be included in the programme's Prospectus or in the manual pertaining to the relevant part.
5. Students with a functional disability may request permission from the Board of Examiners to take the tests in a manner that is, as far as is possible, in keeping with their handicap. The Board of Examiners can ask for expert advice before arriving at a decision.
6. During written examinations students are not allowed to carry electronic devices other than those specified in the course manual. The exam will be declared invalid if the student does not conform to this regulation. If a student is discovered to be using a cellular phone or an electronic agenda during the examination, the fraud regulation will be applied.

Article 3.4 Oral Tests

1. Oral tests are permitted only in special cases and can be conducted only if the examiner has received approval by the Board of Examiners.
2. Oral tests are not given to more than one person at the time.
3. An oral test is administered by two examiners, unless the Board of Examiners has decided otherwise.
4. Administering an oral test is done publicly, unless the Board of Examiners or the relevant examiner has decided otherwise in a special case, or if the student has raised objections to this.

Article 3.5 Attendance at Tutorial Group Meetings

1. The Board of Examiners lays down the minimum of tutorial group meetings a student is required to attend in the rules and regulations and determines how the actual attendance of each student in the education is registered.
2. Students who do not comply with this minimum attendance requirement for the tutorial group meetings, but who have not missed more than one meeting than is allowed, can still comply with the compulsory attendance requirement by applying for a compensatory assignment from the Board of Examiners, no later than two weeks after the relevant course has ended. At most, three requests for a compensatory assignment will be granted to a student in each academic year. The Board of Examiners will inform the student whether permission for a compensatory assignment has been granted no later than four weeks after the course assessment has taken place.
3. If attendance has been met in a given academic year this will be valid for the remainder of the study even if the test is not passed in that year.

Article 3.6 Proof of Having Passed Courses

1. Once a student has taken part in a sufficient number of tutorial group meetings and has successfully completed the course assessment and any associated practical training, this will count as proof of having passed the relevant course. The proof will be obtained after an examiner or a non-academic employee, under the supervision and responsibility of the Board of Examiners, has declared that the requirements for that part of the examination have been complied with. A condition for obtaining proof of having passed a course is that the student has complied with the admission requirements for the relevant part of the examination. The Board of Examiners can revoke the decision of the examiner if the admission requirements have not been complied with.
2. If the non-academic employee doubts whether the requirements for granting proof of having passed a course have been complied with, he/she puts this before the Board of Examiners for a final decision.

Article 3.7 Research Internship

1. The Board of Examiners determines the criteria that the nature and content of an internship must meet in the internship regulations.
2. The internship regulations are set out in Appendix 1.
3. In order to ensure that the internships proceed smoothly, further guidelines have been drawn up, which can be found in the Manual on Research Internships. The manual is provided to Research Master's students before the end of the first academic year.
4. A student can only follow a research internship once during his/her programme of study. During the internship the student will be supervised by the Faculty.

Article 3.8 Clinical Internship

1. The clinical internship coordinator determines the criteria that the nature and content of the internship must meet in the internship regulations.
2. The clinical internship regulations are set out in Appendix 2.
3. In order to ensure that the internships proceed smoothly, further guidelines have been drawn up, which can be found in the Manual on Clinical Internships. The manual is provided to Research Master's students before the end of the first academic year.
4. A student can only follow a clinical internship once during his/her programme of study. During the internship the student will be supervised by the Faculty.
5. PP students may be allowed, but only under exceptional circumstances and with prior approval of the Board of Examiners, to omit the clinical internship and Minor's thesis; in this case, the research internship and Master's thesis would together represent 50 credits.

Article 3.9 Period of Validity

As a rule, the period of validity of assessments is unlimited. However, by way of exception, the Board of Examiners can set a supplementary or alternative assessment for a part a student passed more than six years previously.

Article 3.10 Right of Inspection

1. The student, on request, has the right to inspect his/her corrected work within a period of two weeks after the results of a written assessment have been made known, at a place and time determined by the course coordinator.
2. The student who has undergone the assessment can go through the questions and tasks of the relevant assessment during this inspection, and, in addition, see the norms on which the assessment had been based.

Article 3.11 Exemptions

The Board of Examiners can, on the request of a student, grant exemption from taking a test or other assessment, if the student provides satisfactory written proof that he/she:

1. has already successfully completed a similar course at a university or higher college of higher professional education, which is equivalent in content and level;
2. possesses sufficient knowledge and skills in relation to the relevant test or assessment by way of work or professional experience.

