Practical Training: EEG and ERP

Faculty of Psychology and Neuroscience

PSY4034

Period 1:
1 Sep 2025 **24 Oct 2025**

Credits:
2.0

Coordinator:
F.T.Y. Smulders

Teaching methods:
Lecture(s), Skills, Work in subgroups

Assessment methods:
Final paper, Attendance, Assignment

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.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

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.

Auditory and Higher Order Language Processing

Faculty of Psychology and Neuroscience

PSY4051

Period 1:
1 Sep 2025 **24 Oct 2025**

Credits:
4.0

Coordinator:
B.M. Jansma

Teaching methods:
PBL, Lecture(s)

Assessment methods:
Written exam, Attendance

Keywords:
auditory processing, language comprehension, language production, speech monitoring, cross modal integration

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 between brains and 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.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

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).

Perception and Attention

Faculty of Psychology and Neuroscience

PSY4052

Period 1:
1 Sep 2025 **24 Oct 2025**

Credits:
4.0

Coordinator:
P.H.M. de Weerd

Teaching methods:
PBL, Lecture(s)

Assessment methods:
Written exam, Attendance

Keywords:
visual system, illusions, perception, attention, neurophysiology, monkey

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.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

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.

Mentorship CN

Faculty of Psychology and Neuroscience

PSY4954

Year:
1 Sep 2025 **31 Aug 2026**

Credits:
0.0

Coordinator:
G.A. ten Hoor

Teaching methods:
Work in subgroups

Keywords:
mentor, personal growth

Full course description

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, master thesis research project 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 project 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.
There is no assessment for this module. You will only receive feedback on completed assignments.

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.

Neuroimaging: Functional MRI

Faculty of Psychology and Neuroscience

PSY4054

Period 2:
27 Oct 2025 **19 Dec 2025**

Credits:
4.0

Coordinator:
E. Formisano

Teaching methods:
PBL, Lecture(s)

Assessment methods:
Written exam, Attendance

Keywords:
functional neuroimaging, Magnetic Resonance Imaging, experimental design, analysis methods

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.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

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.

Sensorimotor Processing

Faculty of Psychology and Neuroscience

PSY4055

Period 2:
27 Oct 2025 **19 Dec 2025**

Credits:
4.0

Coordinator:
J. Reithler

Teaching methods:
PBL, Lecture(s)

Assessment methods:
Written exam, Attendance

Keywords:
neural correlates of motor control, somatosensory perception, sensorimotor coordination, reference frames, coordinate transformations, motor learning, action selection, mirror neuron system

Full course description

Everyday 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.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

Course objectives

- describe and explain the neural mechanisms underlying sensorimotor processing (internal models, coordinate transformations, action selection);
- critically assess opposing views, the supporting experimental data and the research methods used to obtain them;
- explain the neuro-behavioural correlates of motor learning and decision making, and the role of mirror neurons in action understanding.

Practical Training: fMRI

Faculty of Psychology and Neuroscience

PSY4056

Period 2:
27 Oct 2025 **19 Dec 2025**

Credits:
2.0

Coordinator:
L.T. DowdleE. Formisano

Teaching methods:
Lecture(s), Skills, Research, Work in subgroups, Presentation(s)

Assessment methods:
Final paper, Presentation, Attendance

Keywords:
functional MRI, experimental design, fMRI data acquisition, fMRI data analysis

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.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

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.

Research Proposal

Faculty of Psychology and Neuroscience

PSY4142

Year:
1 Sep 2025 **31 Aug 2026**

Credits:
4.5

Coordinator:
G.A. ten Hoor

Teaching methods:
Lecture(s), Assignment(s)

Assessment methods:
Final paper

Keywords:
academic skills, professional skills, research skills, methods, statistics, writing, research project

Full course description

In this course, the research proposal is drafted in preparation for the master thesis research project. 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 master thesis research project via assignments, workshops, and lectures that allow students to practice and develop their professional and 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 master thesis research project supervisors (preferably 2-3 months prior to the official start of the master thesis research project).

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

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 master thesis research project. 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 master thesis research project 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.
4. to produce a scientifically sound research proposal;
5. to adequately prepare for a master thesis research project.

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, 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.
- students know how to use A.I. in a responsible manner.

