DISCIPLINE SHEET

1. Study programme

1.1.	**"CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST**
1.2.	**FACULTY OF DENTISTRY**
1.3.	**DEPARTMENT III**
1.4.	**DISCIPLINE** MEDICAL INFORMATICS AND BIOSTATISTICS
1.5.	**STUDY DOMAIN: Health, sectoral regulated within the European Union**
1.6.	**STUDY LEVEL: I (Bachelor's degree) and II (Master's degree)**
1.7.	**STUDY PROGRAMME: DENTAL MEDICINE IN ENGLISH**

2. Discipline

2.1.	**Discipline name according to the study curriculum: MEDICAL INFORMATICS AND BIOSTATISTICS**				
2.2.	**Discipline code: MD01C14EN**				
2.3.	**Discipline type (FD/SD/CD): CD**				
2.4.	**Discipline optionality (COD/ED/FAD): COD**				
2.5.	**Lectures tenure:** 1. Lect. Dr. Eng. Ionuț – Adrian CHIRIAC 2. Lect. Dr. Eng. Radu ILINCA				
2.6.	**Practical classes / seminar tenure:** Dr. Eng. Ionuț – Adrian CHIRIAC				
2.7. Year of study	**I**	**2.8. Semester**	**II**	**2.9. Evaluation (E/C/V)**	**E**

3. Estimated total time (hours/ semester of teaching and training activity /individual study)

I. University training						
3.1. Number of hours per week	**3**	**from which:**	**3.2. lecture**	**1**	**3.3. practical class/ seminar**	**2**
3.4. Total hours in the study curriculum	**42**	**from which:**	**3.5. lecture**	**14**	**3.6. practical class/ seminar**	**28**
II. Preparation/ individual study						
Time distribution						**hours**
Study of lecture materials, textbooks, books, study of the minimum recommended bibliography						**20**
Additional documentation activity in the library, on online platforms						**1**
Specific preparation activities for projects, practical classes, preparation of assignments, reports						**15**
Preparation for presentations or evaluations, preparation for the final examination						**11**
Tutoring activity						**1**
Other activities						**0**
3.7. Total hours of individual study						**48**
3.8. Total hours per semester (3.4.+3.7.)						**90**
3.9. Number of credits						**3**

4. Prerequisites (where appropriate)

4.1. curriculum	The student must have completed algebra and IT&C courses – "Information Technology and Computers" - high school level (regardless of the route). The student must have basic knowledge of algebra elements, computer editing - high school level and general knowledge of computer work.
4.2. proficiencies	The student must be able to: - to explore the internet - identify documentation and help menus in apps - be able to execute a sequence of steps described in an audio-video and/or writing tutorial general operation on a computer and digital text editing.

5. Conditions (where appropriate)

5.1. for lecture activity	The teaching activity is carried out in the amphitheater. The activity does not imply special environmental conditions. The room must provide a capacity of 90 students. In terms of infrastructure, the room must be equipped with computer (including the necessary software applications), projection screen and video projector. The projection screen must be large enough to allow the slides to be projected in such a way that they are visible from any place in the room. The internet connection and an audio system are optional. If the course activity cannot be carried out in normal regime (the one described above), for reasons of natural disasters, pandemics, etc. it will be carried out online, with synchronous activities on one of the 2 platforms of UMFCD G-Suite or Moodle.
5.2. for practical class/ seminar activity	The didactic activity takes place in the seminar/laboratory room. The activity does not imply special environmental conditions. Complete PC workstations are required in proportion to the number of students in the group. All computer equipment must be connected to the Internet and have installed the computer applications necessary for an optimal performance of the teaching activities. If the laboratory activities cannot be carried out in normal regime (the one described above), for reasons of natural disasters, pandemics, etc. they will be carried out online, with synchronous activities on one of the 2 platforms of UMFCD G-Suite or Moodle.

6. Learning outcomes

Knowledge	Skills	Responsibility and autonomy
1. Advanced knowledge of issuing academic presentations using MS-Office suite or equivalent 2. Advanced knowledge of spreadsheets using MS-Office suite (Excel) or equivalent 3. Knowledge of implementing using MS - Office suite (Excel) the main statistical tests used in dentistry	1. The student uses professional terminology in Romanian or English appropriately. 2. Correctly interprets, manages and reports information technology knowledge for documenting, analyzing and communicating information.	1. The student assumes responsibility for the correctness of the processing and interpretation of medical data and demonstrates autonomy in the use of computer and statistical tools to solve individual work tasks.

