

Degree Course in Dentistry and Dental Prosthetics 2023/2024

Integrated Teaching: Behavioral sciences and scientific methodology

Scientific Disciplinary Sectors: MED/01, INF/01, INF/01

Responsible Professor: Prof. [Domenico Rocco](#), mail: domenico.rocco@unicamillus.org

Number of University Educational Credits (CFU):9

Module: Medical statistics

Scientific Disciplinary Sector: MED/01

Number of University Educational Credits (CFU): 4

Professor: Prof. [Monica Sane Schepisi](#), mail: monica.saneschepisi@unicamillus.org

Module: Information Technology

Scientific Disciplinary Sector: INF/01

Number of University Educational Credits (CFU): 4

Professor: Prof. [Domenico Rocco](#), mail: domenico.rocco@unicamillus.org

Module: Psychology

Scientific Disciplinary Sector: M-PSI/01

Number of University Educational Credits (CFU): 1

Professor: Prof. [Susanna Cordone](#), mail susanna.cordone@unicamillus.org

PREREQUISITES

Knowledge and skills in mathematics, statistics and basic computer science at secondary school level, including arithmetic, algebra, Euclidean geometry, trigonometry and elements of differential and integral calculus. However, the teaching does not include preliminary qualifications.

LEARNING OBJECTIVES

Aim of the integrated course of Behavioral sciences and scientific methodology (Medical Statistics, Information Technology and Psychology) is to provide students with knowledge on the fundamentals of statistics, informatics and psychology necessary for their future activity.

In particular, aim of the Teaching is:

- to provide students with the basic knowledge to understand the essential role of Information Technology (IT) in our society, and specifically in the context of health-related technical professions;
- To provide basic knowledge of the theoretical and methodological principles of analysis and research in the field of general psychology;
- To illustrate the basic neuroscientific foundations of psychology, with references to the principles of anatomical physiology of the brain;
- Elaborate knowledge on the functioning of the mind and behaviour;
- To provide the main knowledge about the functioning of the different cognitive domains and higher mental functions. to acquire knowledge on the main IT tools and on the electronic communication in the specific areas of competence;
- to understand the importance of medical statistics in the research methodology in the medical field;

- to read a basic biomedical scientific article, understanding its structure and critically evaluating methods and results;
- to handle a simple database, with particular reference to clinical medicine;
- to make a descriptive and inferential analysis.

LEARNING OUTCOMES

At the end of the course the student will be able to:

Knowledge and understanding

- know the tools and computer concepts that will be useful for his future profession in the medical field.
- Know the basics of information technology, hardware and software;
- Know the computer protocols and computer standards in health matters;
- know the basics of an information system and of an information system of a health facility.
- must know how a database is organized and must know some basic notions of database query languages.
- know the security and privacy issues associated with handling sensitive and non-sensitive data such as health data.
- know how to use the main software for health data analysis (spreadsheet) and word processor.
- know the main software for the analysis of health data (spreadsheet)
- The main psychological perspectives in the history of psychology
- The scientific and methodological fundamentals of general psychology
- The basic principles of anatomy and physiology of the brain
- The higher mental functions such as thought, language, intelligence, consciousness, learning, memory
- the theoretical models of health and the role of psychological stress in the development of the disease
- autonomous ability to draw conclusions about the results of research conducted on the topics covered in the course and to describe and hold conversations on topics concerning the methods of investigation in psychology and the structural and functional characteristics of mental and cognitive processes using scientific terminology correctly.
- principles of anatomy and physiology of the brain. understand the importance of medical statistics in the research methodology in the medical field;
- read a basic biomedical scientific article, understanding its structure and critically evaluating methods and results;
- handle a simple database, with particular reference to clinical medicine;
- make a descriptive and inferential analysis.

Applying Knowledge and understanding

- Apply the principles of informatics, statistics and psychology to selected problems and to a variable range of situations.

- Use the tools, methodologies, language and conventions of informatics, statistics and psychology to test and communicate ideas and explanations.

Communication skills

- Present the topics verbally in an organized and consistent manner.
- Utilize a proper scientific language coherent with the topic of discussion.
- Apply the basics of health professional -patient communication.
- Apply the basics of verbal and non-verbal communication.
- Use the updated tools for communication and management of information, experience and professional skills in the field of services aimed at people, families and groups.

Making judgements

- Recognize the importance of an in-depth knowledge of the topics consistent with a proper medical education.
- Identify the fundamental role of a proper theoretical knowledge of the topic in the clinical practice.

Learning skills

At the end of the course, the student should have acquired independent method for studying and updating through different kind of literature or through scientific literature.

