

Aristotle University of Thessaloniki
Department of Medicine
MSc Neuroscience and Neurodegenerative Diseases

STUDY GUIDE



ΑΡΙΣΤΟΤΕΛΕΙΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΘΕΣΣΑΛΟΝΙΚΗΣ

ΤΜΗΜΑ ΙΑΤΡΙΚΗΣ

ΟΔΗΓΟΣ ΜΕΤΑΠΤΥΧΙΑΚΩΝ ΣΠΟΥΔΩΝ

ΑΚΑΔΗΜΑΪΚΟ ΕΤΟΣ 2022-2023



ΙΠΠΟΚΡΑΤΗΣ

ΘΕΣΣΑΛΟΝΙΚΗ 2022

MSc Neuroscience and Neurodegenerative Diseases

The Department of Medicine of the School of Health Sciences organizes and operates a Joint Master's Program entitled "MSc Neuroscience and Neurodegenerative Diseases".

The subject matter of the proposed Joint MSc is the modern scientific approach to the study of mental, behavioral and emotional disorders as they manifest at work, in the family environment, in the daily life of the sufferer and their caregiver. In addition, the dynamic changes, both mental and behavioral processes during aging, healthy and pathological, will be studied. Furthermore, issues related to the epidemiology and pathogenetic mechanisms that trigger the above disorders, such as environmental and genetic factors, will be analyzed.

The general operating objectives of the Program are: the treatment of neurodegenerative diseases, the exposure of trainees to current therapeutic approaches and their familiarization with the indications, basic principles, results and possible complications of neurodegenerative diseases, the reference to current research programs and the cultivation of correct critical thinking in pioneering announcements, but also the promotion of continuous and uninterrupted research on issues of diagnosis, etiology, epidemiology, pharmaceutical and non-pharmacological treatment of neurodegenerative diseases, which aims at further understanding of these diseases through the development of high-level and of academic interest in graduate theses.

Academic Calendar

The academic year begins on September 1 and ends on August 31 of the following year.

The teaching work of each academic year is structured in two semesters.

At the beginning of each semester, the course declaration for the current semester is made. Students are requested to register all courses for the current semester. The

deadline for declaring courses is announced by the Secretariat of the MSc. The declarations of registration and participation in the courses chosen by the student for a specific academic semester are registered electronically and automatically by the Electronic Secretarial Services of the Aristotle University, (sis.auth.gr), in its individual portion.

Awarded Joint MSc Title

The Joint MSc awards a Master's Degree with the title: " MSc in NEUROSCIENCE AND NEURODEGENERATIVE DISEASES".

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STUDY GUIDE

MSc Neuroscience and Neurodegeneration

Neurodegenerative diseases are becoming more and more widespread with the aging of the general population, having a direct impact on the sufferer's quality of life. Research into the pathogenesis and treatment of these disorders has grown exponentially.

The purpose of this postgraduate program is the holistic teaching and training of neurodegeneration both at a theoretical and applied clinical level. The program is aimed at doctors, psychologists, nurses and other paramedical staff and covers the epidemiology and pathogenesis of dementia, Parkinson's disease, Parkinsonian syndromes, other neurodegenerative diseases (cerebellar ataxias, chronic stage of multiple sclerosis), the modern diagnostic approach to neurodegenerative diseases, the pharmaceutical treatment and non-pharmacological interventions of these diseases, the general care of patients and caregivers.

The teaching is enriched with knowledge of the Anatomy and Physiology of the brain.

FIRST SEMESTER COURSES

"A. Epidemiology and pathogenesis of dementia"

The Modules included in the Course are:

