

Core Courses:

PHI2002: Medical Ethics – Moral health care dilemmas from a European and comparative perspective

Full course description

Those who are working in the medical professions are often confronted with decision making procedures that go far beyond the mere technological aspects that are involved in the cases under investigation. Doctors and nurses are aware of the fact that their fields of operation are characterized by moral parameters as well and they know that ethical reflection has to come in where scientific deliberation is no longer able to answer all the questions that are connected to the medical problems they have to deal with. This means that quite frequently a medical assessment needs the help of an ethical evaluation to cover completely the appraisal of a particular health situation and that doctors and nurses should be conscious of the moral status and implications of the conclusions they draw.

The aim of this course is to give an introductory investigation of the question if, when and how ethical considerations can or must play a role in the practice of the medical professions. It wants to make students aware of the fact that the health sciences are not operating in a moral vacuum and that a good knowledge of both the older and recent ethical debate in this particular field is of the greatest significance.

Besides this it wants to make clear that the European concept of a medical ethics as such is strongly related to typically western assumptions regarding the essence and status of a human being, which indicates that it could be made visible as well that a non-western philosophical anthropology and morality will give rise to a medical ethics that is or can be rather different from its European counterpart. This intercultural way of work serves to yield a clear cut picture of the idea that, indeed, the European medical ethics is a very 'western' one.

This course consists of three parts.

The first part of the course will give an introduction into some fundamental European philosophical ideas of what it means to be a human being. This introduction will be accompanied by an introduction into the most important ethical theories of the West.

The second part of the course will find an introduction into a variety of the most important non-western philosophical ideas of what it means to be a human being. Some major ethical theories of the East will be explained.

The third part of the course wants to discuss some of the most important and well-known ethical problems that can be found within the medical field. They will be approached from a cross cultural perspective: both the western and eastern points of view will be analyzed and compared.

There will be lectures, discussions and the study of cases that reflect the most important problems and topics that make up the moral challenges of the medical discipline of today.

The course includes a field trip.

This course consists of 32 class hours divided over 7-8 weeks. Students earn 6 ECTS credits when they obtain a passing grade. Students who need more credits can sign up for the extended course format, which includes an Independent Study Project (ISP) worth an additional 3 ECTS. The maximum number of credits that can be obtained is 9 ECTS.

This class is a Core Course for students in the Public Health & Medicine in Europe programme and for students in the Psychology & Neuroscience in Europe programme.

Course objectives

By the end of this course students will have gained in-depth knowledge of the following subjects:

- The concept of a human being in European/western thought.
- The background, importance, concepts and ideas of medical ethics as such.
- The most important ethical theories that could, should or do play a role in the medical field.
- Classic cases that invited and shaped the development of ethical thought in the medical fields.
- The concept of a human being as it can be found in Confucian, Taoist, Hindu, Jain and Buddhist philosophies: its relation to some fundamental ideas of medical ethics in these systems of thought.
- Students will also be able to present an ethical discussion of a medical case for which a purely instrumental and technical approach must remain unsatisfactory. They will be able to offer a sound ethical analysis of this case and they will be able to present the outcome of the analysis in a clear, intercultural and philosophically correct way.

Prerequisites

None. A minimum number of 8 students is required for the course to take place.

Recommended reading

We will use the following books in this course:

- G. Pence, 'Medical Ethics: Accounts of Ground-Breaking Cases, McGraw-Hill, New York, 2014
- G. Pence, 'Classic Works in Medical Ethics: Core Philosophical Readings, McGraw-Hill, New York, 1997
- J.M. Koller, 'Asian Philosophies', New York, 2012

CES students receive their books on loan from CES.

<https://www.maastrichtuniversity.nl/meta/326463/medical-ethics-moral-health-care-dilemmas-european-and-comparative-perspective?print=1>

EUH2002: European Public Health in a Globalising World – introducing policy, research and practice

Full course description

The course provides an overview of modern health challenges in Europe and how they are embraced by a variety of stakeholders: policy makers, researchers, practitioners and the civil society.

The course focuses on three perspectives: Firstly, health in Europe, hence, what is the health status across the European countries, how do the health systems look like, what are major challenges for individual countries. Secondly, the perspective of European health which focuses on Europeanisation and European integration within the European Union (EU) and more widely according to the WHO European region. Lastly, European health in a globalised world is assessed. The course combines theory with practice through lectures, tutorials and a field visit.

