Master's Programme

Master Specialisation Cognitive Neuroscience

Faculty of Psychology and Neuroscience

Practical Training: fMRI

Full course description

The primary goal of this course is to provide hands-on experience in experimental design, acquisition and analysis of fMRI experiments. In the first tutorial, each student group will separately formulate an experimental question/hypothesis to be tested with fMRI and will select an appropriate experimental design. In a subsequent meeting, each group will give an oral presentation to the other groups. The proposal will comprise of an fMRI study. All studies are to be discussed and evaluated; at the end of the meeting one study is selected.

In the group meetings and independent study, all students are involved in implementing the experimental set-up required for performing the selected study (e.g. selection and preparation of stimuli, implementation of the design) and participating in the fMRI measurements. During the latter course meetings, all students must perform the statistical analysis of the datasets. Assistance and prior preparation, especially in the implementation stage (stimulus programming) and data analysis stage (preparation of data in usable format for analysis in Brain Voyager QX), is provided by the tutors. Finally, students describe and discuss their findings in an individually written report.

Course objectives

Students are able to understand and gain hands-on experience of:

- experimental design, hypothesis formulation, operationalization;

- fMRI blocked and event related designs;

- parameters for MRI scanning, MR safety and procedures, fMRI measurements;

- pre-processing fMRI data, statistical analysis fMRI data, results interpretation.

Recommended reading

Huettel, S.A., Song, A.W., & McCarthy, G. (2009). Functional Magnetic Resonance Imaging. (2nd ed.). Sunderland, MA: Sinauer, Associates, Inc.; Jezzard, P., Matthews, P.M., & Smith, S.S. (2001). Functional MRI: An introduction to methods. Oxford, UK: Oxford; University Press; Journal articles, book chapters.

PSY4056
Period 2
28 Oct 2024

Master Psychology Specialisation Cognitive Neuroscience

20 Dec 2024
Print course description
ECTS credits:
2.0
Instruction language:
English
Coordinator:

- F. de Martino

Teaching methods:
Lecture(s), Presentation(s), Research, Work in subgroups, Skills
Assessment methods:
Attendance, Final paper, Presentation
Keywords:
Functional MRI, experimental design, fMRI data acquisition, fMRI data analysis
Faculty of Psychology and Neuroscience

Neuroimaging: Functional MRI

Full course description

The investigation of human brain functions using a range of imaging methods (such as Electro- and Magneto- encephalography, Positron Emission Tomography and Magnetic Resonance Imaging) represents the most influential development in Cognitive Neuroscience in the last years. In this course, students will learn about the essential facts of functional Magnetic Resonance Imaging (fMRI). FMRI presents clear advantages over the other methods, particularly in terms of increased spatial resolution. Since its invention in 1992, fMRI has led to major advances in understanding the neural mechanisms that underlie higher levels of human mental activity and has established a strong link between cognitive psychology and neuroscientific research. The other Cognitive Neuroimaging programmes confront student with several applications of fMRI in specific cognitive domains (visual perception and attention, sensorimotor integration, auditory perception). In this course, however, students will gain a deeper knowledge of fundamental and methodological aspects of fMRI.

The tasks will address questions such as: How can the fMRI signal be related to neural activity? How are functional images obtained with an MRI scanner? What do I need for performing a good fMRI measurement? How are "activation maps" created? Some of the tasks are directly linked to the parallel practical course (PSY4056) and are intended to provide the necessary theoretical framework for the design, analysis, measurement and interpretation of results in fMRI investigations. Theoretical aspects on the acquisition and analysis of fMRI data are discussed in the context of cognitive functions such as auditory and visual processing.

Course objectives

Students will gain knowledge and understanding of :

- physical principles of Nuclear Magnetic Resonance and Magnetic Resonance Imaging;
- physiological basis of functional MRIand the relation between the blood oxygenation level dependent contrast and neural activity;
- general rules for designing fMRI experiments, advantages and disadvantages of block and

event related designs;

- pre-processing of fMRI data, including motion correction, spatial and temporal filtering;
- fMRI statistics, including univariate statistics, general linear models, single-subject statistics, multi-subject statistics, correction for multiple comparisons, false discovery rate;
- methods for brain comparison and normalisation, Talairach transformation.

Recommended reading

Huettel, S.A., Song, A.W., & McCarthy, G. (2009). Functional Magnetic Resonance Imaging. (2nd ed.). 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, book chapters.

PSY4054
Period 2
28 Oct 2024
20 Dec 2024
[Print course description](#)
ECTS credits:
4.0
Instruction language:
English
Coordinator:

- [E. Formisano](#)

Teaching methods:
Lecture(s), PBL
Assessment methods:
Attendance, Written exam
Keywords:
Functional neuroimaging, Magnetic Resonance Imaging, experimental design, analysis methods
Faculty of Psychology and Neuroscience

Practical Training: EEG and ERP

Full course description

Electroencephalography (EEG) can measure oscillatory electrical brain activity and Event Related Potentials (ERP) allow for precise measurement of the time course of brain processes. They are low cost, non-invasive methods and are widely available. For these reasons, they make a unique contribution to cognitive neuroscience. Scientific interest in EEG and ERP is growing, and results have been increasingly integrated with other neuro-imaging methods during the last few decades.

