Syllabus

1st Year

Clinical Neuropsychology
Lecturer: Martina Gandola

Baseline Knowledge
Basic knowledge of the neural basis of human behaviour.

Aims and Objectives
The aim of the course is to provide students with advanced theoretical and practical knowledge about the most common neuropsychological disorders resulting from brain lesions. For each deficit, the theoretical substrate, the assessment instruments, and the main rehabilitative techniques will be illustrated. The lectures will be structured to help students to apply the acquired theoretical notions to clinical case studies. The course will also provide knowledge on neuroimaging techniques and their application in clinical neuropsychology.

Program and contents
The course will focus on:
- Introduction to neuropsychology
- Anatomo-clinical method and Voxel-based Lesion-Symptom Mapping (VLSM)
- Structural and functional neuroimaging methods in neuropsychology
- Non-invasive brain stimulation techniques (TMS and tDCS)
- Spatial cognition and its disturbances
- Deficits of motor awareness
- Disorders of body representation
- Language disorders: aphasia
- Recognition disorders: agnosia
- Movements disorders: apraxia
- Neuropsychological rehabilitation (physiological and behavioural technique)

Teaching methods
Lectures, presentation of videotaped material, discussion of clinical cases and individual presentation/discussion of journal articles.

References
- Heilman K.M. and Valenstein E. (Editors). 2012. *Clinical Neuropsychology*. Fifth Edition. Oxford University Press.

Optional book:
- Marien P. & Abutalebi J. (Editors). 2008. *Neuropsychological Research*. A review. Psychology Press (Taylor & Francis Group): Hove and New York.

Assessment
Written and/or oral exam/presentation, according to the student's preference.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Cognition
Module Title: Cognition

Lecturer: Contest in progress

Baseline Knowledge
The basic statistical and cognitive background required for admission to this Master's Degree is suitable for this course and there are no specific prerequisites.

Aims and Objectives
To study the knowledge of specific cognitive mechanisms based on theoretical reference models and on the most widely used experimental techniques. Development of the ability to compare different experimental procedures and integration of data from different studies.

Program and contents
- Use of experimental procedures through specific examples
- Deepening of specific scientific papers indicated by the lecturer and supplemented by an individual student work
- Individual design of scientific experiments and data analysis

Teaching methods
Lectures and labs.

References
Papers and other material indicated by the lecturer.

Assessment
Oral exam with the possibility of presenting individual written and / or oral works.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Cognitive Development
Lecturer: Serena Lecce
Baseline Knowledge
Basic knowledge of developmental psychology

Aims and Objectives
The course aims to offer updated and research-related knowledge in the field of cognitive development psychology with explicit reference to the experimental research conducted in this area. The target are students with specific interests in psychology and cognitive process, as well as students who wish to acquire knowledge that will allow them to evaluate different areas of cognitive development and to intervene to promote socio-cognitive skills in the life span.

On completion of this course, the student will be able to:
  ▪ demonstrate an understanding of main developmental stages of cognitions;
  ▪ critically evaluate existing scientific literature
  ▪ use the main existing tasks tapping on socio-cognitive skills
  ▪ know the main intervention programs designed to promote socio-cognitive skills

Program and contents
The course covers how children think and how it changes with age. Principal theoretical approach in the area and main methods will be presented. Particular attention will be devoted to the topic of socio-cognitive development and theory of mind, adopting a life span perspective. Evaluation tasks and intervention programs in the area of theory of mind are presented.

Teaching methods
Lectures, group discussions and individual exercises based on scientific papers.

References
  ▪ Hughes C. (2011). *Social understanding and social lives*. Psychology Press
  ▪ Banerjee, R., Watling, D., & Caputi, M. (2011). Peer relations and the understanding of faux pas: Longitudinal evidence for bidirectional associations. *Child Development*, 82, 1887–1905.
  ▪ Henry M. Wellman (2018): Theory of mind: The state of the art, *European Journal of Developmental Psychology*, DOI: 10.1080/17405629.2018.1435413
  ▪ Hughes, C., & Devine, R. T. (2015). Individual differences in theory of mind from preschool to adolescence: Achievements and directions. *Child Development Perspectives*, 9, 149–153.
  ▪ Wellman, H. M., & Liu, D. (2004). Scaling of theory-of-mind tasks. *Child Development*, 75, 523–541.
  Further material and articles will be presented during the class.

Assessment
Written exam with both open and multiple choice questions.Student will receive an integrative mark based on the in-class work that will take a variety of forms, such as active participation in class discussions, essays and the presentation of selected scientific papers. The final mark will be the mean of this integrative mark and the one obtained in the written exam.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Communication and Neuropragmatics
Lecturer: Valentina Bambini

Baseline Knowledge
No specific requirements.