Article 3.12 Determining and Publishing Results

1. The Board of Examiners determines the standards for the assessment of each part of the examination.
2. The examiner determines the provisional result of a written assessment within 15 working days after the day on which the assessment took place, and provides the educational office with the data needed for the publication of the result to the student.
3. After students have had the opportunity to inspect their corrected works, the definitive results will be determined and published to the student within 5 working days.

Article 3.13 Fraud

1. If the Board of Examiners ascertains that, in the course of any form of assessment, a student:
   - made use of illicit aids, texts or notes, or makes or made use of prohibited electronic aids or means of communication;
   - verbally or by means of gestures communicated or tried to communicate with a fellow student without the permission of a supervisor, examiner or member of the Board of Examiners;
   - copied or tried to copy or gave somebody the opportunity to copy;
   - deliberately misled or tried to mislead the, the examiner or the supervisor, with respect to the examination;
   - committed any other form of fraud, including plagiarism, then the Board of Examiners can declare the result of the relevant assessment failed for the student concerned.
2. The Board of Examiners can furthermore take the following measures for the cases mentioned under point 1:
   - reprimand,
   - exclusion from (further) participation in one or more parts of the examination of the study programme for a period of at the most one year.

3. In the case of fraud, the Board of Examiners will apply the same fraud regulation as set out in the Rules and Regulations for the Research Master's Examination (appendix 3, article 5). This document also specifies what is understood by fraud.

Article 3.14 Results

Students who have complied with the requirements for the Research Master's examination and who wish to receive the relevant certificate must submit a request to the Exam Administration office to determine the result of the examination, at least one month prior to the date of graduation.

Article 3.15 Examination

1. The Board of Examiners confirms the result of the Research Master's examination as soon as the Exam Administration office has received sufficient proof that the student has passed the assessments. The student, who has met all the requirements for the Research Master's examination, will be conferred the Research Master Degree and will receive the diploma associated with the Research Master's examination as proof of this.
2. Before the Board of Examiners determines the result of the examination, it is entitled to enquire into the student's knowledge in respect of one or more parts of the study programme, should the results of the relevant assessments give reason for this.

Article 3.16 Degree, Diploma

1. He/she who has passed the examination successfully will be awarded the degree of 'Master of Science'.
2. The diploma issued as a result of having passed the examination successfully will contain:
   a. the name of the study programme;
   b. the degree that has been awarded;
   c. the most recent date on which the study programme has been accredited, or alternatively has undergone the test of being a new study programme.
3. The diploma will be signed by the Dean of the Faculty and the Chair of the Board of Examiners.
4. The presentation of the diploma is done in public, unless the Board of Examiners decides otherwise in special cases.
5. A separate list of marks will be issued with the diploma.
6. An English diploma supplement will be issued with the certificate. This will specifically mention the specialization followed.
7. The Board of Examiners can award the diploma with the qualification of 'with distinction' in accordance with the Rules and Regulations of the Research Master's examination.

Article 3.17 Right of Appeal

A student has the right to appeal to the Board of Appeal for Examinations in accordance with article 7.61 of the law. This is clearly stated on the form on which a decision by the examiner and the Board of Examiners that is open to appeal is communicated to the

student. In addition, this form mentions the period within which such an appeal has to be lodged.

§ 4 Admission

Article 4.1 Admission Requirements for the Research Master's Study Programme (art. 7.30b)

The programme will selectively admit a group of maximally 80 highly qualified students each year. Admission is limited to those with at least a university bachelor degree or equivalent (obtained by 1st September 2008).

The following documents are needed for application:

- Completed application form
- Application letter that covers the applicant's background and motivation for research training in the chosen specialization (maximum 500 words).
- A Curriculum Vitae (maximum 2 pages)
- A certified English transcript of university courses followed and marks received
- Two academic references completed on the provided forms and mailed directly by the referees.
- Non-native English speakers who have not studied at a Dutch University must provide evidence of satisfactory English test results:
    - o IELTS: minimum score 6.5
    - o TOEFL: minimum score 570 paper-based, 230 computer-based, or 88 internet-based.
    - o Other recognized proof of English proficiency approved by the Board of Examiners

A copy of the official test results is required.

Furthermore, all applicants must pay a non-refundable application processing fee of €75. All application materials must be in English and be received by the deadline published on the website.

Admission of qualified students is based on a two-step selection procedure. In the first round the Board of Admission assesses the curriculum vitae, academic record, letter of motivation, academic recommendation letters, and proof of English proficiency, provided by the applicant. Following a favourable decision in the first round, the applicant is invited to the second round, which consists of an individual interview conducted by a member of the Board of Admission and a specialization representative, and a written assignment. Final admittance decisions are made following this.