Update on our Master, The history of AD and its current situation, Epidemiology and Genetics in dementia with Lewy bodies, Epidemiology and genetics of other Dementia syndromes, Molecular mechanisms of aging and interactions with molecular mechanisms of neurodegeneration, Molecular and Genetic basis of frontotemporal degenerations, Epidemiology of Frontotemporal Dementias, The Approach to the Bacterial Contribution to Alzheimer's Disease, Molecular and Genetics in Vascular Dementia, Molecular and Genetic Basis of Alzheimer's Disease, Chronic Stress, Depression and Alzheimer's Disease: the Triangle of Oblivion, Epidemiology of Alzheimer's Disease, Predisposing and prophylactic factors, Environmental factors and occurrence of neurodegenerative diseases, Epidemiology and pathogenesis of vascular dementia, Diabetes Mellitus (Stroke and Dementia), Epidemiology and pathogenesis of dementia in MS, Effect of oxidative stress on the progression of Alzheimer's disease, Biomarkers of oxidative stress, Pathoanatomical evidence of Neurodegenerative Diseases I and II, Experimental models of MS - evidence of mechanisms of neurodegeneration, Introduction to Research Methodology, Transgenic mouse models of Alzheimer's neurodegenerative diseases, Mechanisms of

neuroinflammation in Alzheimer's disease. The role of TNF- α , Epidemiology and pathogenesis of Neurometabolic diseases, Neurodegenerative diseases and epilepsy.

Course Leader: Tsolaki M., Emeritus Professor Dept. of Medicine AUTH

Teachers: Tsolaki M. Emer. AUTH Professor, Papaliagas V. Asst. Professor DIPAE, Tegos Th. Asst. Prof. AUTH, Savvopoulos X. Prof. AUTH, Koutsouraki E. Asst. AUTH Professor, Pantazaki A. AUTH Professor, Anastakis D. Academic Scholar AUTH, Visitor Asst. Professor of Medicine, University of Cyprus, Boziki M. Asst. professor A.U.TH., Tsorbatzoudis H., Professor A.U.TH., Mercè Boada Prof., MD, PhD, Zaganas I. Asst. Professor at the University of Crete, Tavernarakis N. Professor at the University of Crete, Ioannidis P. Asst. Professor A.U.Th., Nifli A.-F. MSc, PhD KTE Thessalia, Paraskevas G. Asst. Professor UOA, Kapaki E. Professor UOA, Sotiropoulos I. Research. Founder "Democritos", Georgopoulos S. Research. Founder of Medical Biological Research, Spilioti M. Asst. Professor A.U.TH.

"B. Epidemiology and pathogenesis of Parkinson's disease - Parkinsonism plus syndromes"

The Modules included in the Course are:

Molecular and Genetic basis of parkinsonian syndromes, Translation of biomedical research into clinical practice: examples of Neurodegenerative Diseases, Dementia in the corona period, Pathogenesis of other parkinsonian syndromes, Synucleinopathies - Parkinson's disease, Multiple System Atrophy: from diagnosis to treatment, Tauopathies: Progressive Supranuclear Palsy, Corticobasal degeneration: from diagnosis to treatment, Polyglutamic disorders- Huntington's disease: from diagnosis to treatment, Natural products in the prevention of neurodegenerative diseases, Non-motor problems in Parkinson's disease, Vascular parkinsonism, Brain anatomy, Brain physiology, Brain Neuroplasticity, The Evolutionary Origins of Neurodegenerative Diseases: Reference to Parkinson's and Alzheimer's Diseases, Exercise-Induced Brain Plasticity in Patients with Parkinson's Disease and Alzheimer's Disease, The Contribution of New Technologies to the Diagnosis and Treatment of Parkinsonian Syndromes, Epidemiology of Parkinson's Disease, Pathogenesis of Parkinson's Disease.

Course Leader: Tegos Thomas, Ass. Professor AUTH.

Teachers: Stefanis L. Professor UOA, Skarmas N. Asst. Professor UOA, Amos D. Korczyn Professor Tel Aviv University, Konitsiotis S. Professor at the University of

Ioannina, Chondrogiorgi M. Ph.D. University Scholar at the University of Ioannina, Bostantzopoulou S. Emeritus Prof. AUTH, Tsolaki M. Emeritus Prof. AUTH, Tegos T. Asst. Professor, A.U.TH., Arnaoutoglou M. Asst. Professor A.U.TH., Anastakis D. Academic Scholar A.U.TH., Visit. Asst. Professor of Medicine at the University of Cyprus, Grouios G. Professor, AUTH, Charisis Vassilios, Post-Doctor, AUTH, Hatzidimitriou S. Post-Doctor, AUTH.