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)

Master's Thesis Research Project Graded

Faculty of Psychology and Neuroscience

PSY4180

Year:
1 Sep 2025 **31 Aug 2026**

Credits:
7.0

Coordinator:
G.C. Kraag

Teaching methods:
Skills, Paper(s), Assignment(s), Research, Training(s)

Assessment methods:
Final paper, Participation, Attendance, Observation

Keywords:
academic skills, research project, research, research proposal, master's thesis

Full course description

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

The master thesis research project 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. At least one of these assessors is a staff member at the Faculty of Psychology and Neuroscience (FPN).

Information about the master thesis research projects can be found on the student-intranet.

This module is not applicable for students of the Master Neuropsychology that attend a 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 master thesis research project 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 master thesis research projects may require that practical or skills training(s) have been completed.

Master Thesis Research Project (Ungraded)

Faculty of Psychology and Neuroscience

PSY4181

Year:
1 Sep 2025 **31 Aug 2026**

Credits:
12.0

Coordinator:
G.C. Kraag

Teaching methods:
Skills, Paper(s), Assignment(s), Research

Assessment methods:
Final paper, Participation, Attendance, Observation

Keywords:
academic skills, research project, research, research proposal, master's thesis

Full course description

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

The master thesis research project 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. At least one of these assessors is a staff member at the Faculty of Psychology and Neuroscience (FPN).

Information about the master thesis research projects can be found on the student-intranet.

This module is not applicable for students of the Master Neuropsychology that attend a 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 master thesis research project 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 master thesis research projects may require that practical or skills training(s) have been completed.

Professional and Academic Skills

Faculty of Psychology and Neuroscience

PSY4775

Year:
1 Sep 2025 **31 Aug 2026**

Credits:
0.5

Coordinator:
G.A. ten Hoor

Teaching methods:
Lecture(s), Skills, Assignment(s)

Assessment methods:
Attendance, Assignment

Keywords:
academic skills, research skills, methods, statistics, career skills, writing, peer reviewing, ethics in research

Full course description

In this course, the research proposal is drafted in preparation for the master thesis research project. 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 master thesis research project via assignments, workshops, and lectures that allow students to practice and develop their professional and 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 research project supervisors (preferably 2-3 months prior to the official start of the research project).

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 (incl. what their interests are/what career(s) they would like to pursue).

The Professional and Academic Skills course has to be completed within 6 weeks after the start of a students' master thesis research project (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 master thesis research project 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

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, 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.
- Students know how to use A.I. in a responsible manner.

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)

Master's Thesis

Faculty of Psychology and Neuroscience

PSY4091

Year:
1 Sep 2025 **31 Aug 2026**

Credits:
10.0

Coordinator:
G.C. Kraag

Teaching methods:
Skills, Paper(s), Assignment(s), Research

Assessment methods:
Final paper, Participation, Attendance, Oral exam, Observation

Keywords:
academic skills, research project, research, research proposal, master's thesis

Full course description

During the second part of the one-year master's program (from period 3 onwards), students conduct a master thesis research project that involves 1) writing of a research proposal, and preparing and planning of the master thesis research project, 2) conducting the master thesis research project, and 3) analyzing the results of the master thesis research project. This work will result in an individually written 4) master's thesis. Students will have to 5) orally defend their thesis.
The master thesis research project 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 master thesis research projects can be found on the student-intranet.
This module is not applicable for students of the Master Neuropsychology who choose to do an additional clinical internship.
The final assessment for this course is a numerical grade between 0,0 and 10,0.

Course objectives

Students are able to:

Conduct a supervised empirical research project and summarize this research in a master's thesis. Apply and use LLM's, like ChatGPT in a correct and transparent manner

Prerequisites

The master thesis research project 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 master thesis research project before the start of the data collection. In addition: certain master thesis research projects may require that practical or skills training(s) have been completed.

Coaching for Psychologists

Faculty of Psychology and Neuroscience

PSY9101

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
3.0

Coordinator:
A. Nübold

Teaching methods:
Lecture(s), Skills, Assignment(s), Work in subgroups

Assessment methods:
Participation, Attendance, Oral exam, Observation

Keywords:
coaching; cognitive, motivational, behavioral techniques; self-help; flexibility; self-reflection; personal development

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

Course objectives

After this course students are able to:
- explain the basic principles of coaching;

- 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;
- showcase a professional coaching attitude and apply appropriate communication skills
- 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.

Introduction to Programming in Python

Faculty of Psychology and Neuroscience

PSY9102

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
3.0

Coordinator:
J.J.G. van HarenM. Enan

Teaching methods:
Skills, Assignment(s)

Assessment methods:
Participation, Assignment

Keywords:
Programming skills, Python, Algorithms

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

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).