7. Discipline objectives (correlated with learning outcomes)

7.1. General objective	- Acquiring knowledge of descriptive statistics, basic statistical analysis and practical knowledge regarding the architectural components of a computer system, the use of digital technology and IT&C tools for: retrieving, classifying, coding, structuring, organizing, recording, processing, transmitting and communicating medical information (administrative and clinical), electronic file of health.
7.2. Specific objectives	- Theoretical and practical training of students in order to train the skills and abilities of the practical use of digital technology, specific IT applications in dental medicine, for: retrieving, recording, processing, extracting, transmitting and communicating information between dentist-patient, clinicians-technicians dentists, clinicians, dental technicians - Familiarization with the types of statistics commonly used in dentistry (descriptive and inferential) - Emphasizing and underlining the importance and responsibility of competent, current, correct, accurate and complete data entry for their processing in the electronic environment, demonstration, analysis and interpretation of the results of the entered data processing. -Familiarizing students with the advantages of using information and communication technology in medical education, technique and dental practice

8. Contents

8.1. Lecture	**Teaching methods**	**Observations**
1.1 Presentation of the Discipline Grid 1.2 Presentation of the Students' Professional Regulation 1.3 Planning a statistical study. Gantt Diagram	Didactic project - Exposure, - Information Analysis, Demonstration, - Heuristic conversation, - Directed dialogue through interview, - Questionnaire-based interview **Classroom/Informatics Laboratory** Course support: - Power Point presentation - multimedia educational software - the website of the discipline, accessible only from the local network (intranet) - course support manual (electronic, multimedia and printed format) - practical demonstration support (Internet use) **Technical equipment:** - local computing network - Internet network and Internet services - independent and networked workstations - computer-aided training and assessment software (Veyon and Moodle) - multimedia equipment - video projector - projection screen - blackboard	N/A
2.1 Statistics. Biostatistics. Definitions and Concepts 2.2. Data Types (variables and constants) 2.3. Datasets 2.4. Variables' Proprieties 2.5. Study Cases and Practical Examples		N/A
3.1 Types of Statistical Processing (descriptive and inferential) 3.2. Descriptive Statistics. Frequency Analysis, Histograms, Box & Whiskers Objects 3.3. Descriptive Statistics. Central Tendency 3.4. Descriptive Statistics. Measurement Uncertainty 3.5. Study Cases and Practical Examples		N/A
4.1. Fundamentals of Probability Theory 4.2. Types of Probability Distributions 4.3. The Normal Distribution 4.4. Confidence Intervals 4.5. Study Cases and Practical Examples		N/A
5.1. Inferential Statistics (I). Formulation of Statistical Hypotheses 5.2. Inferential Statistics (I). P-Value, Critical Values 5.3. Inferential Statistics (I). Types of Errors 5.4. Study Cases and Practical Examples		N/A

6.1. Inferential Statistics (II). Z Test, T Test 6.2. Inferential Statistics (II). χ^2 Test 6.3. Study Cases and Practical Examples	If the course activity cannot be carried out face-to-face, online platforms will be used synchronously: Cloud/Online - Practical work support: Educational platform: Google Classroom" Google Classroom, Google Meet, Google Calendar, Google Forms, Google Drive, The Moodle platform https://cursuridentara.umfcd.ro/	N/A
7.1. Statistici Inferențiale (III). Parametric Statistical Tests vs Non Parametric Statistics Test 7.2. Statistici Inferențiale (III). Pearson Test 7.3. Study Cases and Practical Examples 7.4. Review of statistical methods used in two scientific articles 7.5. Exam Sample Questions		N/A

Recent bibliography:

1.Ilinca R, Biostatistics Lecture Notes, 2023 – published online on Google Classroom – in the process of publishing printed physical format

2. Ionuț Adrian Chiriac - "Contributions regarding the interaction with medical education systems for persons with auditory disabilities" Politehnica Publishing House Timisoara, 2015

3. Ionuț-Adrian Chiriac, "Statistical Applications - Microsoft Excel - Guide for Practical Works", 2021 – published online on Google Classroom – in the process of publishing printed physical format

4. http://192.168.0.200 – intranet site updated 2020, Laboratory of Medical Informatics and Biostatistics, Faculty of Dentistry, "Carol Davila" University of Medicine and Pharmacy