"C. Epidemiology and pathogenesis of other neurodegenerative diseases"

The modules included in the Course are:

Epidemiology of mental retardation and its evolution, Down syndrome. From child to adult, Neurodegeneration in Multiple Sclerosis, Molecular and Genetic Basis of Inherited Disorders, Adult Neurometabolic Diseases- Diagnostic Process, Cognitive and Psychiatric Disorders in Epilepsy - Therapeutic Approaches, Functional Morphology of the Nervous System, Medical Research Methodology- Research Question Formulation and types of studies, Medical research methodology - Randomized clinical trials, Critical appraisal of a clinical trial - Regulatory framework of clinical trials, The role of Biobanks in the study of Neurodegenerative Diseases, Epidemiology and pathogenesis of disorders, Aging, cognitive functions and mental health: Findings from physical interventions activity, Examples of analysis from advanced statistical procedures: Applications in neuropsychological research, Epidemiology and pathophysiology of stroke, Systematic review and meta-analysis, The Contribution of Geoinformatics and Data Science to the Epidemiology of Neurodegenerative Diseases.

Course Leader: Savvopoulos Christos, Professor Dept. of Medicine AUTH

Teachers: Papantoniou G. Professor University of Ioannina, Michailidou H. Postdoctoral Fellow at Leiden University, Koutsouraki E. Assoc. Professor AUTH, Tsorbatzoudis H. Professor AUTH, Savvopoulos X. Professor AUTH, Goulis D. Professor AUTH, Spilioti M. Asst. Professor A.U.TH., Tegos Th. Asst. Professor AUTH, Tsapas A. Professor AUTH, Anastakis D. Academic Scholar AUTH, Visit. Asst. Professor of Medicine at the University of Cyprus, Doukas I. Emer. Professor of Geodesy & Geomatics, Department of Civil Engineering, A.U.TH.

"D. Modern diagnostic approach of neurodegenerative diseases"

The Modules included in the Course are:

The neuropsychological evaluation in neurodegenerative diseases: The role of the neurologist, Reversible dementias-examples, Biological indicators in the CSF and in the blood of patients with neurodegenerative diseases, The retina as a mirror of changes in the CNS, Brain oscillations in Parkinson's and Alzheimer's disease, Sexual disorders in dementia , Neuroimaging markers in neurodegenerative diseases: The role of MRI, Posture and gait analysis for the diagnosis of neurodegenerative diseases, Biological markers in Alzheimer's disease, The importance of comprehensive neuropsychological assessment in the early detection of dementia, EEG analysis techniques, Psychometric evaluation of translated of neuropsychological mental dictionary tools - Proposals for the construction of lexical tools, Tests of neuropsychological assessments of perceptual-motor functions and Physical Activity in the context of mental health, Modern diagnostic process of dementia-Criteria, Neurophysiological indicators in the diagnosis of Alzheimer's disease, The role of Neurophysiology in diagnosis and treatment of neurodegenerative diseases, Introduction to Psychogeriatrics, Strokes and psychiatric manifestations, Assessment and treatment of memory disorders, Anemia - Strokes - Dementia.

Course leader: Tegos Thomas, Associate Professor Dept. of Medicine AUTH

Teachers: Papageorgiou S. Asst. Professor UOA, Paraskevas G. Asst. Professor UOA, Kapaki E. Professor UOA, Nifli A.-F. Researcher KTE Thessaly, Yener G. Professor Dokuz Eylül University, Athanasiadis L. Professor AUTH, Kouskouras K. Asst. Professor AUTH, Hatzitaki B. Professor AUTH, Andreadou E. Postdoctoral researcher AUTH, Messinis L. Asst. Professor A.U.Th., Dimitriadis S. Asst. professor Cardiff University, Neofytidou E. EDiP AUTH, Tsorbatzoudis H. Professor AUTH, Tsolaki M. Emer. Professor AUTH, Papaliagas V. Asst. Professor DIPAE, Kimiskidis V. Professor AUTH, Konsta A. Asst. Professor AUTH, Tegos Th. Asst. Professor A.U.Th., Masoura E. Asst. Professor AUTH, Savvopoulos X. Professor AUTH, Kaiafa G. Associate Professor AUTH.