Aims and Objectives
The course aims at offering knowledge in the field of psycho- and neurolinguistic studies applied to the pragmatic aspects of the communicative competence. Specifically, the course aims at offering knowledge about the processes at stake in human communication, their neural basis and their disruption in pathological conditions. The course is targeted for students with specific interests in psychology and cognitive neuroscience of language, as well as for students who wish to acquire greater awareness of the role of communicative competence in relation to other cognitive functions. After completing this course, the student will be able to:

- recognize the main pragmatic processes, such as conversational rules and inferring of implicit meanings;
- describe the cognitive architecture of pragmatics, especially the relation with the faculty of language and with theory of mind;
- know the neural correlates of pragmatic processes, as they emerge from neuroimaging and electrophysiological studies;
- know the main symptoms of pragmatic language disorder and the most affected conditions;
- be familiar with the main experimental tasks and neuropsychological tests to assess pragmatic competence.

Program and contents
The course combines notions in linguistics, psychology and cognitive neuroscience, with special attention to the emerging fields of experimental pragmatics, clinical pragmatics and neuropragmatics.
Part of the lessons will be devoted to explain what pragmatic competence means, presenting it with respect to the other language components. Special attention will be paid to the description of the inferential processes that support the understanding of metaphors, irony and other non-literal expressions.
The core part of the course will deal with the neural correlates of pragmatic competence, describing research with neuroimaging and electrophysiological methods. We will discuss the main brain regions and networks elicited by pragmatic tasks and how the electrophysiological response unfolds during the comprehension of discourse and non-literal meanings.
The last part of the course will focus on pragmatic language disorder, describing the communicative difficulties that might occur in schizophrenia, autism spectrum disorder and various neurological conditions. The course will describe the main symptoms of pragmatic language disorder, such as concretism and off-topic speech, as well as the available assessment tools. Finally, the relation between pragmatics and other cognitive components, such as theory of mind and executive functions, will be discussed.

Teaching methods
Lectures, group discussion, and exercises.

References
Selected chapters from:

- Cummings, Louise. 2014. *Pragmatic Disorders*. Cham, Switzerland: Springer International Publishing AG.

- Kemmerer, David. 2014. *Cognitive Neuroscience of Language*. New York: Psychology Press.
- Noveck, Ira. 2018. *Experimental Pragmatics*. Cambridge: Cambridge University Press

Further material could be based on the following texts, as well as on articles presented during the course:
- Cummings, Louise. (ed.) 2017. *Research in Clinical Pragmatics*. Cham, Switzerland: Springer International Publishing AG.

Assessment
Written and/or oral exam, to be agreed with students.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Epistemology, Logic and Informal Reasoning
Lecturer: Andrea Sereni, Alfredo Tomasetta

Baseline Knowledge
There are no formal prerequisites for this class. The class is designed to be accessible to students with no background in either philosophy or logic. A mild familiarity with basic logic, however, while not necessary, can be helpful.

Aims and Objectives
After taking this course, the student should be able to identify and analyse some key problems in epistemology, (in)formal logic and philosophy of science, and to develop basic skills of philosophical analysis and argumentation.

Program and contents
The course is ideally comprised of three – strongly connected – parts.
- An introduction to epistemology, viewed as the theory of knowledge and cognate notions such as justification and evidence. Some basic problems concerning knowledge gained through reasoning and its relations with scientific methodology will also be discussed.
- An overview of the most relevant questions concerning formal and informal reasoning, with particular reference to the notions of formal validity and soundness, logical fallacies, and the relation between logic and the psychology of reasoning.
- An introduction to the main problems in the philosophy of science. These include the demarcation problem – how to distinguish between science and non-science –, the nature of scientific explanations, and the question of scientific revolutions. Some philosophical problems raised by 'special sciences' such as biology and (neuro)cognitive science will also be considered.

Teaching methods
Lectures will be accompanied by group discussions and class exercises.

References
- Pritchard, D. 2006. *What is this thing called knowledge?*, Routledge.
- Okasha, S. 2016. *Philosophy of Science*, Oxford University Press, (2nd Edition).
- Ladyman, J. 2014. *Understanding Philosophy of Science*, Routledge,
- Bowell, T. & Kemp, G. 2015. *Critical Thinking. A Concise Guide,* Routledge.
- Selected papers on the issues dealt with and/or instructors' lecture slides

Assessment
Written examination, organized according to teaching modules.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Experimental Psychology
Lecturer: Tomaso Vecchi

Baseline Knowledge
The basic statistical and cognitive background required for admission to this Master's Degree is suitable for this course and there are no specific prerequisites.