This course consists of 32 class hours divided over 7-8 weeks. Students earn 6 ECTS credits when they obtain a passing grade. Students who need more credits can sign up for the extended course format, which includes an Independent Study Project (ISP) worth an additional 3 ECTS. The maximum number of credits that can be obtained is 9 ECTS.

This class is a Core Course for students in the Public Health & Medicine in Europe programme.

Course objectives

After participating in the course students should be able to:

- Describe in brief the historical developments in European health
- Describe the main contemporary health challenges at national levels, European level and from a global perspective
- Describe the main characteristics of how different European health systems are financed and managed
- Know examples of EU related health policies, strategies, institutions and projects
- Describe examples of cross-border collaboration across Europe
- Identify examples of global trends that influence European health and how Europe influence global health

Prerequisites

To facilitate a fruitful learning environment a moderate level of health-related knowledge is required. Hence, the course is directed towards students attending bachelor or master courses in medicine, public health science, sociology, anthropology, political science, economics, European studies etc.

A minimum of 9 students is required for the course to take place.

Recommended reading

The literature is based on EU documentation, reports from the WHO and the European Observatory as well as general research papers concerning European public health. All literature is freely available on the internet.

<https://www.maastrichtuniversity.nl/meta/328703/european-public-health-globalising-world-%E2%80%93-introducing-policy-research-and-practice?print=1>

Additional Courses:

BIO3003: Microbiology + *Optional: PRA3010 (Medical) Microbiology*

Full course description

The 7 weeks course will start with two introduction lectures on Bacteriology and Virology. The general principles of replication, classification, metabolism and antibiotic resistance of bacteria as well as the presence of bacteria in several organ systems and the composition of the indigenous flora will be discussed in week 1. The general principles of replication, classification and pathogenesis of viruses will be discussed in the introduction lecture of week 2. Several aspects of bacteriology and virology will be further discussed in the expert and tutorial group meetings, which will include topics as HIV, Tuberculosis and ESBL.

The knowledge you have obtained in the first two weeks will serve the basis for the following three weeks, where Infectious diseases, Outbreaks & resistance and Microbiological diagnostics will be discussed in the lectures as well as in the tutorial groups. In these topics, both the bacterial and viral aspects will be discussed.

The last part of this course will deal with genetically modified microorganisms, in which you gain insight in the purposes of modification and the tools that are available. In the PBL tutorial group linked to this part of the course (Case: The Experiment), you will design your own experiment on paper; genetically modification of viral genes.

Course objectives

To obtain basic knowledge of medical microbiology, i.e. of bacteriology, virology and genetically modification of microorganisms.

To study the characteristics of a selection of micro-organisms in relation to their related infectious diseases, more specific pathogenesis, epidemiology, diagnosis and therapy.

Prerequisites

No pre-requisites

Optional Co-requisite: PRA3010 Microbiology

Recommended reading

Murray. Medical Microbiology. (7th ed.), Elsevier Mosby.

<https://www.maastrichtuniversity.nl/meta/328655/microbiology?print=1>

INT1002: Basic Principles of Pharmacology

Full course description

Pharmacokinetics (what the body does to a drug) and pharmacodynamics (what a drug does to the body) describe basic principles that are important for predicting and understanding drug effects in the human body. Pharmacokinetics can be defined as the characterization of transport processes of drug in the body throughout the phases of absorption, distribution, metabolism and excretion. These transport processes are usually studied in blood or blood plasma and evaluated in terms of pharmacokinetic parameters such as clearance, volume of distribution and elimination half-life. These principles are of particular importance in the clinical use of drugs when dealing with pharmacodynamic issues such as drug interactions, concentration response relations, therapeutics versus non therapeutic effects, dosing schedules and differential drug actions at receptor sites. The course will discuss two important (psycho)pharmacological principles of receptors: first, they are organized in multiple subtypes, and second, their interaction with drugs can be defined as agonist, partial antagonist, antagonist and inverse agonist. The course will cover the major principles of signal transduction, in particular in relation to the nervous system. Furthermore, the basic principles of drug metabolism and toxicity will be discussed. Finally, the process of drug discovery and development is a topic of interest.

Course objectives

- To explain the basic principles of pharmacokinetics and pharmacodynamics of drugs.

Prerequisites

None.