Article 4.2 Limitations on Enrolment

At least two months before the mentioned closing date published on the website the Dean proposes the maximum number of students to be admitted to each of the four specializations of the Research Master's to the University Board.

The Board of Admission is not bound to admit a minimum number of applicants to the Research Master's programme or to any of its four specializations.

Article 4.3 Board of Admission

1. The Board of Admission of the Research Master's programme is delegated the authority to make judgements concerning admission to the programme and to supply proof of such admission. The Board of Admissions consists of:
   - Chair who is also a member of the Board of Examiners;
   - Two faculty members;
   - A representative for each specialization.

Appointment to the Board of Admission is effected by the Dean.

§ 5 Study advice and guidance

Article 5.1 Individual Access to Study Results

1. The Faculty registers the individual study results of the students in such a way that they can be consulted by the students via Pandia.
2. The Faculty furnishes each student with an overview of the personal study results obtained at least once a year (preferably halfway through the second semester).

Article 5.2 Study Mentoring

The Faculty organises an introductory programme and assigns a faculty mentor to each student enrolled in the study programme. The mentor guides the learning process and supervises the personal growth of the student. Close monitoring of student performance and progression will help ensure that students complete the Research Master's programme on schedule.

Article 5.3 Study Advisor

Research Master's students may consult a Study Advisor of the Faculty at any time to discuss academic or personal problems. Study Advisors are not members of the Research Master's teaching staff and can provide impartial advice and referrals, as appropriate, to students seeking solutions for such problems.

§ 6 Procedural rules and exceptions

Article 6.1 Change

1. Changes in these regulations will be determined by special decision of the Faculty Board on the advice of the study programme commission and with the approval or advice of the Faculty Council.
2. A change in these regulations will not apply to the academic year in which it occurs, unless the interests of the students are not adversely affected by such a change.
3. A change can furthermore not be to the detriment of students by affecting any other decision that had been taken on the basis of the original regulations.

Article 6.2 Publication

1. The Faculty Board sees to the proper publication of this regulation, of the Rules and Regulations that have been determined by the Board of Examiners, and also of any

changes in these, by incorporating them in the programme's Prospectus among other things.
2. Interested persons can obtain a copy of the documents referred to in point 1 from the secretariat of the Board of Examiners.

Article 6.3 Unforeseen Cases

The Board of Examiners decides in cases that have not been foreseen by these regulations.

Article 6.4 Hardship Clause

The Board of Examiners is entitled to deviate from these regulations in individual cases, if a strict adherence will, in its opinion, result in an unfair outcome for the individual, in view of the special circumstances.

Article 6.5 Appeal

When the provisional results of (parts of) tests are announced, the Examination Board will notify students of the right to inspection. When the final results are announced the Examination Board will notify them of the possibility to appeal against the decision with the Board of Appeal for Examinations as meant in article 7.61 of the Act, and of the period of four weeks within which this appeal has to be lodged. The right of appeal is also communicated to the student in all correspondence regarding a decision of the Examination Board which is open to appeal. In addition, the period within such an appeal has to be lodged will be mentioned.

Article 6.6 Date of Taking Effect

This regulation takes effect as of 1st September 2008 and will be in force for the 2008/2009 academic year.
Thus enacted with the approval of the Council of the Faculty of Psychology and Neuroscience in its meeting of 29th May 2008.

No rights can be derived from the education and examination regulations as included here. Copies of the definitive education and examination regulations can be obtained from the secretariat of the Board of Examiners.

6.2 Rules and Regulations

for the Research Master's examination of the study programme Cognitive Neuroscience, Fundamental Neuroscience, Neuropsychology, Psychopathology

Article 1 Board of Examiners

The Board of Examiners sees to the execution of the regulation for the Research Master's examination and its parts, taking into account the law and the education and examination regulations concerning the organization and scope of the examinations of the Research Master's study programme of the Faculty of Psychology and Neuroscience. The Board of Examiners appoints examiners who are competent to assess student performance in a course. In particular cases the Board of Examiners can annul decisions taken by the examiners and can take its own new decision. This will in particular be the case if a student has not complied with the admission requirements for a part of the examination which he/she has completed.

Article 2 Composition of the Research Master's Examination

The Research Master's examination consists of the following parts:

a. the courses pertaining to the Research Master's specialization;
b. the other courses, workshops, skills trainings, and colloquia;
c. the tutorial group meetings pertaining to the courses as meant under a.;
d. the research internship and the Master's thesis;
e. where applicable, the clinical internship and Minor's thesis.