Aims and Objectives
The aim of this course is to develop the competences that are necessary in order to work in the various fields of experimental psychology and neuroscience. This will be achieved through a process of familiarization and development of personal skills by analyzing scientific papers partly provided by the lecturer and partly chosen individually by the student. In order to achieve this objective, practice courses will also be activated aimed at the use of the most important scientific databases (ie PubMed, PsycINFO).

Program and contents
- Analysis of general mechanisms of cognitive functioning
- Link between theoretical models and experimental procedures
- Use of experimental methods in behavioral, clinical, neuroimaging and neurostimulation and comparison between them, starting from the same research hypothesis
- Development of skills in understanding scientific papers and reference literature
- Development of individual skills in scientific writing.

Teaching methods
Lectures carried out through the analysis of scientific papers and a work of understanding, summary and comparative analysis.

References
Scientific papers provided by the lecturer and / or present in the university databases.

Assessment
Individual written reports that have to reflect the actual learning of course objectives.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Forensic Neuroscience
Teacher: Gabriella Bottini

Baseline Knowledge
Basic knowledge of the neurobiological correlates of cognitive and emotional processes is required.

Aims and Objectives
This course will provide knowledge concerning Forensic Neuropsychology. The course is addressed to students aiming at acquiring methodological instruments to apply when law and Neuroscience interact.

Program and contents
- Basic Clinical and Forensic Neuopsychology
- Interaction between the patient and the neuropsychologist
- Tests and Scales of Cognitive and Forensic Neuropsychology
- The problem of simulation: how to understand this behaviour?
- Physiological and pathological aspects of emotions: symptoms and diagnostic tools
- Legal aspects in Forensic Neuropsychology
- Capacity of discernment / free will / decision making
- Entitlement to drive: a complex cognitive concept – the problem of dementia - t
- Neuroethics and Neuroscience
- Good Clinical Practice

The course will provide theoretical concepts, examples of the principal behavioural and instrumental tools (neuroimaging) and will also include presentation of emblematic cases.

Teaching methods
Teaching, videos, student group presentations, journal club.

References
- Papers, reviews, legal cases, research reports

Assessment
Group presentations, oral communications of students, essay

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

MRI Physics for Neuroscience
Lecturer: Claudia Gandini

Baseline Knowledge
No specific requirements.

Aims and Objectives
The course aims to train students and give them the theoretical basis for understanding quantitative magnetic resonance methods. In order to do this, it will be necessary to address the physical principles that determine the sensitivity of nuclear magnetic resonance to microstructural and functional properties of tissues that have a macroscopic effect despite having a molecular nature. The course will also discuss how nuclear magnetic resonance examinations can be set according to neuroscientific research or clinical questions. Finally, the course will address how, once obtained the instrumental data, it is possible to process quantitative and comparable maps between subjects. Through the course the students will also be educated on the ethical principles central in the field of scientific research.

Program and contents
- Nuclear Magnetic Resonance: basic principles
- How protons interact
- Principles of magnetization transfer: presence of macromolecules
- Chemical shift imaging and metabolites
- Measurements of microstructure: the diffusion tensor
- Advanced microstructure models: beyond the diffusion tensor
- Measure brain functions
- Sensitization of the MRI signal to different functional states
- Structural connettomics
- Functional connetomy
- How to build an acquisition protocol
- How to set up data analysis

Teaching methods
Lectures**,** specialized seminars and individual reports.

References
Tofts, P. & Wiley. 2004. *Quantitative MRI of the Brain*.
(http://onlinelibrary.wiley.com/book/10.1002/0470869526)

Assessment
Theoretical report on a pre-agreed choice topic and oral exam.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Neural Modelling and Computation
Lecturer: Claudia Casellato

Baseline Knowledge
A basic knowledge in "neurophysiology" is required

Aims and Objectives
The course aims at offering knowledge in the field of computational neuroscience. Neural models able to describe, represent and interpret the reality. In particular, the focus will be on computational models correlated to behavioral features, within a neurobiological framework. There will be presented principles to build these neural models of brain structures, able to embed multi-scale information, from single neuron functional mechanism to microcircuits, till the generation of high-level functional behaviors. In view of applications, the models represent powerful tools to understand the complex operations underlying perception, actions and memory, in both physiological and pathological states. This multi-scale and multi-disciplinary approach is the key of challenging international projects, as Human Brain Project.