Recommended reading

Katzung BG et al. Basic and clinical pharmacology. McGraw Hill (11th edition), 2009, e-version via library

INT3002: Advanced Microscopy: Theory and Applications

Full course description

The use of advanced imaging techniques in light and electron microscopy is wide-spread, particularly in the fields of material science and biological imaging. In recent years, the resolution and/or functionality of such tools has been increased due to the development of fluorescence microscopy, two-photon excitation microscopy, correlative light-electron microscopy and stimulation emission depletion (STED) microscopy [first experimentally shown by the winners of the 2014 Nobel Prize in Chemistry]. In electron microscopy, rapid developments in aberration correction and in image filtering allow users to understand much more about the samples they are investigating. This course will introduce a number of advanced imaging techniques to participants, detailing theoretical aspects as well as practical considerations. This course is aimed any students from the programme with an interest in imaging and its principles.

Course objectives

- To acquaint the student with an understanding of principles of (light) microscopy and limiting factors in resolution
- To introduce and detail a number of microscope designs and theory as to how they overcome the resolution limit
- Introduction and understanding of electron microscopy and its application to material science and biological imaging
- To explain sample preparation procedures and perform a demonstration of some of the equipment

Prerequisites

Introduction to Natural Sciences: Biology, Introduction to Natural Sciences: Calculus, Introduction to Natural Sciences: Mathematical Foundations of Physics

Recommended

Elements of Physics

Recommended reading

TBC

<https://www.maastrichtuniversity.nl/meta/328585/advanced-microscopy-theory-and-applications?print=1>

NEU1002 Cognitive Neurosciences: Biological Foundations of Behaviour

Full course description

Throughout our lives, we encounter an innumerable amount of situations. Each of these circumstances requires a unique response. Our brain allows us to adapt our response to every new situation.

Course objectives

- Students will have a basic understanding of biological foundations of behaviour
- Students will understand the basics of movement and memory
- Comprehension of chemical control (neurotransmission and hormones) by the brain and dysfunctional control (e.g. addiction)
- Student will have a basic understanding of language, sleep/wake behaviour, consciousness

Recommended reading

Required literature Neuroscience: Exploring the Brain – Bear, 3rd edition. Additional literature Principles of Neural Science – Kandel, 4th edition

NEU2002: Neuropsychopharmacology + Optional: PRA1005 Data Collection Techniques in the Neurosciences

Full course description

In the first part of the course the focus will be on the molecular and cellular biology of the nervous system. Focus will be the neurotransmission process, in particular the role of neurotransmitter receptors as a basis for understanding the mode of action of CNS drugs. The second part of the course will give an overview of the major classes of a number of CNS drugs: the hypnotics and sedatives, the anxiolytics, and the drugs used to treat CNS degenerative disorders. The pharmacology of these drugs will be put in the perspective of their clinical use. The final part of the course will be devoted to illicit drugs, their acute and long term effects, and their potential as medicines.

Course objectives

- To know the basic principles of neurotransmission & the basic mechanism of drug-receptor interaction
- To understand the mechanism of action of the major groups of drugs acting in the central nervous system
- To understand the major neurotransmitter systems in the brain and their role in cognitive and affective disorders and functions
- To understand the pharmacotherapy of anxiety disorders, CNS degenerative disorders, ADHD
- To understand the acute and long term effects of drugs of abuse

Recommended reading

Journal articles, book(s) chapter(s).

Data Collection Techniques in the Neurosciences

Full course description

The skills will cover relevant laws of sensory perception (Weber, Fechner, Stevens), and introduce testing procedures for the measurement of detection and discrimination thresholds. These will include constant stimuli methods, and various adaptive testing procedures. In addition, there will be an introduction to Signal Detection Theory and derived measures of detectability or discriminability. In order to make this knowledge concrete, students conduct experiments based on several of these testing procedures. The end goal is to test one of the colleague-students and determine a sensory threshold with provided software. Students will also be familiarized with the analysis (Brainvoyager QX) and interpretation of an fMRI dataset. In addition to the empirical data collection and analysis, relevant literature will be covered on specific testing procedures, and on particularly beautiful examples of current state of the art experiments.

Course objectives

This skill has the aim of familiarizing students with basic techniques for data collection and analysis in behavioural neuroscience and fMRI.

Prerequisites

None.

Recommended reading

No mandatory literature. Hand-outs will be provided by coordinator.