Article 3 Proof of Having Passed a Course

1. Core Courses

A student can have a course registered as passed if the following requirements have been met:

- A minimum of 85% attendance at the tutorial group meetings. A student who arrives more than 10 minutes after the official starting time of the meeting shall be considered not to have attended. For admission to the course examination, a student must have attended a minimum of 85% of the tutorial group. If a student has not complied with the minimum attendance requirement but has not missed more than one meeting than is allowed, he/she will be admitted provisionally to participate in the course examination. In this case a student can still comply with the minimum attendance requirement by applying for a compensatory assignment;
- A satisfactory assessment for the practical training, if applicable;
- At least sufficient marks for the final course assessment.

2. Interdisciplinary Perspectives

A student can have a Interdisciplinary Perspectives course registered as having been passed if the following requirements have been met:

- Attending a minimum of 85% of the sessions;
- A satisfactory assessment for the course.

3. Colloquia

A student can have the colloquium series registered as having been passed if the following requirements have been met:

- Registered attendance at a minimum of 15 colloquia; if a student has not complied with the attendance obligation but has not missed more than one meeting, he/she will be able to apply for a compensatory assignment;
- Timely and satisfactory completion of the required assignments.

4. Skills Trainings

A student can have a skills training registered as having been passed if the following requirements have been met:

- Attendance of 100 % of the skills trainings sessions. If a student has not complied with the attendance obligation but has not missed more than one meeting, he/she will be able to apply for a compensatory assignment;
- Timely and satisfactory completion of the required assignments.

5. Workshops

A student can have a workshop registered as having been passed if the following requirements have been met:

- Attendance of a minimum of 85% of the group meetings; if a student has not complied with the attendance obligation but has not missed more than one meeting, he/she will be able to apply for a compensatory assignment;
- Timely and satisfactory completion of the required assignments.

6. Electives

a. Electives can be regular courses offered by the UM or another university at the Master's level or higher. The content of elective courses should have a link to the RM programme goals. In questionable cases, the Board of Examiners will decide. Course content should not duplicate or extensively overlap with previously taken courses, as judged by the Board of Examiners.
b. Individually-designed electives: Students can design an elective tutorial, research project, or other study, provided that it meets established criteria, as judged by the Board of Examiners. These criteria include: supervision and assessment by a faculty member; a minimum study load of 28 hours per credit; assessment based on a written paper or examination; content linked to the goals of the RM programme, as described on page 8 of the Prospectus (General). A maximum of 3 of the 5 required electives for PP students can be obtained through an individually-designed course or activity. A maximum of 2 credits can be earned for any single individually-designed elective.
c. Applications to register for electives (including individually-designed electives) must be submitted 6 weeks in advance of their starting date.
d. Admission to an elective course can be denied if the student does not have the prerequisite background knowledge (if in doubt, students should consult the course coordinator before applying).
e. The Board of Examiners will notify students as soon as possible, at the latest within 2 weeks after the application has been submitted, in case their application for an

elective cannot be granted.

f. By notifying the Board of Examiners, a student can cancel enrolment in an elective course anytime up to and including the second meeting of a course of at least 4 meetings, or up to and including the first meeting of a shorter course, or during the first week of an individually-designed elective.

g. For elective courses in which a grade is given, this grade will appear on the transcript but is not included in the grade point average.

h. There is no limitation on the number of elective courses students in any specialization may take; however, credits obtained from elective courses cannot be used to substitute for credits that must be obtained from required courses or parts of the curriculum.

Article 4 Attendance Requirements

1. Where attendance of at least 85% of meetings is mandatory, the following applies:
   - of a total of 18 meetings: at least 15 meetings;
   - of a total of 16 or 17 meetings: at least 14 meetings;
   - of a total of 15 meetings: at least 13 meetings;
   - of a total of 14 meetings: at least 12 meetings;
   - of a total of 13 meetings: at least 11 meetings;
   - of a total of 12 meetings: at least 10 meetings;
   - of a total of 11 or 10 meetings: at least 9 meetings;
   - of a total of 9 meetings: at least 8 meetings
   - of a total of 8 meetings: at least 7 meetings;
   - of a total of 7 meetings: at least 6 meetings;
   - of a total of 6 meetings: at least 5 meetings;
   - In the case of 5 or fewer meetings there is an attendance obligation of 100%.
2. Attendance will be registered on a form, which is transmitted to the education office at the end of the course or training.
3. If a student has not complied with the attendance requirements, the relevant course will not be registered as having been passed.