Lectures and basic literature provide an introduction for students to the basics of EEG and ERP research, EEG and ERP terminology and the possibilities and limitations of EEG and ERP. For a Midterm paper students study an empirical data article from the literature and answer questions about its EEG and ERP methods and interpretation based on lectures, basic literature and other sources. Students also study practical measurement issues, such as electrode placement and types of artefacts. Finally, students will interpret the resulting data. Successful measurement requires an understanding of the basics of EEG and ERP signal analysis techniques, such as artefact

management, spectral analysis, filtering, ERP averaging, time-frequency analysis etc. Students also receive training in running an ERP experiment, including electrode application, minimising artefacts, and health and safety in the lab. A number of simple experimental paradigms will be used that provide interesting and reliable results. Data processing will include a number of common EEG analyses, e.g. analyses in the time and frequency domain.

Course objectives

Students are able to understand:

basic EEG/ERP paradigms, EEG recording systems, measurement settings, electrode application, data quality verification, analogue-digital conversion, basic EEG/ERP components, interpreting topographical plots, neural origins of EEG, time domain analysis, frequency domain analysis, time-frequency analysis, filtering, ocular artefact control, muscle artefact control, choice of reference, re-referencing.

Recommended reading

Journal articles, handbooks.

PSY4034
Period 1
2 Sep 2024
25 Oct 2024
[Print course description](#)
ECTS credits:
2.0
Instruction language:
English
Coordinator:

- [F.T.Y. Smulders](#)

Teaching methods:
Lecture(s), Skills, Work in subgroups
Assessment methods:
Attendance, Final paper, Assignment
Faculty of Psychology and Neuroscience

Auditory and Higher Order Language Processing

Full course description

The course introduces the auditory and speech system: How do we segregate the sound of a Ferrari from that of a Red Bull Formula 1 car? How do we focus on the voice of a friend among many other voices in a crowd? How do we understand and produce speech? Why does a non-fluent speaker become fluent when his, her or its auditory feedback is delayed? How is auditory information integrated with other senses such as vision or touch?

In the last few years, cognitive neuroscience research has set a number of milestones in our

understanding of related brain mechanisms. This knowledge is crucial fundamental knowledge because hearing and communicating with the environment and with others is one of the most essential human cognitive skills. This knowledge helps understanding why something goes wrong (hearing loss, dyslexia, non-fluent speaking). It supports development of interventions.

This course aims to develop students' knowledge about the human auditory and speech system. The course starts with basic neural anatomy and considers how this might constrain but also assist auditory processing. It provides the basics of auditory Gestalt and stream segregation, speech perception and speech production, and related auditory feedback principles. It introduces how the brain integrates information from different modalities.

Course objectives

Students are able to understand:

- anatomy and function of the auditory system, of the speech system (separately for comprehension and production), and of cross modal integration;
- methods used in CN to study anatomy and function (in animals, humans: electrophysiology, psychophysics, fMRI), understanding relevant aspects of the method to quantify cognition (EEG oscillation, ERP components, fMRI);
- experimental design to study open questions in hearing and speech processing (tasks, stimuli);
- most relevant open issues of how the brains solves problems like Gestalt processing/grouping, figure ground segregation/streaming, comprehension, production, error monitoring, multisensory/cross modal integration;
- acquiring critical thinking skills of limits of methods, designs, tasks and theories in the context of auditory and language processing;
- acquiring creative thinking skills to come with new ideas by merging knowledge from different fields (i.e. comprehension and production, or by transferring ideas from one to another field (speech motor integration and its role in production).

Recommended reading

E-reader.

PSY4051
Period 1
2 Sep 2024
25 Oct 2024
[Print course description](#)
ECTS credits:
4.0
Instruction language:
English
Coordinator:

- [B.M. Jansma](#)

Teaching methods:
Lecture(s), PBL
Assessment methods:
Attendance, Written exam

Perception and Attention

Full course description

The objective of the course is to present the groundwork based on which students will be able to understand current neuro-cognitive theories and experimental methods in the field of visual perception and attention. This will be achieved via discussion of a set of core papers in this field.

Vision is a complex cognitive process which provides us with a richer stream of information than any other sense. The primate visual cortex is composed of a network of at least 30 highly interconnected functionally specialized regions. The regions where visual information first enters the cortex are called early visual areas. Neurons in these areas have relatively simple properties, and their small receptive fields are arranged to form retinotopic maps of the environment on the cortex. Higher level visual processing occurs in a ventral and dorsal stream, which are respectively contributing to object perception and the perception of motion.

The network contributing to visual perception can adapt to the task that the organism is faced with. This is the case, for example, when looking for someone in a crowd and attending to one face at a time. There are many kinds of attention, but attention can be generally described as involving some type of information selection.