Program and contents
- Neuronal Dynamics: Computational models of Single Neurons, at different simplification levels
- Biological Modeling of Neural Networks
- Brain functions: Systems and Computational Neuroscience to model control systems and sensorimotor integrations, with encoding/decoding strategies of transmitted signals
- Brain functions: Computational Neuroscience to model cognitive functions
- Some examples will deal with cerebellum circuit and its crucial role in motor learning and perception-action loop.

Teaching methods
The course will be made up of lectures, hands-on with computational tools, group discussions with scientific journal papers to be analyzed. Few specific seminars will be held by post-doc researchers from the lab: http://www-5.unipv.it/dangelo/

References
- Spitze, M. 2000. *The Mind within the Net: Models of Learning, Thinking, and Acting* Reprint Edition.
- Churchland, P.S. & Sejnowski T.J. 1994. *The Computational Brain* (Computational Neuroscience Series).
- Dayan, P. & Abbott, L.F. 2005. *Theoretical Neuroscience: Computational and Mathematical Modeling of Neural Systems*.

More details will be indicated during the course.

Assessment
The examination comprises written and oral parts

Other information
In the download area of the website https://psychology.unipv.it/ section, the slides and materials used during the course will be made available.

Neurobiology of Memory
Lecturer: Eleonora Catricalà

Baseline Knowledge
Basic knowledge of neuroanatomy and neuropsychology is assumed.

Aims and Objectives

This course aims to provide a detailed knowledge of the neurobiology of memory, with a specific focus on semantic memory.
After the course, participants will be expected to be able to:
- Describe and differentiate the various types of memory and the supporting brain regions
- Read, understand, and critically analyze research papers of neuroimaging and neurostimulation techniques as well as of neurological patients investigations unraveling the neural bases of semantic memory
- Describe the brain pathologies associated with memory impairments, detecting their main clinical features
- Critical knowledge of the neuropsychological tests assessing memory deficits

Program and contents
- Organization of memory
- Human neuroanatomy of memory
- Relationship between episodic and semantic memory
- Theories and models of semantic memory
- Computational models of semantic memory
- Neuroimaging and neurostimulation studies of semantic memory
- Memory deficits in neurological patients
- Neuropsychological assessment of memory impairments
- Presentation and discussion of neurodegenerative disease cases with memory impairments

Teaching methods
The course is based on lectures, videos, discussion of case reports, and discussion of scientific articles.

References
Scientific papers will be provided during the course.

Assessment
Written exam with possible oral integration on a voluntary basis.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Neuroeconomics
Lecturer: Nicola Canessa

Baseline Knowledge
A basic-level knowledge of the main subjects of cognitive neuropsychology is suggested, but not strictly required.

Aims and Objectives
This course aims to provide a concise picture of available evidence in Decision neuroscience, i.e. of the cognitive processes and neural mechanisms underlying different facets of decision-making in the individual and social contexts. The close relationship between neuroeconomics and neuroethics will be addressed in terms of the neural correlates of choices characterized by social and moral, besides individual and economics, valence. The implications of the results provided by these disciplines for neuro-psychiatric and forensic settings will be also discussed.
These goals will be pursued with an interdisciplinary approach aimed to establish connections between theoretical and empirical inputs from distinct but related research fields, such as psychology of judgment and decision-making, experimental economics, neuropsychology and cognitive neuroscience.
The last section of the course will be devoted to a collective discussion of key topics within neuroeconomics, based on scientific papers previously analyzed at the individual level. After the course, participants will be expected to be able to:
- discuss in-depth the main trajectories of research in neuroeconomics
- understand and critically examine the data reported in scientific papers relevant to the topics addressed by neuroeconomics
- develop proposals for original studies concerning the different sub-fields of neuroeconomics, which could be pursued with the typical techniques of cognitive neuroscience (neuroimaging, neurostimulation, lesional approach)

Program and contents
- Cognitive neuroscience: aims and research techniques
- At the origin of neuroeconomics: the orbitofrontal cortex and the Somatic marker hypothesis
- The micro-economic bases of Decision theory: expected value and expected utility
- Psychology of judgment and decision-making: Prospect theory
- Neurophysiology of learning and motivation: processing of rewards, punishments and prediction errors in the meso-cortico-limbic dopaminergic pathway
- Anomalies and biases in probabilistic judgment and decision-making
- The neural bases of executive functioning and cognitive control
- The neural bases of anomalies and biases: drives, preferences and cognitive control
- "Social brain" and others' understanding: social neuroscience and the neural bases of mentalizing and empathy
- Neural correlates of decision-making in social contexts
- Translational implications of neuroeconomics in neuro-psychiatric domains
- Neuroscience of pathological choice: gambling and addiction
- Neuroethics: neural bases of moral choices, and implications for forensic sciences

Teaching methods
The course is mainly based on lectures, but the last hours will be devoted to the collective discussion of key topics within neuroeconomics, based on scientific papers previously analyzed at the individual level.