Article 5 Compensatory Assignment

In order to qualify for a compensatory assignment a student must apply for this within **two weeks** after the course is finished by filling in the form **Request Compensatory Assignment Insufficient Attendance** (to be collected at the education desk) and handing it in at the education desk (Universiteitssingel 40) during opening hours. The student will receive a receipt, with the deadline for handing in the assignment on it. The assignment must be handed in to the course coordinator within four weeks after it has been given to the student. If this compensatory assignment is considered to be satisfactory the student will be considered to have complied with the attendance requirements and the provisional result of the course examination shall be ratified. If the request for a compensatory assignment has not been submitted in time and/or more than one meeting above what is allowed has been missed, the compensatory assignment will not be given and the provisional result of the course examination will be annulled. The student will then have to comply with the attendance obligation and take the course

examination in the following academic year. A student can qualify for a compensatory assignment at the most three times per academic year.

Article 6 Requirements for the Research Master's Degree in Cognitive Neuroscience, Fundamental Neuroscience, Neuropsychology and Psychopathology.

The awarding of the Research Master's degree and the issuing of the relevant Diploma will take place when proof of having passed all parts of the examination mentioned in article 2 have been obtained:

1. At least sufficient marks for each of the assessments;
2. Proof of satisfactory performance for all practical training sessions that are part of the education;
3. Compliance with the attendance requirement for all courses and practical training sessions;
4. Proof of satisfactory completion of the research internship, research proposal and the Master's thesis;
5. Where applicable, proof of satisfactory completion of all components of the clinical internship, the clinical research proposal and the Minor's thesis.

Article 7 With Distinction Degree Completion

1. Degree completion "with distinction" is attached to the Research Master's examination, if each of the following requirements has been met:
   a. A weighted grade point average (GPA) of at least 8.0 for all parts of the Research Master's examination that are assessed on a ten-point scale. Furthermore, all assessments must be passed on the first attempt.
   b. Weighting of course grades occurs according to the credits obtained in each course (see also Article 2.3).
   c. Master's thesis: a score of at least 8.0 or, where applicable, the proportional average of the scores for the Master's thesis and the Minor's thesis is at least 8.0.
   d. In the calculation of the overall GPA, thesis grades are weighted as follows: the Master's thesis is equivalent to 12 European credits; for students writing both a Master's and a Minor's thesis, the Master's thesis is equivalent to 12 credits and the Minor's thesis to 4 credits.

Article 8 Exemptions

1. Request for exemption from taking an assessment or undergoing another part of the examination on the strength of what has been determined by law will be submitted to the Board of Examiners. Written proof must be submitted to support the request.
2. The Board of Examiners makes a substantiated decision within four weeks after having received the request. The Board of Examiners is entitled to extend this period of four weeks by a period it determines. The student will be informed of the Board of Examiners' decision in writing.
3. No credits will be awarded for the parts of the examination for which exemption has been granted.

Article 9 Reassessments/Resits

The following reassessment arrangements apply to students who in the first instance have not passed a part of the Research Master's examination. The relevant reassessments are available only to students who have complied with the attendance requirement.

1. Core courses, including Advanced Statistics Part I and II

The student who failed a course assessment will get one other opportunity to resit that examination per academic year. If a student passes the initial assessment he/she cannot resit the examination. In the case of a reassessment the highest mark counts.

2. Workshops, Skills Trainings, Interdisciplinary Perspectives, and Colloquia

Students who failed a task of a practical training will have to complete a reassessment in the same academic year.

3. Papers

There will be one chance per unit to redo papers (including the Master's and Minor's thesis) per academic year. This will consist of rewriting the relevant paper.

Article 10 Hardship Clause

The Board of Examiners has the right to deviate in individual cases from what has been determined in the regulation on the request of a student, if a strict application of the rules would lead to an unfair or unreasonable situation. In the assessment of individual cases the Board of Examiners uses as its starting point the generally applicable legal principle that equal must be treated as equal and unequal must be treated as unequal. The Board of Examiners uses the so-called principle of unforeseen circumstances as the criterion for acceptability.

Article 11 Implementation and Date of Taking Effect

1. The Board of Examiners makes decisions in all cases that have not been foreseen by the Rules and Regulations.
2. These Rules and Regulations take effect as of 1st September 2008.

No rights can be derived from the education and examination regulations as included here. Copies of the definitive education and examination regulations can be obtained from the secretariat of the Board of Examiners.