COURSE SYLLABUS

Medical Statistics

- Introduction to biomedical statistics
- Data types, evaluation and presentation
- Probability: evaluation and the role of probability
- Normal distribution, sampling techniques
- Principles of statistical inference
- Inference from a sample mean, comparison of two means; inference from a sample proportion, comparison of two proportions
- The hypothesis testing system, the chi-square test
- Correlation
- Linear regression
- Non-parametric methods
- Introduction to sample size calculation
- Evaluation of diagnostic tests, reproducibility of measurements
- Cohort studies
- Introduction to survival analysis
- Case-control studies
- Probability
- Introduction to multivariate regression
- Introduction to logistic regression
- Introduction to Poisson and Cox regression
- Analysis strategies

Information technology

- Binary system and information codification, input and output, boolean operators.
- Computer architecture, CPU, memories;
- Software: operating systems, application software;
- Word processor (Microsoft Word), including bibliography, citations and references;
- Spreadsheet (Microsoft excel);
- Computer networks, Internet, e-mail, World Wide Web;
- Databases, Academic databases and search engines. Public health databases
- Introduction to health information systems. The Italian health information system. Health standards for data acquisition, storing and visualization. The electronic medical record.
- Information security and Privacy in the management of healthcare data.
- Digital devices, sensors and mobile app for precise medicine.
- Analog to digital conversion

Psychology

GENERAL PRINCIPLES OF PSYCHOLOGY

- What is psychology?
- The history of psychology
- Main psychological perspectives

NEUROSCIENTIFIC FOUNDATIONS OF PSYCHOLOGY

- The brain : principles of anatomy and physiology
- Research in psychology

HIGHER MENTAL FUNCTIONS

- Thinking
- Language
- Intelligence
- Consciousness
- Learning
- Memory

STRESS AND HEALTH

- Theoretical models of health and the role of psychological stress in disease development
- Relevance of psychology in medicine
- Odontophobia

COURSE STRUCTURE

The teaching consists of hours of frontal teaching, 40 hours of Information Technology, 10 hours of Psychology and 40 hours of Medical Statistics. The frontal teaching includes hours of theoretical lessons followed by hours of exercises, reference to concrete case studies and possible seminars on the topics covered. The attendance at lectures is mandatory.

COURSE GRADE DETERMINATION

The exam of the Integrated Teaching of Behavioral sciences and scientific methodology is comprised of an unique written and oral exams of Information Technology, Psychology, and Medical Statistics whose marks are an integral part of the Integrated Course exam evaluation.

Student preparedness will be assessed through a written exam. Some questions may carry different weights (scores) based on their complexity. Questions may be multiple-choice, open-ended, or require problem-solving or exercises. The evaluation for each course will be graded on a scale of thirty.

The examination will be assessed overall according to the following criteria:

Not sufficient: significant deficiencies and/or inaccuracies in knowledge and understanding of the topics; limited ability to analyse and synthesise, frequent generalisations.

18-20: barely sufficient knowledge and understanding of the topics with possible imperfections; sufficient ability to analyse, synthesise and make independent judgements.

21-23: routine knowledge and understanding of the topics; correct analysis and synthesis skills with coherent logical argumentation.

24-26: fair knowledge and understanding of the topics; good analytical and synthetic skills with rigorously expressed arguments.

27-29: comprehensive knowledge and understanding of the topics; considerable ability to analyse, synthesise. Good autonomy of judgement.

30-30L: very good knowledge and understanding of topics. Remarkable ability to analyse and synthesise and independent judgement. Arguments expressed in an original manner

OPTIONAL ACTIVITIES

There are no optional activities in the course.

READING MATERIALS/BOOK LIST:

- The lesson slides and handouts distributed by the teacher during lessons.

Information Technology

Only as a reference:

- Rosotti, A, "Informatica medica", Mc Graw Hill
- Joos, D. Wolf, R. Nelson, "Introduction to Computers for Healthcare Professionals" seventh edition, 2019, Jones & Bartlett Learning, ISBN 978-1284194708
- Kathleen Mastrian, Dee McGonigle - Informatics for Health Professionals. Jones & Bartlett Learning; 1 edition (April 25, 2016)
- Joseph Tan - E-Health Care Information Systems: An Introduction for Students and Professionals. Jossey-Bass Inc Pub; 1 ed (May 1, 2012)

Medical Statistics

- Dancey, Reidy, Rowe. Statistica per le scienze mediche. PICCIN editore

Psychology

- E.B. Goldstein. Psicologia Cognitiva. Connettere mente, ricerca, ed esperienza comune. PICCIN editore
- P. Gray. Psicologia. ZANICHELLI editore
- JM Armfield, LJ Heaton. Management of fear and anxiety in the dental clinic: a review. Australian Dental Journal 2013; 58: 390–407 doi: 10.1111/adj.12118
- Rosa De Stefano. Psychological Factors in Dental Patient Care: Odontophobia. Medicina 2019, 55, 678; doi:10.3390/medicina55100678