5. ECDL Spreadsheet Manual - Microsoft Excel 2019 - Raluca Constantinescu, Ionuț Dănăilă, ISBN / ISSN 978-606-9037-09-6, ECDL Romania Publishing House 2020

6.. Excel Rentrop & Practical Guide Straton - Marius Roman ISBN/ISSN, 9786066727570, Editura Rentrop & Straton 2021

8.2. Practical classes/ seminar	**Teaching methods**	**Observations**
1. Presentation of the use of online educational software Google Classroom, Meet, Calendar, Forms, Drive, Moodle Platform https://cursuridentara.umfcd.ro/. Laboratory - Introduction to the working method and use of the local computer network and Internet access. Laboratory Work Safety	Didactic project - Exposure, - Information Analysis, Demonstration, - Heuristic conversation, - Directed dialogue through interview, - Questionnaire-based interview **Classroom/Informatics Laboratory** Course support: - Power Point presentation - multimedia educational software - the website of the discipline, accessible only from the local network (intranet) - course support manual (electronic, multimedia and printed format) - practical demonstration support (Internet use) **Technical equipment:** - local computing network - Internet network and Internet services - independent and networked workstations - computer-aided training and assessment software (Veyon and Moodle) - multimedia equipment - video projector - projection screen	N/A
2. Microsoft PowerPoint Program (I). Practical application for making project presentations.		N/A
3. Microsoft PowerPoint Program (II). Practical application for making project presentations.		N/A
4.1 Power Point Application Evaluation. 4.2 Microsoft EXCEL Program (I). General Presentation. Data Representation. Data Structures.		N/A
5 Microsoft EXCEL Program (II). Graphical representation of data / results. Elementary statistical functions		N/A
6 Microsoft EXCEL Program (III). Advanced statistical functions, descriptive statistics		N/A
7 Microsoft EXCEL Program (IV). Advanced statistical functions, inferential statistics		N/A
8.1. Evaluation of Application 1 Excel Practice 8.2. Presentation of the Architecture and Requirements of the Excel Application 2		N/A
9. Building and Populating the Database		N/A

10. Qualitative and Quantitative Data Analysis Exercises	-blackboard If the course activity cannot be carried out face-to-face, online platforms will be used synchronously: Cloud/Online - Practical work support: Educational platform - Google Classroom" Google Classroom, Google Meet, Google Calendar, Google Forms, Google Drive, The Moodle platform https://cursuridentara.umfcd.ro/	N/A
11. Descriptive Data Analysis Exercises		N/A
12.1. Evaluation of the Excel Application 2 12.2. Presentation of the Requirements of the Power Point Application 2		N/A
13. Development of the Power Point Project 2		N/A
14. Evaluation of the Power Point Application 2. Final Evaluation		N/A

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1.Ilinca R, Biostatistics Lecture Notes, 2023 – published online on Google Classroom – in the process of publishing printed physical format

2. Ionuț Adrian Chiriac - "Contributions regarding the interaction with medical education systems for persons with auditory disabilities" Politehnica Publishing House Timisoara, 2015

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5. ECDL Spreadsheet Manual - Microsoft Excel 2019 - Raluca Constantinescu, Ionuț Dănăilă, ISBN / ISSN 978-606-9037-09-6, ECDL Romania Publishing House 2020

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9. Assessment

Activity type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Percentage of final grade
9.4. Lecture	- The final assessment is focused on assessing the knowledge and skills acquired during the semester. The ability to answer correctly, the ability to analyze and issue professional judgments, as well as attention to details are assessed.	**Written Examination** Exam Type: Multiple Choice Question Type: 1 correct answer only Work Time: 40 min	70%
9.5. Practical classes/ seminar	Continuous student assessment is carried out through the periodic evaluation of the portfolio made up of projects carried out during the semester according to the scales established at the discipline level, for each project and topic. The grade obtained in the practical activity is the result of the arithmetic average of the grades obtained throughout the semester. Passing involves the submission of projects and obtaining at least the minimum passing level in each project.	**Practical assessment Evaluation of projects/tests**	30%
9.5.1. Individual project (if any)	N/ A	N/A	N/A

Minimum performance standard
Knowledge of p-value, Critical value, measurement level of a variable, relations between variables, at least one inferential statistical test