6.3 Appendices

with the rules and regulations of the Research Master's examination

Appendix 1: Regulation on Research Proposal, Research Internship, and Master's thesis
Appendix 2: Regulation on Clinical Internship and Minor's Thesis
Appendix 3: Regulation on Fraud

APPENDIX 1 Regulation on research proposal, internship, and Master's thesis

Article 1 Research proposal

1. A research proposal is an independently written proposal concerning research that the student intends to conduct during his/her internship.
2. The research proposal consists of the following parts:
   - a brief theoretical background of the research;
   - the question posed by the research;
   - a description of the research plan;
   - a description of the research methods that will be applied;
   - a description of the techniques that will be used for processing and analysing the data;
   - a timetable.
3. Guidelines for the format and length of the research proposal can be found in the Research Internship Manual.
4. The assessment is done by two assessors. They are: a. two senior staff members of the Faculties if the internship is done internally (supervisor from the Faculties and a second assessor), or b. the external supervisor and the supervisor from the Faculties in case the internship is done outside the Faculties.
5. The research proposal must be submitted within 4 weeks of commencing the research internship. If the research proposal is judged to be unsatisfactory, the regulation about reassessments for Papers, article 8, point 3, Rules and Regulations for the Research Master 's examination of the study programme Cognitive Neuroscience, Neuropsychology, Psychopathology applies.
6. Before the student can commence research activities, formal permission for the study must have been obtained from the appropriate Ethics Commission/Institutional Review Board.

Article 2 Research internship

1. A student is required to do a research internship and Master's thesis at the conclusion of his/her study programme. If applicable, the clinical internship and Minor's thesis can be done before, after, or together with the research internship.
2. The student notifies the educational office about the internship at least one month before the start of the internship by means of a research internship notification form. The educational office checks whether the student has complied with the requirements in article 3.1, point 1 of the examination regulations.
3. An internship agreement is drawn up separately for each internship, in which a number

of arrangements are set out between the institution where the internship takes place, the supervisor from the Faculties and the student. A copy of this agreement is sent to the educational office at least one month before the internship starts.
4. The student will be supervised during the internship by a supervisor from the Faculty and a supervisor from the institution where the internship takes place (internship supervisor). The task of the supervisor from the Faculties and/or the internship supervisor consists in advising the student in matters of content with respect to the internship activities and the reporting of these in a Master's thesis (see Appendix 1: Article 3, Regulation Master's thesis). In addition, the supervisor from the Faculties is the contact person with the institution where the internship takes place.
5. After the practical part of the research has been finished, an evaluative discussion takes place between the internship supervisor, the supervisor from the Faculty and the student. The internship is registered as having been completed successfully by the internship supervisor or the supervisor from the Faculty on an assessment form, which is sent to the educational office.

Article 3 Master's thesis

1. A Master's thesis is an independently written report of the research that has been conducted during the research internship.
2. The Master's thesis is in principle an individually written piece of work.
3. The Master's thesis is assessed on the following aspects: the research question, scientific content, argumentation and form.
4. Guidelines for the format and length of the Master's thesis can be found in the Research Internship Manual.
5. The student must submit four copies of the Master's thesis to the educational office and one electronic version to an e-mail address that is announced on blackboard. Two copies, together with the individual assessment form, are sent on to the internship supervisor / supervisor from the Faculties and to the supervisor from the Faculties / second assessor. The assessment form, filled in and signed by both supervisors, is sent back to the educational office together with a written explanation within 20 working days. The educational office sends one copy of the approved Master's thesis to the internship coordinator for filing. The fourth copy is put into the University Library unless the institution where the Internship took place has objections to this.
6. If the Master's thesis is awarded insufficient marks, the Regulation for Reassessments for Papers, article 8, point 3 of the Rules and Regulations for the Research Master's examination of the study programme apply.

Article 4 Requirement for obtaining credit

In order to obtain credit (50 credits for students not doing a Clinical internship/Minor's thesis; 30 credits for students also doing a clinical internship/Minor's thesis) for this part of the Research Master's examination, the student must have satisfactorily completed the research proposal, the research internship, and the Master's thesis. Of these parts, only the Master's thesis is graded (the average of the scores given by the first and the second assessor). All other parts are assessed as pass/fail. The final grade for the Master's thesis is equivalent to 12 credits.