Second Semester

"A. Pharmaceutical treatment of neurodegenerative diseases (MANDATORY)"

The Modules included in the Course are:

Particles and Fields in modern biomedicine, Pharmaceutical treatment of frontotemporal dementia, Future Pharmaceutical treatment of Alzheimer's Disease, Extracellular vesicles in the treatment of neurodegenerative diseases, Pharmaceutical treatment of Parkinson's Disease, Pharmaceutical treatment of Vascular Dementia, Pharmaceutical treatment of cognitive disorders in multiple sclerosis plaque, Pharmacological intervention in patients with cognitive disorders and epilepsy, Treatment of motor and non-motor disorders in Parkinson's syndromes-Adverse effects of drugs, Parkinson's disease: Device-assisted treatments, Treatment of anxiety in neurodegenerative diseases, Pharmacological treatment of behavioral disorders, Pharmaceutical treatment of depression in neurodegenerative diseases, Pharmacological treatment of sleep disorders in degenerative diseases, Pharmacological treatment of non-cognitive disorders in MS, Neurosurgical management of Parkinson's Disease, Alzheimer's disease and hearing, Remote ischemic postconditioning of the human brain in dementia, Neurosurgical Management of Neurodegenerative Disorders, Pharmacological treatment of spasticity.

Course leader: Tegos Thomas, Associate Professor Dept. of Medicine AUTH

Teachers: Aggelakeris M. Professor AUTH, Papatriandafillou I. Dr. Psychiatrist, Tsolaki M. Emer. Professor AUTH, Nifli A.-F. Researcher KTE Thessaly, Tegos Th. Asst. AUTH Professor, Koutsourakis E. Asst. AUTH Professor, Spilioti M. Asst. AUTH Professor, Konitsiotis S. Asst. Prof. University of Ioannina, Chondrogiorgi M. Acad. Scholar of the University of Ioannina, Stathis P. Dr. Neurologist, Degleris N. Ex Lecturer of the University of Ioannina, Politis A. Asst. Professor UOA, Konsta A. Asst. AUTH Professor, Bonakis A. Asst. Professor UOA, Koutsourakis E. Asst. AUTH Professor, Foroglou N. AUTH Professor, Psyllas G. Asst. AUTH Professor, Tsitsopoulos P., Asst. AUTH Professor, Voucharas X. Cardiac Thoracic Surgeon.

"B. Non-pharmacological interventions (MANDATORY)"

The modules included in the Course are:

Educational Needs of the Nursing staff, New technologies for the assessment of cognitive functions, Biological mechanisms of improving the functional capacity of patients with neurodegenerative diseases with exercise I , Non-pharmacological

interventions: The role of the Psychologist, Cognitive training of patients with Mild Cognitive Impairment in neurodegenerative diseases, The role of the Neurologist in the assessment of legal capacity, The assessment of the driving capacity of patients with neurodegenerative diseases, Biological mechanisms of improving the functional capacity of patients with neurodegenerative diseases with exercise II, The assessment of Legal Capacity in dementia: The role of the Neuropsychologist, Creating serious games to support patients with dementia, Mechanisms of improving mental functions through physical exercise, Physical exercise in patients with motor problems in neurodegenerative diseases, Techniques of Neuromodulation, Proposed program (FAME) of physical exercise for patients with dementia, REMEDS for Alzheimer: A new tool for the differential diagnosis between healthy elderly and minor neurocognitive disorders, The working mechanisms of exercise in neurodegenerative diseases, Cognitive rehabilitation software RehaCom: Efficacy studies in patients with Multiple Sclerosis, Driving and Mental disorders in old age, Computational tools for the modeling of non-invasive brain stimulation, Introduction to Neurophysiology, Social cognition in Parkinson's Disease and Multiple Sclerosis, Non-pharmacological interventions in behavioral disorders of dementia patients, Occupational therapy and sensory interventions in people with cognitive disorders.

Course leader: Tsorbatzoudis Haral., Professor AUTH.