In this course, neural mechanisms underlying prototypical examples of low and high level perception will be studied, as well as neural mechanisms underlying selective attention. The course will discuss both historically important papers, as well as more recent research in visual perception and attention, involving different empirical methods including psychophysics, neurophysiology, and functional brain imaging but with an emphasis on animal neurophysiology.

Course objectives

Students will

- gain knowledge and understanding of the human and non-human primate visual system (structure and function), in terms of low-level and high-level visual perception as well as visual attention;
- gain knowledge regarding acquisition and analysis of data in the methodological fields of neurophysiology and psychophysics;
- acquire the capability of detailed, in-depth reading of scientific papers, which involves (I) the understanding and evaluation of methods, (II) the understanding/contrasting of (quantitative) theories and models and the evaluation of their fit with the data, and (III) the critical evaluation of interpretations of presented data by the article's authors;
- improve their ability to use scientific terminology while verbalizing and discussing insights and questions raised by the readings;
- be able to apply the acquired scientific reading and evaluation skills to papers outside the field of visual perception and attention;
- generally improve their ability of theorizing, hypothesis formation, and experimental design.

Recommended reading

E-reader.

PSY4052
Period 1
2 Sep 2024
25 Oct 2024
[Print course description](#)
ECTS credits:
4.0
Instruction language:
English
Coordinator:

- [P.H.M. de Weerd](#)

Teaching methods:
Lecture(s), PBL
Assessment methods:
Attendance, Written exam
Keywords:
Visual system, illusions, Perception, Attention, neurophysiology, monkey
Faculty of Psychology and Neuroscience

Sensorimotor Processing

Full course description

Every day activities such as riding a bicycle, typing a summary and drinking a cup of coffee require the continuous interaction of brain systems that serve sensory perception and systems that control the body's muscles. In other words, most of the things people do require sensorimotor integration. Since sensory perception (visual as well as auditory) is covered extensively in other courses, the main focus here will be on the somatosensory and motor system as well as on the transformation and processing of sensory information for motor control. Initially, basic processes are covered, such as the representations used by primary and secondary somatosensory and motor areas (which parameters are represented, e.g. muscle contractions, joint angles or whole movements?), types of motor control (since processing perceptual feedback takes time, how should individuals use past information to control future actions?), and coordinate transformations (how to get from incoming visual information, coded with respect to our current eye position, to motor commands, coded with respect to our current body posture?). Later in the course, the focus will shift to higher level issues such as motor learning, action selection and decision making, and predicting the actions of others. All topics will be discussed in the context of cognitive neuroscience research so that students learn how these topics can be investigated using a range of different techniques from behavioural experiments to electrophysiological recordings and brain imaging methods.

Course objectives

- describe and explain the neural mechanisms underlying sensorimotor processing (internal models, coordinate transformations, action selection);

Master Psychology Specialisation Cognitive Neuroscience

- critically assess opposing views, the supporting experimental data and the research methods used to obtain them;
- explain the neuro-behavioural correlates of motor learning and decision making, and the role of mirror neurons in action understanding.

Recommended reading

Journal articles, book chapters.

PSY4055
Period 2
28 Oct 2024
20 Dec 2024
[Print course description](#)
ECTS credits:
4.0
Instruction language:
English
Coordinator:

- [J. Reithler](#)

Teaching methods:
PBL, Lecture(s)
Assessment methods:
Attendance, Written exam
Keywords:
Neural correlates of motor control, Somatosensory perception, Sensorimotor coordination, reference frames, coordinate transformations, Motor learning, action selection, mirror neuron system
Faculty of Psychology and Neuroscience

Mentorship CN

Full course description

The Mentor programme is closely connected to PSY4142 (research proposal).

This module aims at making our new Master students feel comfortable at FPN. Our mentors share their experience in academia with the students and by doing so broaden the students' horizon. They guide the students in the transfer from a BA to a MA study level and support the students' adjustments to international, multicultural, interdisciplinary, and PBL based education. Also, the mentors provide preparation, orientation and reflection on study progress, internship choices, and post-Master career options.

Voluntary but highly recommended meetings are scheduled for the students. The main themes of those meetings are 1) starting at UM, 2) the research internship and 3) future career, but the meetings are open for other topics based on student needs.

Upon request, the mentor also engages individually with a student.

Master Psychology Specialisation Cognitive Neuroscience

Course objectives

Intended learning outcomes (ILO's) are tailored to the individual student, but do relate to study and research skills, employability and global citizenship education. Main goals are as described above.

PSY4954
Year
1 Sep 2024
31 Aug 2025
[Print course description](#)
ECTS credits:
0.0
Instruction language:
English
Coordinator:

- G.A. ten Hoor

Teaching methods:
Work in subgroups
Keywords:
mentor, personal growth

Research Internship

Faculty of Psychology and Neuroscience

Research Proposal

Full course description

In this course, the research proposal is drafted in preparation for the research internship. The course serves to provide students with general skills and a source of information about academic research. The course thereby supports the development of the research proposal and subsequent execution of the internship via assignments, workshops, and lectures that allow students to practice and develop their academic skills.