References
Glimcher, P. W. & Fehr, E. 2013. *Neuroeconomics: Decision Making and the Brain*, 2nd Edition; Academic Press.

Additional scientific papers will be provided for in-depth analyses on a voluntary basis.

Assessment
Written exam with possible oral integration on a voluntary basis.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Neurolinguistics
Lecturer: Stefano Cappa - Andrea Moro

Baseline Knowledge
Basic knowledge of the anatomical and physiological foundations of mental functions is required.

Aims and Objectives
The course aims to provide an introduction to the basic concepts of contemporary linguistics, and a systematic treatment of current knowledge on the biological foundations of language, through the analysis of pathological conditions (neuropsychology of language) and of the study methods in normal populations (neuroimaging and neurophysiology).
In particular, the course is aimed at students interested in acquiring updated knowledge on a core area of cognitive neuroscience research.
At the end of the course the student must be able to:
- describe the main levels of linguistic organization
- recognize the main developmental and acquired language disorders
- discuss the contribution of structural and functional neuroimaging and of neurophysiology to the study of the neurobiology of language

Program and contents
- Introduction to linguistics: the autonomy of syntax
- Biological foundations of language
- Clinical language assessment
- Acquired disorders (aphasias)
- Developmental disorders
- The contribution of neuroimaging
- Neurolinguistics and syntax: the discovery of "impossible" languages
- Neurophysiology of language
- Electrophysiological analysis of language: the case of endophasia.

Teaching methods
The course is based on lectures, video material, group discussion and individual discussion of scientific articles.

References
Moro, A. 2008. *The boundaries of Babel* (II ed.) The MIT Press, Cambridge, Mass.
Denes, G. 2012. *Talking heads: the neuroscience of language*. Psychology Press.

Assessment
Oral and / or written exam with methods to be discussed with the student.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Psychology of Music
Lecturer: Floris van Vugt - floris.vanvugt@mail.mcgill.ca

Baseline Knowledge
The basic statistical and cognitive background required for admission to this Master's Degree is suitable for this course and there are no specific prerequisites. Basic knowledge about cognitive science and statistics. Having followed a course in basic neuroscience is recommended.

Aims and Objectives
Music is considered one of the highest human accomplishments, and if you are asked to think of a prodigy, quite possibly the first that comes to mind is a musician. For anybody, not just musical experts, music plays a large part in our lives, and our favourite tunes accompany us wherever we go. You could think this is surprising if you consider that music really is only sound waves! Or is it?

In this course, we will explore why music affects us so much, what are the brain and how music is made possible by our brain. During this journey, we will touch on many fields of psychology and neuroscience. Music provides a unique window into how the brain functions, enabling us to study how expertise shapes the brain, how music builds social connections, how it interacts with language, how music can be used in rehabilitation, and much more.

Program and contents
- Musical experts and prodigies
- Music and motor performance
- Music and language
- Music and cognitive function
- Music and health
- Music and emotion
- Music in a social context

Teaching methods
36 hours of lectures. Class time will contain teacher lecture as well as presentation by groups of students of assigned readings.
Weekly readings including seminal and recent papers on the topics discussed.
Each student will be assigned to a group that will present a paper during class.

References
Siu-Lan Tan, Peter Pfordresher, Rom Harré. 2010. *Psychology of Music – from sound to significance*; Psychology Press.

This text is recommended but optional. Weekly readings will be assigned in class and are supplied electronically.

Assessment
Final oral exam (40%), Paper presentation in class (40%), Class participation (20%)

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Practice courses and Labs

Baseline Knowledge
The basic statistical and cognitive background required for admission to this Master's Degree is suitable for this course and there are no specific prerequisites.

Aims and Objectives
Development and familiarization with particular experimental techniques and / or clinical and testistic material.

Program and contents
Seminars chosen by the student from an offer proposed by the plan of the study. Attendance at seminars is mandatory and there is no final evaluation.

Teaching methods
Seminars with a small number of students and compulsory attendance.

References
Reference material may eventually be provided by the lecturer.

Assessment
The assessment will be done during the lessons through the participation of the student in lessons and simulations of intervention.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

2nd Year

Advanced Research Methods
Lecturer: Riccardo Russo

Baseline Knowledge
Students should have a firm grasp of the basis of frequentist inferential statistics.