Teachers: Gioka M. Psychologist, Msc, Ph.D., Zygouris S. Psychologist, Ph.D., Mougios V. Professor, AUTH, Moraitou D. Professor, AUTH, Tsatali M. Lecturer City College, Poptsi E. Psychologist BSc MSc Doctoral Candidate, Voskou P. Dr. Neurologist, Stamatelos P. Doctoral Candidate UOA School of Medicine, Giannoulis V. Postdoctoral Researcher Bulgarian Academy of Sciences, Tsiatsos T. Professor AUTH, Tsolaki M. Emer. Professor AUTH, Garopoulou V. Postdoctoral Fellow Medical School of Athens, Sedaghat F. MD, PhD Neuroscientist, Mouzakidis X. Dr. T.E.F.A.A. AUTH, Kurz A. Technical University of Munich, Tsorbatzoudis H. Professor AUTH, Messinis L. Asst. Professor A.U.Th., Katsouri Ioanna Asst. Prof. University of Western Attica, Samaras Theod. Professor AUTH, Kosmidis E. Associate Professor Dept. of Medicine AUTH, Petridou A. Ass. Prof. AUTH, Doskas T. Neurologist, Dimitriou T. Dr. Psychologist, Katsiana Aikat. Asst. Professor Univ. of Western Macedonia.

"C. Home care – Hospital - institutional care of patients with neurodegenerative diseases (OPTIONAL)"

The modules included in the Course are:

Home Care and Advanced Stages of Dementia, The Dental Needs of Patients with Neurodegenerative Diseases, The Stigma of Neurodegenerative Diseases, Nursing

Interventions for Patients with Dementia, Care of Dementia Patients in the End-Stage Unit, Recognition and Management of Behavioral Disorders I, Recognition and Management of Behavioral Disorders II, Response of Patients with Mild Cognitive Dysfunction to New Technology Interventions and Associations with Polymorphisms, Parkinson's Disease: a Home Fitness Program. The contribution of physical therapy, Adaptations of exercise in patients with degenerative diseases, Nursing needs of patients in the final stage, New legislative framework for dementia, Social intelligence of elderly people with high autistic elements, The frequency of autistic elements in the elderly with mental disorders, The pathophysiology of pain in its diagnosis and treatment, Examples of analysis from advanced statistical procedures: Applications in neuropsychological research, Respiratory Physiotherapy in patients with neurological problems - Modern techniques and devices.

Course leader: Savvopoulos Christos, Professor Dept. of Medicine AUTH

Teachers: Nikolaidou E. Psychologist MSc, Gavopoulou E. Dentist Msc, Theofanidis D. Professor TEI, Bekiaridis-Moschou D. Dr. Psychologist, Konstantinou A. Academic scholar of the University of Thessaly, Vorvolakos T. Assistant Professor of the University of Athens, Tsolaki Anth. Academic Scholar AUTH, Stathopoulos S. Professor of PE University of Rome, Baldimtsi E. postdoctoral researcher AUTH, Nifli A.-F. Researcher KTE Thessaly, Tsorbatzoudis H. Professor AUTH, Barkoukis V. Prof. A.U.TH., Christara-Papadopoulou Al. Professor of the Physiotherapy Department of the International University of Greece, Ravdas P. Dikigoros, LL.M.

"D. Education - Support of carers (OPTIONAL)"

The Modules included in the Course are:

Functional reorganization of the brain and communication disorders in dementia - the role of neurorehabilitation, Online training of caregivers throughout Greece, Remote support of caregivers using online technologies, The burden of caregivers, Family and Dementia, Bereavement support, Psychological Interventions in Caregivers, Living with a chronic neurodegenerative disease: effects on the patient and his family, Counseling genetics of neurological diseases, The role of nutrition in neurodegenerative diseases, Difficult behaviors in dementia and their management, Assessment and management of disorders in visuospatial and visuoconstructive abilities, Dementia, aged care and end-of-life preparation: a pastoral psychological approach, The role of the carer, Dementia: Help, Hope and Psychosocial interventions for carers, Dementia: home or institutional care, Examples of analysis from advanced statistical procedures: Applications in neuropsychology research, Harmful effects of smoking on human organism and dementia.

Course leader: Tsolaki M., Emeritus Professor Dept. of Medicine AUTH.