Entering the Job Market: Selection and Training

Faculty of Psychology and Neuroscience

PSY9103

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
3.0

Coordinator:
F.E.R.M. NievelsteinA.L.T. Walkowiak

Teaching methods:
PBL, Lecture(s), Skills, Assignment(s), Work in subgroups

Assessment methods:
Presentation, Attendance, Assignment, Observation

Keywords:
Selection, Training, Assessment Center, Role play, CV, Interviewing

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

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.

The global SDGs: From problem to solution

Faculty of Psychology and Neuroscience

PSY9104

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
3.0

Coordinator:
I. GatzounisJ.G. ZimmermanH.M.L. Zimmermann

Teaching methods:
Lecture(s), Paper(s), Work in subgroups, Presentation(s)

Assessment methods:
Participation, Presentation, Attendance, Assessment

Keywords:
Applied psychology, global citizenship, psychological literacy, creative problem solving, social responsibility, change agency

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 the first half of this elective (week 1-5), 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, (b) interview members of the target audience and relevant stakeholders working in the field; and (c) come up with a theory- and evidence-based outline of 'solutions' in the form of an e-health interventions that enable this SDG to be attained. In the second half of this elective (weeks 6-10), you will make use of open source software to build (components of) your own e-health intervention. Your final (group) report will take the form of a policy brief outlining the need for the intervention and you will give a (group) pitch demonstrating your intervention.
The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

Course objectives

Upon completing this elective, 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 integrate perspectives of target populations and stakeholders outside academia;
- to present research and recommendations to a non-specialized audience
- to reflect on their use of AI tools for writing for non-academic audiences
- to develop (components) of an e-health intervention using open source software;
- to work in teams

Clinical Assessment

Faculty of Psychology and Neuroscience

PSY9105

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
3.0

Coordinator:
A.L. Smitten

Teaching methods:
Lecture(s), Skills, Work in subgroups, Presentation(s)

Assessment methods:
Presentation

Keywords:
Clinical reasoning, Screening (protocol), (neuro)psychological assessment, observation, interviewing

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). This collection of information involves learning about the client's skills, abilities, personality characteristics, cognitive and emotional functioning, social context and cultural factors particular to them. We need to question whether the assessment tools we select are reliable, valid and standarised for our client population. Whilst this is an important factor of clinical assessment, even before that, we need to clinically reason which tests to select and how our own clinical reasoning factors into our hypothesis development in the diagnostic process.

The goal of this course is to allow the students to experience practical application of critical thinking and case formulation in clinical assessment. In each tutorial, students will have the opportunity with case studies to practice clinical anamnesis and assessment of differing mental disorders. Students will explore a particular set of assessment tools that focus on attention & memory, anxiety & depression and sensory integration & modulation areas of dysfunction.

This elective is relevant to all students who in the future wish to understand methods and models of clinical reasoning used within the clinical assessment process to assist children, adults, clients,

patients, or employees in being their best self, but maybe especially useful for students without an NP background.
The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

Course objectives

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

- Develop a better understanding of clinical assessment processes;
- Know the cognitive skills required to clinically reason and reflect on your own cognitive processes;
- Develop an understanding and knowledge of various assessment models;
- Develop a formulation plan for a variety of clients based on initial referrals;
- Gain practical use of a variety of assessment tools in the fields of Anxiety, Depression, Attention, Memory, and Sensory Integration;
- Complete a variety of online CPD courses in various areas of clinical practice;
- Evaluate the clinical reasoning process of a clinical assessment;

Negotiation and Mediation

Faculty of Psychology and Neuroscience

PSY9106

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
3.0

Coordinator:
M. IannuzziC.J. Zelihsen

Teaching methods:
Lecture(s), Skills, Paper(s), Assignment(s), Work in subgroups

Assessment methods:
Final paper, Presentation, Attendance, Assignment, Observation

Keywords:
Negotiation, mediation, roleplay

Full course description

In this elective, students will focus on negotiation and mediation skills. These are crucial skills for student's future careers, since they are crucial for, among other things, conflict resolution and creating value in contracts (e.g. in salary negotiations). The elective will start with a lecture to explain the structure of the course and to introduce the topic of negotiation. In this lecture, students will learn about the most important theories and strategies that can be used in negotiations and mediation in different contexts. After the lecture, students will read literature to prepare them to practice their negotiation skills during the tutorials. During the tutorials, we will focus on the Harvard Principles of negotiation, several tools and traps (like biases) that can be used during negotiations and we will discuss individual differences like the roles of gender, culture and personality. Students will also write a 2-page essay on a topic of choice where they can express their personal opinion. The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

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;
- Students will be aware of the role of individual differences in Negotiations;
- Students will learn about and practice application of mediation techniques.