Aims and Objectives
The aim of this module is to review the basis of classic/frequentist statistical analysis (also known as the Neyman-Pearson approach to statistical analysis) as well as introducing the basis of Bayesian analysis. To this aim, different conceptualisations of probability and their consequences with respect to statistical analysis will be explored. Moreover, an in depth revision of the analysis of contingency tables, t-test, correlation and regression and the basic Analysis of variance design will be provided, as well as an introduction to their Bayesian equivalent analyses. Practical implementations of statistical analyses will be conducted using JASP and relevant online apps.

Program and contents
- The basis of classical statistical inference: Type I and type II statistical errors; How can these be controlled? Introduction to Power analysis.
- Revision of probability theory and Bayes theorem.
- Sample distribution of the mean and the central limit theorem.
- Analysis of contingency tables; t-test (and application of power analysis to the t-test); linear correlation and regression; Analysis of variance (ANOVA) with either one or two factors will be considered from both frequentist and bayesian approaches.

Teaching methods
Lectures and practical classes using either JASP or appropriate apps.

References
- R. Russo. *Statistics for the behavioural analysis: an introduction* (second edition). Routledge.
Further references will be provided during the course.

Assessment
Written exams.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Applied Clinical Neuroscience
Lecturer: Lecturer to be identified through a direct call from abroad that can take service in 2019/2020.

Baseline Knowledge
Basic knowledge in clinical psychology and psychopathology

Aims and Objectives
Knowledge of the characterizing aspects of clinical psychopathology and methodologies of investigation. Development of critical skills during the reading of scientific papers regarding the methodological and procedural components of the texts. Capacity development in the design phase of original research and interventions that combine clinical knowledge with neuroscientific methods. Analysis of clinical cases and development of interpretative skills and differential diagnosis.

Program and contents
- Clinical psychology and neuroscience, an integration
- Deepening of articles in the literature
- Diagnosis of psychopathologies using neuroimaging methods
- Treatment of psychopathologies through neurostimulation
- Verify the effectiveness of treatments using neuroimaging
- Nosological contributions of the use of neuroscience techniques

Teaching methods
Lectures with integration specific seminars.

References
The material will be provided at the beginning of the course.

Assessment
Written and oral exam with the possibility of integration with personal relationships and discussion of clinical cases.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Applied Neuroscience
Lecturer: Contest expected in 2019

Baseline Knowledge
Basic knowledge in cognitive neuroscience and experimental investigation techniques.

Aims and Objectives
Capacity development in the design phase of experimental research that can be integrated into psychological and social practice. Knowledge of the fields of application of neuroscience outside the purely clinical practice. Use of neurostimulation techniques both during rehabilitation and treatment (e.g. depression).

Program and contents
- Examples of successful integration of neuroscientific methods in various fields
- Practical implications of the epistemological approaches of neuroscience
- Practical implications of neuroscientific theories and clinical applications (e.g. mirror neurons and autism)
- Familiarization with neurostimulation techniques (TMS, TDCS, TES) and related experimental and clinical use

Teaching methods
Lectures and labs.

References
The material will be provided at the beginning of the course.

Assessment
Oral exams with practical exercises.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Cognitive Rehabilitation
Lecturer: Contest in progress

Baseline Knowledge
Basic knowledge in physiological psychology

Aims and Objectives
This course will provide knowledge on the neurophysiological basis of neural plasticity and on the theoretical basis of the cognitive rehabilitation methodology. The traditional and computerized (virtual reality) rehabilitative approaches of the main neuropsychological and productive deficitary and behavioral disorders will also be illustrated.

Program and contents
- Premises to the cognitive rehabilitation of neuropsychological functions
- CNS physiological manipulations (SCV, Prisms and other techniques)
- Methodological bases of cognitive rehabilitation
- Role of functional Neuroimaging in cognitive rehabilitation
- Instrumental rehabilitation techniques (TDCS, TMS, Virtual Reality)
- The language and the foundations of language rehabilitation
- Neuropsychology and rehabilitation of disturbances in the representation / perception / exploration of space
- Disorders of the body schema and rehabilitation
- Neuropsychology and rehabilitation of the head injury
- Role of emotions in rehabilitation / Rehabilitation of emotional disorders
- Neuropsychology and rehabilitation of stroke in the acute phase
- Neuropsychology and addiction rehabilitation
- Relationship with caregivers from severe brain-injured patients
- Pathological aging and neuropsychological stimulation of the elderly with cognitive impairment
- Neuropsychology and rehabilitation of memory disorders
- Neuronal plasticity

Teaching methods
Lectures and specific seminars

References
The material will be provided at the beginning of the course.

Assessment
Oral exams with practical exercises.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Development of Musical Ability
Lecturer: Lecturer to recruit or external contract lecturer

Baseline Knowledge
Basic knowledge provided by the Psychology of Music course.