Teachers: Nasios G. Asst. Professor Univ. of Ioannina, Karagiozi K. Psychologist, Tsiatsos T. Professor AUTH, Margioti E. Clinical Neuropsychologist PhD candidate AUTH, Margaritidou P. Psychologist, Remoundou M. Neuropsychologist postdoctoral researcher, Koutsouraki E. Associate Professor AUTH, Makri M. Cand. Doctor of Medicine AUTH, Chourdakis M. Associate Professor AUTH, Emmanuel A. Dr. Psychologist, Bekiaridis-Moschou D. Dr. Psychologist, Nikolaidou E. Psychologist MSc, Pattakou-Parasiri V. Asst. Professor of Social Work, Barkoukis V. Professor AUTH.

Practical Exercise

The practical training can be carried out in the 2nd or 3rd semester. In particular, it is carried out at the Day Care Centers of the Hellenic Society of Alzheimer's Disease and Related Disorders based in Thessaloniki or at other collaborating institutions.

The Program aims at the professional empowerment of Biomedical Sciences graduates, not only by providing theoretical knowledge on the epidemiology, diagnosis, pathogenesis and treatment of Neurodegenerative Diseases, but also by involving them in processes of mental, moral and emotional development, reflection and personal -professional emancipation in practice close to patients and caregivers, in order to become more effective in dealing with patients with these problems.

Master Thesis

The beginning of the thesis (taking up the topic, preparation-presentation of the study plan) takes place in the 2nd semester and it is completed (writing-presentation) after the end of the 2nd semester, i.e. at the end of a full calendar year.

The promotion of continuous and uninterrupted research on issues of diagnosis, etiology, epidemiology, pharmaceutical and non-pharmacological treatment of neurodegenerative diseases aims at further understanding of these diseases through the preparation of high-level and academically interesting postgraduate theses.

Digital services for students

Students benefit:

1. AUTH registration system (<https://register.auth.gr/>)

Students complete their registration at AUTH and create their institutional account which gives access to all student benefits such as the application for meals at the University Student Club and the application for obtaining the academic identity card (pass).

2. Schedule of Courses and Halls of AUTH (<https://classschedule.auth.gr/>)

It is the central information application that serves students, offering personalized information about the course program and the rooms in which they are held.

3. Eudoxus (<https://eudoxus.gr/>)

This is an electronic service of the Ministry of Education and Religious Affairs through which the Essays are provided to undergraduate students of all Institutions.

4. Department of European Educational Programs AUTH (<https://eurep.auth.gr>)

The online application portal for student exchanges of the Aristotle University of Thessaloniki within the framework of the Erasmus Program.

5. School of New Greek Language (<https://smg.web.auth.gr>)

The School of Modern Greek Language of the Aristotle University of Thessaloniki offers Greek language and culture courses to foreigners and expatriates who are going to study in Greek educational institutions and knowledge of Greek is a prerequisite.

6. Quality Management System (QMS) MO.DIP. (<https://qa.auth.gr/student>)

Through the website of MO.DIP (Quality Assurance Unit of AUT) students can anonymously evaluate the courses and lecturers they attend.

Student support

The state provides a range of administrative, financial and other services and facilities to postgraduate students to facilitate the completion of their studies. These include the possibility of postponing conscription, medical and hospital care and the ticket for reduced fares on the various means of transport, etc.

In addition, the AUTH has developed - and continues to develop - procedures and services that cover the basic obligations arising from the legislation and is oriented towards the continuous improvement and increase of benefits, despite the constantly shrinking resources.

- Housing in Student Residences
- Feeding at the University Student Club
- Libraries and online Libraries (The Central Library remains open 24 hours a day during exam periods), while the scientific reading room for postgraduate students and PhD candidates operates 8:00 – 20:00.
- Scholarships and endowments
- Internship Office
- Department of European Programs
- Department of International Relations
- Study and Career Liaison Office
- Office of Support for Students of Sensitive Social Groups
- Counseling and Psychological Support Center
- Student Advocate: for issues other than grades and exams
- Gender Equality Committee: for discrimination issues
- Scientific student associations
- Children's Center
- Office of Coordination of Volunteers & Student Activities
- Various groups of a cultural and social nature at the level of the Foundation and Departments
- University Gymnasium
- University Camp
- Electronic services through special applications of the Foundation, and via mobile phone