The research proposal describes what you will investigate, why it is important, and how you will do the research. The format of a research proposal varies between (sub)fields, but most proposals should contain at least these elements: Cover page, Introduction, Literature Review (incl background, relevance, and research question), Research design and methods, Reference list, and a Timeline/planning. Students discuss the content of the proposal with their internship supervisors (preferably 2-3 months prior to the official start of the internship).

This module is not applicable for (the subsample of) students of the Master Neuropsychology that complete a clinical internship.

Course objectives

- to produce a scientifically sound research proposal;

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- to adequately prepare for a research internship.

Mandatory ILO's are:

- students know what the criteria/guidelines are for writing a research proposal;
- students know what transparency in science is (including data management and research ethics);
- students recognize ethical aspects of conducting research and are able to complete an ethics application.
- students are familiar with the key concepts of open science including preregistration.

Additional ILO's (if skills are not yet mastered) are:

- students are able to execute a literature review;
- students are able to use a reference manager;
- students are able to select a research design and corresponding methods for a research project;
- students understand basic statistical techniques;
- students can explain characteristics of academic writing and are able to implement and apply that knowledge to the writing of a research proposal.

(this list is just an example, and will be updated each year, based on student and supervisor needs)

PSY4142
Year
6 Jan 2025
4 Apr 2025
[Print course description](#)
ECTS credits:
4.5
Instruction language:
English
Coordinator:

- G.A. ten Hoor

Teaching methods:
Assignment(s), Lecture(s)
Assessment methods:
Final paper
Keywords:
Academic skills, Research skills, methods, statistics, writing, Internship
Faculty of Psychology and Neuroscience

Research Internship Graded

Full course description

During the second part of the one-year master's program (from period 3 onwards), students conduct a research internship that involves 1) writing of a research proposal, and preparing and planning of the research project, 2) conducting the research project, and 3) analyzing the results of the research project. This work will result in an individually written 4) master's thesis.

Master Psychology Specialisation Cognitive Neuroscience

The internship can be carried out at Maastricht University, at an external research institute or at other, more practically oriented institutions. In all cases, a student's research proposal and master's thesis will be evaluated by two assessors.

Information about research internships can be found on AskPsy:
https://www.askpsy.nl/internship/home

This module is not applicable for students of the Master Neuropsychology who choose to do an additional clinical internship.

Course objectives

Students are able to:

Conduct a supervised empirical research project and summarize this research in a master's thesis.

Prerequisites

The Research Internship can only be started when at least 8 credits of the compulsory core courses have been obtained of the modules offered in periods 1 and 2. The research proposal must be assessed as sufficient by both assessors and there must be ethical approval for the research project before the start of the data collection. In addition: certain Research Internships may require that practical or skills training(s) have been completed.

PSY4180
Year
1 Sep 2024
31 Aug 2025
[Print course description](#)
ECTS credits:
7.0
Instruction language:
English
Coordinator:

- [G.C. Kraag](#)

Teaching methods:
Assignment(s), Paper(s), Research, Training(s)
Assessment methods:
Attendance, Assignment, Participation, Observation
Keywords:
Academic skills, internship, research, Research proposal, master's thesis
Faculty of Psychology and Neuroscience

Research Internship Ungraded

Full course description

During the second part of the one-year master's program (from period 3 onwards), students conduct

Master Psychology Specialisation Cognitive Neuroscience

a research internship that involves 1) writing of a research proposal, and preparing and planning of the research project, 2) conducting the research project, and 3) analyzing the results of the research project. This work will result in an individually written 4) master's thesis.

The internship can be carried out at Maastricht University, at an external research institute or at other, more practically oriented institutions. In all cases, a student's research proposal and master's thesis will be evaluated by two assessors.

Information about research internships can be found on AskPsy:
https://www.askpsy.nl/internship/home

This module is not applicable for students of the Master Neuropsychology who choose to do an additional clinical internship.

Course objectives

Students are able to:

Conduct a supervised empirical research project and summarize this research in a master's thesis.

Prerequisites

The Research Internship can only be started when at least 8 credits of the compulsory core courses have been obtained of the modules offered in periods 1 and 2. The research proposal must be assessed as sufficient by both assessors and there must be ethical approval for the research project before the start of the data collection. In addition: certain Research Internships may require that practical or skills training(s) have been completed.

PSY4181
Year
1 Sep 2024
31 Aug 2025
[Print course description](#)
ECTS credits:
12.0
Instruction language:
English
Coordinator:

- [G.C. Kraag](#)

Teaching methods:
Assignment(s), Paper(s), Research, Skills
Assessment methods:
Attendance, Final paper, Participation, Observation
Keywords:
Academic skills, internship, research, Research proposal, master's thesis
Faculty of Psychology and Neuroscience

Academic Skills

Full course description

The Academic Skills course is closely connected to the research proposal and prepares students for their internship and thesis. This module offers students an opportunity to practice and apply academic writing and research skills and prepares students for their research internship (including the writing of their research proposal and thesis). To achieve this, a series of assignments, workshops, and lectures is offered in the 3rd period (four weeks). In addition, students will be encouraged to consider their future career (inc. what their interests are/what career(s) they would like to pursue).

