UNICAMILLUS

Degree Course in Dentistry and Dental Prosthetics 2022/2023

Integrated Course: Behavioral sciences and scientific methodology
CFU Number: 9
Course coordinator: Prof. Domenico Rocco; e-mail: domenico.rocco@unicamillus.org

Module: Medical statistics
SSD: MED/01
CFU Number: 4
Professor's names: Prof. Monica Sane Schepisi; e-mail: monica.saneschepisi@unicamillus.org

Module: Information Technology
SSD: INF/01
CFU Number: 4
Professor's names: Prof. Domenico Rocco; e-mail: domenico.rocco@unicamillus.org

Module: Psychology
SSD: M-PSI/01
CFU Number: 1
Professor's names: Prof. Susanna Cordone; e-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 behavior;

- 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 Module

- Introduction to biomedical statistics
- Types of data, evaluation and presentation of data
- Probability: assessment and role of probability
- The binomial distribution
- Normal distribution

- Principles of statistical inference
- Inference from a sample mean
- Comparison of two averages
- Inference from a sample proportion
- Comparison between two proportions
- Association between two categorical variables
- Effect measurement in 2 x 2 tables
- Combined analysis for associated binary data
- Correlation
- Linear regression
- Non-parametric methods
- Introduction to the calculation of the sample size
- Cohort studies
- Introduction to survival analysis
- Case-control studies
- Introduction to multivariate regression
- Introduction to logistic regression
- Introduction to the Poisson and Cox regression
- Strategies of analysis

Information technology Module

- 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.

Psychology Module

1. GENERAL PRINCIPLES OF PSYCHOLOGY

- What is psychology?
- History of psychology

- Main psychological perspectives

2. NEUROSCIENTIFIC BASIS OF PSYCHOLOGY

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

3. HIGHER MENTAL FUNCTIONS

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

4. STRESS AND HEALTH

- Theoretical models of health and the role of psychological stress in the development of disease
- Relevance of psychology in the field of 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 Course 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.

OPTIONAL ACTIVITIES

In addition to the teaching activity, the student will be given the opportunity to participate in seminars, research internships, department internships and monographic courses.

READING MATERIALS/BOOK LIST:

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

Information Technology

- 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

- Essential Medical Statistics (Kirkwood, Sterne)

Psychology

- General Psychology: An Introduction; Tori Kearns, Deborah Lee, NOBA, 2015
- 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*