Individual Elective

Faculty of Psychology and Neuroscience

PSY9109

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
6.0

Coordinator:
G.A. ten Hoor

Teaching methods:
Assignment(s), Research

Assessment methods:
Final paper

Keywords:
Elective, paper assignment

Full course description

Students work on an assignment (structured literature review, research project) under the supervision of a member of the scientific staff of FPN, 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 master thesis research project 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.
The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

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.

Internship Elective

Faculty of Psychology and Neuroscience

PSY9110

Period 3:
5 Jan 2026 **30 Jan 2026**

Credits:
6.0

Coordinator:
M.D. Schilbach

Teaching methods:
Assignment(s)

Assessment methods:
Final paper

Keywords:
Internship, practical, organisation

Full course description

During the elective internship, psychology master students apply theoretical knowledge to practice and gain relevant practical experience, while working in an institution or company of their own choice. 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 with the opportunity to gain practical experience, relevant for becoming a psychologist. If student want 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 students start 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.
Before the start of the practical, students draft a personal development plan (PDP), defining the learning objectives for the internship. In addition, following the internship, students must write a report about their experience. As such, students 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.
The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

Course objectives

The students:
-obtain insight into the work setting(s) of a psychologist;
- gain experience with applying knowledge and skills essential for being a psychologist
- develop the ability to apply scientific insights to reflect upon practices in the field.

Introduction to Programming in Matlab

Faculty of Psychology and Neuroscience

PSY9107

Period 4:
2 Feb 2026 **2 Apr 2026**

Credits:
3.0

Coordinator:
G. MarrazzoJ. Haarsma

Teaching methods:
Lecture(s), Skills, Work in subgroups

Assessment methods:
Final paper, Attendance, Assignment

Keywords:
Programming; MATLAB; data analysis.

Full course description

Why learning programming? Because with some basic programming you'll be able to efficiently collect, organize, explore, analyze, interpret and visualize data – any type of data: from clinical and research assessments to behavioral and brain data; text and numbers, financial trends and accounting.
In 4 weeks, you will learn to write simple algorithms to automatize processes, optimize the structure, timing and tidiness of your workflow. At the end of the course, a group project will test your programming and analysis skills.
If you're interested in programming and logic, if you like handling and analyzing data, if you like visualizing data in graphs, this course is for you. Although we'll use some brain data as example (brain waves from EEG), this course was not designed for a specific specialization.
The final assignment is on a topic of your choice: analyse brain, behavioral, marketing, financial data, or anything you'd like.
The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

Course objectives

The aim of this research elective program is twofold:
1. Develop basic and generalizable programming skills in MATLAB;

2. Test your programming skills by handling and analyzing multidimensional data

Prerequisites

Basic knowledge of neuroimaging methods.

Science Communication

Faculty of Psychology and Neuroscience

PSY9108

Period 4:
2 Feb 2026 **2 Apr 2026**

Credits:
3.0

Coordinator:
A.E.M. Hendriks

Teaching methods:
PBL, Lecture(s), Skills, Assignment(s)

Assessment methods:
Presentation, Attendance, Assessment

Keywords:
Writing skills, (digital) presentation skills

Full course description

In this 5-week course students will practice presenting science to a broad audience. Students will make a podcast (assignment 1), a blog post (assignment 2) and a video (assignment 3) for a broad audience about a scientific topic.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 verbal, written and 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).
The final assessment for this course is pass or fail - and not a numerical grade between 0,0 and 10,0.

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 podcast and a video
- organize the content of a (digital) presentation

- use visual aids in (digital) presentations

Introduction to Statistics in R

Faculty of Psychology and Neuroscience

PSY9114

Period 4:
2 Feb 2026 **2 Apr 2026**

Credits:
3.0

Coordinator:
M.D. Hilton

Teaching methods:
Lecture(s), Skills, Work in subgroups

Assessment methods:
Attendance, Assignment

Keywords:
Programming; R; data analysis; statistics

Full course description

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

Course objectives

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

Developing E-Health Interventions

Faculty of Psychology and Neuroscience

PSY9115

Period 4:
2 Feb 2026 **2 Apr 2026**

Credits:
3.0

Coordinator:
H.M.L. Zimmermann

Teaching methods:

Assessment methods:

Keywords:

Full course description

Course objectives

Recommended reading