Aims and Objectives
The course aims to study the characteristics of cognitive development of the child associated with the musical aspects, with particular reference to the differentiation of biological and / or cultural ones. The relationship between music processing and other cognitive aspects such as memory, learning, spacial cognition and language will be studied. Study the value of the emotions in listening processes and music processing.

Program and contents
- Development of musical skills
- Maternal music
- Absolute pitch
- Musical practice and brain plasticity
- Music and language
- Use of music in the rehabilitation of learning disorders

Teaching methods
Lectures

References
The material will be provided at the beginning of the course.

Assessment
Written and / or oral examinations with the possibility for the student to prepare reports on specific topics.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Developmental Psychopathology
Lecturer: Contest in progress

Baseline Knowledge
Basic knowledge of developmental psychology and psychopathology.

Aims and Objectives
To develop the knowledge of the nosological characteristics of developmental disorders, diagnosis techniques and rehabilitative methods. Develop critical skills in relation to available literature.

Program and contents
- Developmental disorders within the DSM-5 from a nosological point of view
- Autism (ASD)
- Intellectual disability
- ADHD
- Anxiety and mood disorders in developmental age
- Evaluation and diagnosis
- Pharmacological interventions
- Cognitive-behavioral interventions
- Applied Behavior Analysis (ABA) interventions
- Discussion of clinical cases and planning of interventions

Teaching methods
Lectures and clinical cases

References
The material will be provided at the beginning of the course.

Assessment
Oral exam with discussion of clinical cases

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Language Acquisition and Degeneration
Lecturer: Cristiano Chesi

Baseline Knowledge
Knowledge of General Linguistics & Developmental Psychology.

Aims and Objectives
Knowledge of the main linguistic theoretical models & major approaches to Language Acquisition.
Knowledge of congenital and acquired disorders related to the Language Faculty.
Knowledge of major computational models of linguistic processing.

Program and contents
- Introduction to linguistic processing: a formal and computational perspective
- Typical development of the language faculty
- Congenital disorders related to the language faculty
- Language disorders related to the difficulty of accessing to the linguistic information
- Linguistic disorders related to strokes or cognitive dysfunctions
- Analysis and evaluation of the linguistic performance
- Presentation of the recent research trends
- Deafness and language acquisition

Teaching methods
Lectures and discussion of clinical cases

References
The material will be provided at the beginning of the course

Assessment
Oral exams

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Neuroethics
Lecturer: To be defined

Baseline Knowledge
No prerequisites.

Aims and Objectives
To develop knowledge within neuroethics, a field that arises from the development of cognitive neuroscience and its theoretical and practical repercussions at an ethical, legal, social and political level. Understanding the relationship between neuroethics and different fields of knowledge such as: philosophy, the psychology of law, aesthetics, medicine, genetics and the theory of evolution.

Program and contents
- Cognitive neuroscience and ethics
- Cognitive neuroscience and politics
- Cognitive neuroscience and legal and social aspects
- Neuroethics and neurophilosophy
- Neuroetic and neuroesthetic
- Philosophy of neuroscience

Teaching methods
Lectures and open discussion of relevant topics.

References
The material will be provided at the beginning of the course

Assessment
Oral exam with discussion of individual reports.

Other information
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Neurophysiology
Lecturer: Lisa Mapelli

Baseline Knowledge
General knowledge of cellular biology and physiology, anatomy of central nervous system.

Aims and Objectives
The course will provide advanced knowledge on cellular and system neurophysiological processes, including the principal neuromodulatory systems. These topics will be addressed in the overall frame of understanding the main neurophysiological processes that provide the biological bases of cognitive functions, including learning, memory and consciousness. The program also include an analysis of these systems alterations that are known to be involved in main cognitive disorders.

Program and contents
- Basic cellular neurophysiology
- Motor and sensory systems
- Learning and memory
- Consciousness and sleep
- Neuromodulatory systems
- Pathological alterations

Teaching methods
Lectures

References
- Squire, L., Berg, D., Bloom, F. E., Du Lac, S., Ghosh, A., & Spitzer, N. C. (Eds.). (2012). *Fundamental neuroscience*. Academic Press.

Supplementary materials will be provided during the course.

Assessment
Written exams and open questions.

Other information
In the download area of the website https://psychology.unipv.it/ , the slides and materials used during the course will be made available.

Neuroscience of Music
Lecturer: Lecturer identified through a direct call from abroad that will take service in 2019

Baseline Knowledge
Basic knowledge provided by the Psychology of Music course.

Aims and Objectives
To develop knowledge in the field of cognitive neuroscience of music by studying the architecture of the anatomical-functional foundations of mental processes that allow listening, understanding and processing of musical stimuli.