SCI3005: Metabolism, Nutrition and Exercise

Full course description

The aim of the course is to provide students with a solid understanding of the key aspects in energy metabolism, and the effects of nutrients on skeletal muscle metabolism during exercise of different types. The course requires prior knowledge on some simple (bio)chemical concepts (e.g. the structure and function of macromolecules, common forms of chemical reactions, basic cell structure, and metabolism of macromolecules).

The course starts with a theoretical framework in which the basics of exercise biochemistry and exercise physiology are discussed. The course builds on the knowledge students have obtained in basic and intermediate courses, such as biochemistry, human physiology, and cell biology. In addition, students are encouraged to relate to appropriate knowledge from other courses. This course is meant as a culmination where all relevant knowledge acquired in previous courses comes together and is applied. The first, theoretical part of the course is rounded off with a midterm exam.

In the second part of the course students discuss the individual case studies for the take-home assignments. This is done in the form of presentations. By doing so every student will have the opportunity to discuss their findings and, if applicable, remaining questions or issues relating to the case study, as well as receive feedback on how to proceed. The second part of the course is rounded off by a written recommendation (take-home assignment).

Course objectives

- To provide knowledge of cellular and whole-body energy metabolism in rest and during exercise.
- To provide knowledge of the effects of nutrients on cellular and whole-body energy metabolism.
- To provide knowledge of the effects of training on different body systems and how this relates to exercise.

Prerequisites

Biochemistry.

Recommended

Human Physiology, Cell Biology

Recommended reading

There is no main book for this course. A list of suggested readings is provided in the course manual; these books are all available in Reading Room at UCM and/or in the library at the UNS50. In addition, E-Readers will be available in the Student Portal.

<https://www.maastrichtuniversity.nl/meta/328005/metabolism-nutrition-and-exercise?print=1>

SCI3049: Pathobiology and Disease

Full course description

In this course students will have an opportunity to learn how modern medicine has benefitted from our knowledge in the fields of (molecular) cell biology and immunology. Pathobiology is the field that deals with disturbance of normal physiological processes and the consequences of it for adequate functioning of our human body. Our challenge has been to arrange a program that offers insight in the nature, e.g. the causes and processes of disease.

The emphasis in this course is on diseases of the immune system and oncology. In this respect, this course builds on the knowledge obtained in the UCM course 'Immunology' and 'Cell Biology'. It is our hope that the acquired knowledge will furthermore enable you to better understand and appreciate the newest developments in treatment of these diseases.

The program comprises PBL tasks, workshops and assignments. PBL tasks will be presented to you in the form of tutorial group meetings and topic-related lectures. The tasks deal with 1) examples of diseases caused by unwanted reactions of the immune system, e.g. chronic inflammation and autoimmunity, and 2) with oncological diseases in which cells have gone astray, circumvent the body's defense mechanisms and give rise to cancer.

Workshops will address immunology- and oncology-related research highlights related to diagnostic, preventive and (immuno)therapeutic developments in immunological and oncological diseases. Assignments consist of writing an essay and giving a presentation on a block-related subject for discussion and deepening in the tutorial group meeting.

Course objectives

- To gain more insight in the field of pathobiology. particularly in immunological and oncological diseases
- To increase appreciation and knowledge of healthy living.
- To provide students with a good basic knowledge required to enter master courses in life sciences.

Prerequisites

Cell Biology and Immunology

Recommended

Microbiology, Human Physiology; Lab Skills: Genetics, Molecular Cell Biology and Genetics.

Recommended reading

Abbas, Lichtmann and Pillai. Cellular and Molecular Immunology, 8th edition, 2014.

Alberts et al. Molecular Biology of the Cell, 6th edition, 2015

<https://www.maastrichtuniversity.nl/meta/329207/pathobiology-and-disease?print=1>