APPENDIX 2 Regulation on clinical internship and Minor's thesis

Article 1 Clinical internship

1. Students following the Psychopathology specialization are required to (and students following the Neuropsychology specialization may choose to) complete a clinical internship of 13 weeks or the equivalent (520 hours).
2. The student notifies the educational office about the internship at least one month before the start of the internship by means of a clinical internship notification form. The educational office checks whether the student has complied with the requirements in article 3.1, point 2 of the examination regulations.
3. An internship agreement is drawn up for each internship in which a number of arrangements are set out between the institution where the internship takes place, the Clinical Internship coordinator from the Faculty and the student. A copy of this agreement is sent to the educational office at least one month before the internship starts.
4. The student will be supervised during the internship by a supervisor from the Faculties and a supervisor from the institution where the internship takes place (internship supervisor). The task of the internship supervisor from the institution is to guide and monitor the student's clinical activities, and to facilitate the clinical research project. The supervisor from the Faculties advises the student concerning the conduct and reporting of research for the Minor's thesis (see Appendix 2, Article 2, Minor's thesis) and is the contact person with the institution where the internship takes place.
5. After the practical part of the clinical internship has been completed, an evaluative discussion takes place between the institutional internship supervisor, the Clinical Internship coordinator from the Faculty and the student. The internship is registered as having been completed successfully when the Clinical Internship coordinator has approved the student's clinical activities report, has received a satisfactory assessment of the internship performance from the supervisor from the institution, and has sent the relevant assessment form to the educational office.
6. PP students may be allowed, but only under exceptional circumstances and with prior approval of the Board of Examiners, to omit the clinical internship and Minor's thesis; in this case, the research internship and Master's thesis would together represent 50 credits.

Article 2 Minor's thesis

1. All students who elect or are required to follow a clinical internship are required to write a Minor's thesis.
2. The Minor's thesis is an independently written research report, based on a clinical topic relevant to the clinical setting where the internship is conducted.
3. A research proposal must be submitted to and approved by the clinical internship supervisor of the Faculties before the research activities commence.
4. Guidelines for the format and length of the research proposal can be found in the Clinical Internship Manual.
5. Before the student can commence research activities, formal permission for the study

must have been obtained from the appropriate Ethics Commission / Institutional Review Board of the institution where the internship is conducted.
6. The Minor's thesis is assessed on the following aspects: the clinical research question, scientific content, argumentation and form.
7. The student must submit two copies of the Minor's thesis to the educational office and one electronic version to an e-mail address that can be found on blackboard. One copy, together with the individual assessment form, is sent on to the UM supervisor from the Faculties. The assessment form, filled in and signed by the supervisor, is sent back to the educational office together with a written explanation within 20 working days. The educational office sends one copy of the approved Minor's thesis to the clinical internship coordinator for filing.
8. If the Minor's thesis is awarded insufficient marks, the Regulation for Reassessments for Papers, article 8, point 3 of the Rules and Regulations for the Research Master's examination of the study programme applies.

Article 3 Requirement for obtaining credit

In order to obtain credit (20 credits) for this part of the Research Master's examination, the student must have satisfactorily completed the clinical internship, the final clinical activities report, the clinical research proposal, and the Minor's thesis. Of these parts, only the Minor's thesis (4 credits) is graded, by the clinical internship supervisor/assessor at Maastricht University. All other parts are assessed as pass/fail.

APPENDIX 3 Regulation on fraud

The Board of Examiners has laid down the following regulation on examination fraud by way of further elaboration of article 3.14, point 1 sub e of the Education and Examination Regulation, in its meeting of 14th June 1995. This regulation is part of the Rules and Regulations.

Article 1

Fraud as referred to in article 3.14 of the Education and Examination Regulations is understood to mean:
a. acting or failing to act on the part of an examinee in a way that makes it wholly or partly impossible to form a fair judgment about the knowledge, insight and skills of the examinee.
b. acting or failing to act on the part of an examinee in a way that makes it wholly or partly impossible to form a fair judgment about the knowledge, insight and skills of a co-examinee.

Article 2

Fraud as meant in article 3.14 of the Education and Examination Regulations also includes: an attempt at fraud.

Article 3

Acting or failing to act as meant in article 1 of this regulation is understood to mean:

a. With respect to the writing of papers:
   - literal or paraphrased copying of passages from other papers or oral texts, from scientific articles or books, from sources on the Internet or from other electronic papers in such a way that the impression is given that it is one's own work;
   - literal copying or copying with minimal changes of extensive passages (more than a couple of sentences) from above mentioned sources with or without reference to the source text in such a way that the impression is given that it is one's own work.

b. With respect to taking tests, comparable proofs of ability, and examinations:
   - disposing over the usage of texts other than those of which the use is expressly permitted, on or in the vicinity of the table where the examinee sits or another place accessible to the examinee, during the taking of the test;
   - exchanging information with a co-examinee, where and in whatever way, during the taking of the test.