Program and contents
- Brain bases of music processing
- Studies in electrophysiology and neuroimaging
- Neural correlates and neurocognitive models
- The musical synaesthesia
- Musical practice and brain plasticity

Teaching methods
Lectures and specific seminars

References
The material will be provided at the beginning of the course

Assessment
Oral exams

Other information
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Philosopy of Mind
Lecturer: Michele Di Francesco

Baseline Knowledge
No specific requirements.

Aims and Objectives
Knowledge of the main problems discussed by the philosophy mind and their ethical and social implications. Development of critical and argumentative skills in the discussion of abstract philosophical themes. Sensitivity to conceptual distinctions (i.e. the difference between ontological, epistemological, methodological levels of discussion). Acquisition of the proper language of the discipline.

Program and contents
The course will provide a critical introduction to the main themes discussed by contemporary philosophy of mind. Among them prominent will be the place of mind in the natural order (and the connected mind-body problem) and the epistemological and ontological implications of both classical (computational) and 4E (embodied, embedded, enacted, extended) cognitive science.

- The "manifest image" and the "scientific image" of the world
- Descartes and the birth of the Modern Mind.
- Consciousness and intentionality as the mark of the mental
- Mind and nature
- The mind-body problem
- Ontologies of the mind: reductionism, eliminativism, emergentism
- The computational mind
- The embodied/extended mind
- Neurophilosophy: a critical assesment

Teaching methods
Lectures, seminars, presentations by students, informal discussion, videos on the internet.

References
The material will be provided during the course.

Assessment
Oral exams, possibly based on essays, class presentations, in-class tests.

Other information
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Psychology of Learning Disabilities
Lecturer: Paola Palladino

Baseline Knowledge
Knowledge of the classic psychology theories and of the main cognitive models of cognition and learning.

Aims and Objectives
To build accurate and articulated knowledge and skills on memory and learning assessment to detect main developmental cognitive specific disorders, learning disabilities. A clinical perspective on their diagnosis and treatment will be analyzed.

Program and contents
- Learning to read
- Learning to write
- Learning to calculate
- Attention deficit disorders
- Language minority bilingualism
- The Diagnosis of Learning disabilities
- A clinical perspective on the relationship between cognition, emotion and behavior
- Which psychological intervention and how to plan it

Teaching methods
Class lessons with open discussions and single case study. Preparation of short essays on critical aspects and scientific readings.

References
The material will be provided during the course.

Assessment
A written and oral discussion of single cases will be required.

Other information
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Social Cognition
Lecturer: Fulvia Castelli

Baseline Knowledge
Basic knowledge in social psychology

Aims and Objectives
To study the key issues of Social Cognition. The student will have to develop the knowledge of the main theories and approaches and be able to relate critically to the available scientific literature.

Program and contents
Social Cognition concerns the cognitive and neuronal mechanisms at the base of our social behavior, that is the ability to recognize, understand and interact with others. The main topics are the syndrome of the autism spectrum (Autism Spectrum Disorder), the ability to mentalize and to empathize. Several clinical tests will be presented and discussed.

The course is based on the presentation of scientific papers and related class discussion of articles regarding these issues.

Teaching methods
Lectures and discussion of scientific papers

References
The material will be provided during the course.

Assessment
Oral exam and discussion of specific report

Other information
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Socio-Emotional Development
Lecturer: Contest in progress

Baseline Knowledge
Basic knowledge in tipical and atipical development

Aims and Objectives
At the end of the course the student must be able to:
- to know the main stages and characteristics of socio-emotional development, including moral development
- to know what are the factors and mechanisms that determine the development within the family and the main affective relationships, with particular reference to attachment bonds and the main mechanisms of transmission of contents and socio-emotional functioning between generations
- to know and identify the most reliable interventions to support family and parenting
- to face and manage the most common emotional-relational problems within the family with an informed and critical spirit

Program and contents
The course presents the lines of development of socio-emotional skills illustrating how emotions and significant relationships are defined and built during the life cycle.
Starting from an accurate examination of the components and qualities involved in the evolutionary processes of meaningful emotional relationships, the bonds of attachment will be presented as places of construction of emotional and relational competences, illustrating their characteristics during childhood, adolescence and adult age. A part of the course will deal with the link between socio-emotional development and moral development.
Some evaluation tools will be presented and the methodological and applicative implications of the theoretical aspects presented will be discussed.
Some interventions in the family context will also be discussed and the role and possible employment and application opportunities of the expert psychologist in development interventions will be discussed.

Teaching methods
Lectures and specific seminars

References
The material will be provided during the course.

Assessment
Oral exam with practice

Other information
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