SSC2053: Public Health Policymaking

Full course description

Students will become familiar with the following topics in public health: the epidemiology of mortality and disease; the determinants of health; the ageing of society and its implications for medical care; the unequal distribution of health; moral issues in public health; the economics of public health; health systems analysis; public health genomics; markets and public health; public health disasters. Students will become familiar with the following topics in public policymaking: the various components of public policy (values, objectives, instruments, policy paradigm); the concept of the policy cycle (problem recognition and definition, agenda building, policy formation, policy implementation, policy evaluation and feedback); theoretical approaches of public policy making (rational model, political model, institutionalist model); stakeholder and policy community analysis; types of state-society relationships (elitist model, pluralist model, corporatist model, regulatory agency model, communitarian model); the role of power in public policymaking. Regarding the third objective, students will learn to combine the knowledge gained under the first and second objective. Concretely, they learn to understand the implications of public health issues for public policymaking (e.g. how can we effectively tackle the problem of overweight/obesity or the problem of the unequal distribution of health? Which moral issues arise in public policymaking?) and, conversely, the implications of the structure and process of public policymaking for addressing public health issues (e.g. how are public health issues defined? Who dominates the agenda building process? What are the implications of the rational, political and institutionalist model for public health policymaking? What about the role of the state and society in public health policymaking? What are the specific characteristics of public policymaking in case of public health disasters?)

Course objectives

- To make students familiar with basic issues in public health.
- To make students familiar with basic issues in public policymaking.
- To make students familiar with basic issues in public policymaking on public health.

Prerequisites

None

Recommended reading

To be announced

<https://www.maastrichtuniversity.nl/meta/328943/public-health-policymaking?print=1>

SCI2009: Human Physiology

Full course description

While Mathematics is seen as the father of science, Physiology is the mother. Physiology attempts to explain the physical and chemical factors that are responsible for the origin, development, and progression of life. Human physiology investigates the mechanisms of the human body making it a living being (Guyton). In the healthy human body it is of the utmost importance that the working conditions for all cells are kept “constant”. In this respect it is noteworthy that essentially all organs and cells of the human body perform functions that help to maintain this constant nature or homeostasis by using feed-back mechanisms. We will begin by discussing the physiology of the cell, and the function of the cell membrane. Continuing, we will discuss cardiovascular physiology, respiratory, fluid and salt balance, followed by the autonomic nervous system and the endocrine system and ending with gastrointestinal physiology, control and feedback.

Course objectives

- To obtain basic knowledge of human physiology

Prerequisites

This course is designed to be taken in combination with SKI2079 Lab Skills: Human Anatomy and Histology. Students wishing to take the Lab Skills should concurrently enroll in, or have completed, this course. Students wishing to take SCI2009 Human Physiology without taking the Lab Skills may do so.

Introduction to Biology.

Recommended reading

Multiple sources provided by UM/UCM libraries including textbooks on:

Physiology, Biochemistry, Physics, Pathology, Internal Medicine, etc. The use of the on-line library Access Medicine (access provided by UB).

<https://www.maastrichtuniversity.nl/meta/328685/human-physiology?print=1>

HUM3051: Medical Humanities: Bodies & Minds, Histories of the Normal and the Pathological

Full course description

Medical humanities acknowledge that instead of being fixed entities, health and illness are constantly changing, ambiguous phenomena. What is called healthy (sane) or ill (insane) depends indeed on a large variety of issues and dynamics: cultural, socio-economical, and religious aspects; moral system; legal system; science; technology; art and media etc. This course approaches the question of health and illness through a philosophical, anthropological and sociological exploration of “bodies” and “minds”. Through a historical and cross-cultural perspective it will discuss various concepts of body and mind. We will discuss how and why some bodies and minds are considered as normal and others as abnormal or pathological. For this we will draw on scientific, social, cultural and economic contexts, but also on how bodies and minds are represented in art and (popular) culture. Cases include cosmetic surgery; the modern hospital; boxing in the ghetto; organ transplantation; depression; menopause; prostheses in Paralympic athletes; medical imaging technologies; the war on cancer.

Course objectives

- To gain knowledge of different influential conceptions of ‘body’ and ‘mind’, ‘healthy’ and ‘sick’, ‘normal’ and ‘pathological’, ‘regular’ and ‘deviant’.
- To gain understanding of how cultural, social, economic, legal, scientific and religious contexts play a role in the construction and consequences of these distinctions.

Prerequisites

NB: This course is highly interdisciplinary (philosophy, history, cultural studies, medical anthropology & sociology, several branches of medicine). It is situated at the crossroads of Social Sciences, Humanities and Science.

Prerequisite

COR1002 philosophy of science

Recommended reading

E-Reader. (Articles that are not included in the E-Reader will be made available for photocopying during the course). A book on a special topic in this field, selected by you from a list offered.

<https://www.maastrichtuniversity.nl/meta/329031/medical-humanities-bodies-minds-histories-normal-and-pathological?print=1>