Article 4

If in the opinion of the examiner a (possible) case of fraud has taken place, the examiner as a rule takes the following action:

a. If the (possible) fraud has been ascertained during the taking of the test:
   - the examiner notifies the examinee of the ascertained (possible) fraud;
   - any text that the examinee may have unjustly had at his/her disposal for usage is confiscated;
   - the examinee is given the opportunity to complete the test, unless the examiner decides otherwise;
   - the examiner will bar the student from further participation in the test, if the examinee refuses to hand over the text that was possibly unjustly kept at hand in order to be used;
   - a text that has been confiscated is normally not returned to the examinee after the test is finished, unless the examiner decides otherwise;
   - the examiner documents the relevant facts connected with the suspected fraud in writing and sends this statement without delay to the Board of Examiners, together with any texts that had been confiscated.

b. if the (possible) fraud has been ascertained during or after the correction of a test or examination:
   - the examiner notifies the Board of Examiners in writing without delay about the (possible) fraud, providing the relevant papers and documents;
   - the Board of Examiners notifies the examinee about the ascertained (possible) fraud.

c. if the (possible) fraud is ascertained during or after the correction of written papers that are part of a test or that count as part of the course assessment:
   - the examiner notifies the Board of Examiners in writing without delay of the (possible) fraud, adding the relevant papers and documents;
   - the Board of Examiners notifies the examinee about the ascertained (possible) fraud.

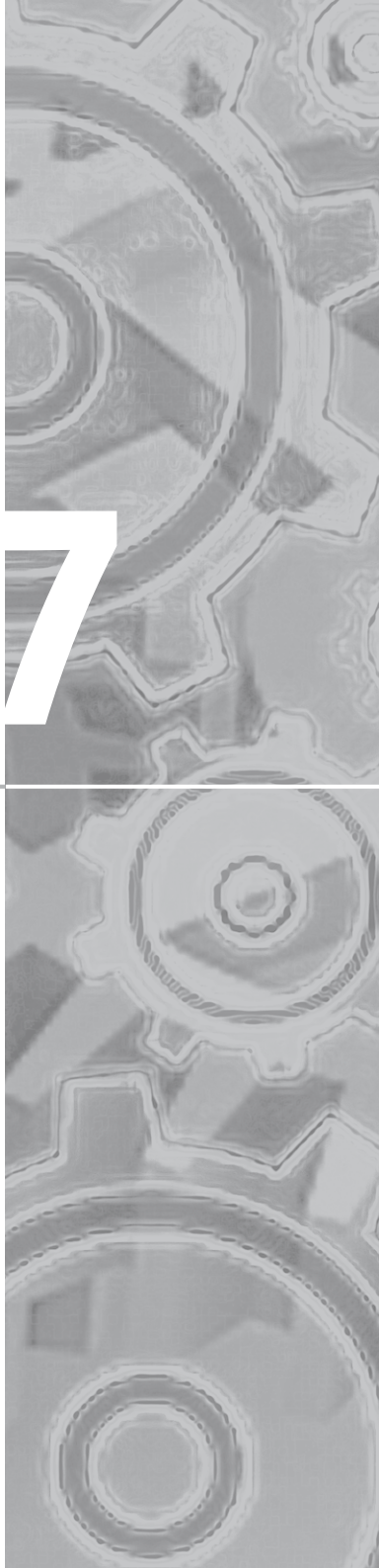
Article 5

The Board of Examiners deals with cases of possible fraud in the following manner:

a. the person who is suspected of fraud is called for a discussion; the Board of Examiners will be represented by the chairperson and the secretary or their representatives, and if possible by one other member of the committee;
b. the Board of Examiners decides, also on the ground of the outcome of the discussion as meant under point a., whether fraud has taken place;
c. the relevant test or paper will be declared invalid in each case that fraud as meant by article 1, point a. has been ascertained;
d. the Board of Examiners imposes a sanction, taking into account the nature and severity of the fraud committed in accordance with what has been said in article 3.14 of the Education and Examination Regulations, in each case that fraud as meant by article 1, point a has been ascertained;
e. the student concerned will be notified about the decision of the Board of Examiners as soon as possible;
f. an entry will be made in the student's file when a test or paper has been declared invalid and a sanction has been a imposed;
g. texts that have been confiscated will, on request, be returned by the Board of Examiners to the student concerned, if it decides that they do not need to remain available any longer in connection with the (further) treatment of the case;
h. the Board of Examiners can decide to reveal its decision publicly but without revealing the identity of the student concerned, with all the facts and circumstances on which the decision was based.

Article 6

A student can appeal to the Board of Appeal for Examinations against decisions taken by the Board of Examiners concerning fraud, within four weeks after the decision has been publicized.



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