The Academic Skills course has to be completed within 6 weeks after the start of a students' research internship (so no need to have this finished at the end of period 3). To make sure that students can pass this course when delaying (the start of) their internship this course is open during the entire academic year. For most students, however, the academic skills course is focused on period 3 (January).

The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

Course objectives

Intended learning outcomes (ILO's) are tailored to the individual student and depend on the individual motivations and needs for their research internship. ILO's are related to:

1. The (general) mandatory skills that students followed as part of the assessment in PSY4775.
2. The additional academic skills deemed necessary by internship supervisor.
3. Additional (online) skills courses and/or experiences that students may have followed or obtained additionally to point 1 and 2 out of interest/personal growth.

Mandatory ILO's are:

- students know what the criteria/guidelines are for writing a research proposal;
- students know what transparency in science is (including data management and research ethics);
- students recognize ethical aspects of conducting research and are able to complete an ethics application.

Additional ILO's (if skills are not yet mastered) are:

- students are able to execute a literature review;
- students are able to use a reference manager;
- students are able to select a research design and corresponding methods for a research project;
- students understand basic statistical techniques;
- students can explain characteristics of academic writing and are able to implement and apply that knowledge to the writing of a research proposal.

(this list is just an example, and will be updated each year, based on student and supervisor needs)

PSY4775

Master Psychology Specialisation Cognitive Neuroscience

Year
6 Jan 2025
4 Apr 2025
ECTS credits:
0.5
Instruction language:
English
Coordinator:

- G.A. ten Hoor

Teaching methods:
Skills, Assignment(s), Lecture(s)
Assessment methods:
Assignment, Attendance
Keywords:
Academic skills, research skills, methods, statistics, career skills, writing, peer reviewing, ethics in research
Thesis

Master's Thesis

Faculty of Psychology and Neuroscience

Master's Thesis

Full course description

During the second part of the one-year master's program (from period 3 onwards), students conduct a research internship that involves 1) writing of a research proposal, and preparing and planning of the research project, 2) conducting the research project, and 3) analyzing the results of the research project. This work will result in an individually written 4) master's thesis.

The internship can be carried out at Maastricht University, at an external research institute or at other, more practically oriented institutions. In all cases, a student's research proposal and master's thesis will be evaluated by two assessors.

Information about research internships can be found on AskPsy:
https://www.askpsy.nl/internship/home

This module is not applicable for students of the Master Neuropsychology who choose to do an additional clinical internship.

Course objectives

Students are able to :

- conduct a supervised empirical research project and summarize this research in a master's thesis.

Master Psychology Specialisation Cognitive Neuroscience

Prerequisites

The Research Internship can only be started when at least 8 credits of the compulsory core courses have been obtained of the modules offered in periods 1 and 2. The research proposal must be assessed as sufficient by both assessors and there must be ethical approval for the research project before the start of the data collection. In addition: certain Research Internships may require that practical or skills training(s) have been completed.

PSY4091
Year
3 Feb 2025
31 Aug 2025
[Print course description](#)
ECTS credits:
10.0
Instruction language:
English
Coordinator:

- [G.C. Kraag](#)

Teaching methods:
Assignment(s), Paper(s), Research, Skills
Assessment methods:
Attendance, Final paper, Observation, Participation
Keywords:
Academic skills, Internship, Research, Research proposal, master's thesis
Elective courses

Electives

Faculty of Psychology and Neuroscience

Selection and training

Full course description

In this elective, students will practice with designing an assessment center, with structured interviews and with training design and evaluation. This elective will start with an opening lecture, in which the structure of the elective will be explained and in which they will learn the relevant theoretical background on assessment centers, structured interviews, and trainings. After that, they will read relevant literature on these topics and start to work in small groups on designing an assessment center. In the first group meeting, they will present their assessment centers to each other and receive feedback on it. In the next group meeting, they will practice a structured interview, in which they will do roleplays in which half of them plays the role of the interviewer and the other half the role of the candidates. Halfway through the meeting, they will switch roles. Finally, they will design a training in small groups and conduct this training during the final group meeting. Again, half of them will start as the trainers, and the other half of the group will be the trainees. During this meeting they will also switch roles.

Course objectives

- Students will get acquainted with assessment centers: they will learn about the procedures and validity of this selection tool;
- Students will practice and improve their interview skills by conducting a structured interview;
- Students will learn theories about training design and practice their skills by designing and evaluating a training;
- Students will improve their employability by learning more about and practicing with selection and training methods.

PSY9103
Period 3
6 Jan 2025
9 Feb 2025
Print course description
ECTS credits:
3.0
Instruction language:
English
Coordinators:

- A.L.T. Walkowiak
- F.E.R.M. Nievelstein

Teaching methods:
Lecture(s), PBL, Assignment(s), Skills, Work in subgroups
Assessment methods:
Assignment, Attendance, Observation, Presentation
Keywords:
Selection, training, Assessment Center, Role play
Faculty of Psychology and Neuroscience

Systemic Coaching for Psychologists

Full course description

Coaching can be defined as a developmental, tailor-made intervention in which a professional coach utilizes collaborative, reflective, and goal-oriented strategies to facilitate the development and performance of individuals or groups. Coaching puts coachees as learners at the center of the coaching experience, thereby aiming to promote their self-awareness and personal responsibility and unlock their full potential.

In this elective students will learn about the basic principles of systemic coaching (a form of coaching in which the larger system in which we all operate is considered) and will get to know a variety of cognitive, motivational, and behavioral techniques to help coachees achieve a mutually identified goal. In this elective students will form groups of three: Every student will act as a coach, but will also be coached by a peer, and additionally act as an observer who provides meaningful feedback on the coaching process.

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Course objectives

After this course students are able to:

- explain the basic principles of systemic coaching;
- differentiate psychological theories on the topic of personal development;
- understand the effects of different coaching techniques;
- independently design a coaching session for a client;
- flexibly and spontaneously apply different coaching tools based on the (changing) needs of a client;
- reflect on their own strengths and weaknesses in their role as a coach;
- reflect on their progress regarding a goal in their role as a coachee;
- provide meaningful feedback to coaches in their role as an observer;

PSY9101
Period 3
6 Jan 2025
9 Feb 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinator:

- [A. Nübold](#)

Teaching methods:
Lecture(s), Assignment(s), Work in subgroups, Skills
Assessment methods:
Attendance, Participation, Observation, Oral exam
Keywords:
systemic coaching; psychological theories; cognitive, motivational, behavioral techniques; self-help; flexibility; self-reflection; personal development
Faculty of Psychology and Neuroscience

Introduction to Programming in Python

Full course description

The work of many high-skilled jobs now requires more advanced computer skills than ever before. Skilled professionals ought to be able to use programming to efficiently process and visualize data, without being limited by the tools conventional programs offer. This elective focuses on understanding and solving problems using programming.

You will learn how to think in terms of algorithms, moving from identifying a problem to creating a step-by-step solution (in the form of code). You will learn how to program in Python, a free, open-source, platform-independent, and continuously maintained programming language. Python is a powerful dynamic programming language that is used in a variety of applications and domains.

Once you know how to program in Python, it will be much easier for you to learn other – more specialised or more general-purpose – languages (such as Matlab, R, or C).

Master Psychology Specialisation Cognitive Neuroscience

Course objectives

During the elective, students will develop a basic understanding of programming in general and the Python programming language specially.

After this course, students:

- Have a basic understanding of how to program and be able to think in terms of algorithms.
- Have a working knowledge of the Python programming language specifically (data types, variables, operators, control-flow, and loops).
- Are able to write well-commented Python scripts.
- Are able to write functions to automate particular tasks.
- Are able to debug (fix) Python code.
- Are able to understand basics of scientific computing (numpy & matplotlib).

PSY9102
Period 3
6 Jan 2025
9 Feb 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinators:

- [M. Enan](#)
- [J.J.G. van Haren](#)

Teaching methods:
Skills, Assignment(s)
Assessment methods:
Assignment, Participation
Keywords:
Programming skills, Python, Algorithms
Faculty of Psychology and Neuroscience

The global SDGs: From problem to solution

Full course description

Psychologists are invaluable sources of knowledge and allies for global governments in helping them to achieve the 17 Sustainable Development Goals (SDGs), https://sdgs.un.org/goals. After all, many of the current global challenges require a deep knowledge of human cognition, motivation, emotion, and behaviour – as well as how to change these. Indeed, humans, and human behaviour, are central to achieving many of the (sub-)SDGs, whether it is a reduction of reliance on fossil energy sources, achieving gender equality, or creating optimal health and wellbeing. In this course, you will be introduced to and practice with the PATH model (Problem – Analysis – Test- Help). Using this protocol, you will (a) describe and analyse the psychology behind one of the SDGs, and (b) come up with 'solutions' – interventions – that enable this SDG to be attained. Your final (group) report will take the form of a policy brief.

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Course objectives

Students are able:

- to apply psychological principles to global/societal problems (SDGs);
- to acquire basic knowledge of the cognitive, motivational, emotional, social, and behavioural factors are at the core of many societal and global challenges;
- to engage in creative problem solving while designing an intervention;
- to reflect on ethical and moral dimensions of an applied psychological problem;
- to take perspectives of other (sub)disciplines and stakeholders outside academia;
- to present research and recommendations to a non-specialized audience
- to work in teams

PSY9104
Period 3
6 Jan 2025
9 Feb 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinators:

- J.G. Zimmerman
- A. Pawlowska

Teaching methods:
Lecture(s), Work in subgroups, Paper(s), Presentation(s)
Assessment methods:
Final paper, Attendance
Keywords:
applied psychology, global citizenship, psychological literacy, creative problem solving, social responsibility, change agency
Faculty of Psychology and Neuroscience

Clinical Assessment

Full course description

To be able to treat a client effectively, mental health professionals first need to perform a clinical assessment of the client. This assessment refers to the collection of information and consequently drawing conclusions about the client's symptoms and disorder(s). For this purpose, the health professional does observations, administers (neuro)psychological tests, and interviews the client. In this course, we will introduce you to such clinical assessment. During the first sessions, we acquaint you with screening tools that are used in the earliest stages. Next, we go more in-depth and you will learn to administer tests that are commonly done as follow-up for a number of disorders. For example, you acquire skills to administer Anxiety and Depression scales, to run neuropsychological tests for the measurement of attention and memory, and you will be acquainted with tools to examine potential problems with sensory integration. In all cases, we discuss which types of tests are used across the life span. At the end of the course, for the materials studied, you are able to

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develop a basic screening protocol with follow-up testing.

Course objectives

At the end of this course, students are able to:

- Develop an assessment plan for a client based on the initial referral by a general practitioner
- Complete an initial mental screening of a client
- Use and analyse follow-up assessment tools in the field of Anxiety, Depression, Attention, Memory, or Sensory Integration
- Evaluate the outcome of a clinical assessment

PSY9105
Period 3
6 Jan 2025
31 Jan 2025
Period 4
10 Feb 2025
23 Mar 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinators:

- [A. Sambeth](#)
- [A.L. Smitten](#)

Teaching methods:
Lecture(s), Presentation(s), Skills, Work in subgroups
Assessment methods:
Presentation
Keywords:
Clinical reasoning, Screening (protocol), (neuro)psychological assessment, observation, interviewing
Faculty of Psychology and Neuroscience

Negotiation and Mediation

Full course description

In this elective, students will focus on negotiations and mediation skills. The elective will start with a lecture to explain the structure of the course and to introduce the topic of negotiation to them. In this lecture, they will already learn about the most important theories and strategies that can be used for negotiation and mediation in different contexts. After the lecture, they will read literature to prepare them to practice their negotiation skills. TrainTool will be used to practice these skills. We will use the Harvard principles of negotiation in this elective. In TrainTool, they will first practice the first two principles, after which they will have a group meeting in which we will do a role play focusing on these two principles. Then, they will again practice with Traintool, now focusing on the last two principles, and we will end the course with another role play in the group meeting.

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Course objectives

- Students will learn about different theories and strategies for negotiation;
- Students will practice their negotiations skills based on the Harvard principles of negotiation.

PSY9106
Period 3
6 Jan 2025
31 Jan 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinators:

- [A.L.T. Walkowiak](#)
- [C.J. Zelihsen](#)

Teaching methods:
Lecture(s), Work in subgroups, Skills, Assignment(s), PBL
Assessment methods:
Assignment, Attendance, Observation, Presentation
Keywords:
negotiation, mediation, roleplay
Faculty of Psychology and Neuroscience

Introduction to Programming in Matlab

Full course description

The aim of this elective is twofold:

1. Develop basic and generalizable programming skills in MATLAB;
2. Utilize programming to handle and visualize big data, such as those encountered in Neuroscientific research.

MATLAB is a widely used programming and numeric computing platform. Through this elective, you will familiarize with basic MATLAB programming and will learn how to use it to handle, analyze and visualize multidimensional datasets like those encountered in neuroscience and neuroimaging research, business, marketing, social and natural sciences.

Through the course we will explore examples of how to use programming to speed up computations, construct, analyze and visualize time-series (e.g., EEG data, market and financial trends).

At the end of the course, you will write a report in subgroups about the data analysis approach you adopted to analyze time-series data and on how you interpreted results.

Course objectives

With this course, students will:

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1. develop fundamental and generalizable programming skills in MATLAB;
2. learn how to use programming to handle and visualize multidimensional datasets;
3. learn how to summarize, visualize and interpret the results of their analyses.

PSY9107
Period 4
10 Feb 2025
23 Mar 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinators:

- [G. Valente](#)
- [A. Criscuolo](#)

Teaching methods:
Lecture(s), Skills, Work in subgroups
Assessment methods:
Attendance, Assignment, Final paper
Keywords:
Programming; MATLAB; data analysis.
Faculty of Psychology and Neuroscience

Science Communication

Full course description

In this 5-week course students will practice presenting science to a broad audience in written format and (online) presentations. They will write a blog post (assignment 1) about a scientific topic of choice, to practice how to summarize complex information in a reader-friendly manner. Furthermore, students will make a video about a scientific topic (assignment 2). In the course, the students will learn how to target their presentation to the audience, how to organize their presentation, and how to use visual aids.

This course will provide students the opportunity to hone their written, visual, and verbal presentation skills. The ability to present complex information in written or visual form can help to become and effective communicator in the workplace or to engage more with larger audiences.

The students will have 9 meetings within the course (lectures, workshops and PBL meetings).

Course objectives

After this course, students are able to:

- write about scientific topics for a broad audience
- summarize complex information
- present scientific information in the format of a video
- organize the content of a (digital) presentation

- use visual aids in (digital) presentations

PSY9108
Period 4
10 Feb 2025
23 Mar 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinator:

- A.E.M. Hendriks

Teaching methods:
Lecture(s), PBL, Skills, Assignment(s)
Assessment methods:
Final paper, Presentation, Attendance
Keywords:
Writing skills, (digital) presentation skills
Faculty of Psychology and Neuroscience

Individual Elective

Full course description

Students work on an assignment (structured literature review, research project) under the supervision of a member of the scientific staff of Maastricht University, resulting in a written product (e.g. literature review, research report). Students take the initiative to locate and arrange a FPN supervisor for the elective. The elective topic, content and format will be determined by mutual agreement between student and supervisor. The assignment should be different/clearly separate from the actions that will be taken in the research internship and the written final product should be a separate product from the master thesis. Students are expected to devote 168 hours to the Individual elective. Students aiming to follow an individual elective should hand in an individual elective proposal, signed by the supervisor, to the coordinator of the individual elective for approval.

Course objectives

Students are able to:

- identify gaps in their own knowledge and abilities and develop an individual learning plan accordingly.
- communicate scientific literature and/or report on a research project.

PSY9109
Period 3
6 Jan 2025
31 Jan 2025
[Print course description](#)
ECTS credits:

Master Psychology Specialisation Cognitive Neuroscience

6.0
Instruction language:
English
Coordinators:

- [G.J.A.M.L. Uitdewilligen](#)
- G.A. ten Hoor

Teaching methods:
Assignment(s), Research
Assessment methods:
Final paper
Keywords:
Elective, paper assignment
Faculty of Psychology and Neuroscience

Internship Elective

Full course description

During the elective internship, psychology master students (can) practice applying theoretical knowledge to practice and gain relevant practical experience, while working in an institution or company. Students are expected to devote 168 hours to the elective internship.

Students can only be enrolled in this elective, if they have found an internship on their own before December 1st. Students can work in a variety of 'settings': e.g., a (mental) health care facility, rehabilitation centers, schools, but also companies, such as HR consultancies. Suitable institutions or companies provide students the opportunity to gain practical experience, relevant for becoming a psychologist. If the student wants to obtain ECTS for this practical work, the internship (the institution or company and the content of the internship) has to be approved by the elective internship coordinator before the student starts working there. Students can only obtain ECTS for work conducted at one (and not multiple) institute(s). During this practical, students need to work under the supervision of a supervisor with an academic degree in psychology or a related field. At the start of the practical, the student drafts a personal development plan (PDP), defining the learning objectives for the internship. In addition to the work experience, the student must write a report about this experience. As such, the student will get more insight into the work setting(s) of a psychologist and they will gain experience with applying knowledge and skills essential for being a psychologist. Note: this practical experience cannot be used to fulfil the prerequisites regarding the theoretical background and working experience set for the psychodiagnostics registration (i.e., the BAPD) and/or vLOGO. This module is only relevant for FPN students and not available for Exchange students.

Course objectives

The student:

- obtains insight into the work setting(s) of a psychologist;
- gains experience with applying knowledge and skills essential for being a psychologist
- develops the ability to apply scientific insights to reflect upon practices in the field.

PSY9110

Master Psychology Specialisation Cognitive Neuroscience

Period 3
6 Jan 2025
31 Jan 2025
[Print course description](#)
ECTS credits:
6.0
Instruction language:
English
Coordinator:

- [M.D. Schilbach](#)

Teaching methods:
Assignment(s)
Assessment methods:
Final paper
Keywords:
internship, Practical, Organisation
Faculty of Psychology and Neuroscience

Introduction to Statistics in R

Course objectives

R is a programming language frequently used in data science and related fields for data processing, data visualization, and statistical analysis. Working with data in R requires writing code, which makes the data processing steps and analysis procedure transparent and reproducible. The core functions of R are being continually expanded by a community of users who write and maintain packages containing more specialist functions, meaning that R is a flexible tool that is adaptable to a very wide range of data types (e.g., questionnaire responses, neurophysiological data), while a broad spectrum of data analysis approaches are catered for.

Designed for users with little or no experience with R, this course will make use of RStudio, an open-source program that facilitates the writing and storage of R code. Students will be introduced to the basic steps of data processing, visualization, and analysis. These procedures will taught and practiced in the context of experimental data. Critically, students will be empowered to troubleshoot their own code, by identifying problems in their code and seeking potential solutions in the documentation or online. Students will thereby be able to begin writing their own code independently.

Prerequisites

After completing this course, students will be able to:

1. Import and handle data in R
2. Create graphs and run basic statistical analyses in R
3. Document data analysis output from R

PSY9114
Period 3
10 Feb 2025

Master Psychology Specialisation Cognitive Neuroscience

23 Mar 2025
[Print course description](#)
ECTS credits:
3.0
Instruction language:
English
Coordinator:

- [M.D. Hilton](#)

Teaching methods:
Lecture(s), Skills, Work in subgroups
Assessment methods:
Attendance, Assignment
Keywords:
Programming; R; data analysis; statistics