DISCIPLINE FILE

1. Data about the programme

1.1.	"CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY
1.2.	FACULTY OF DENTISTRY
1.3.	DEPARTMENT DENTISTRY III
1.4.	DISCIPLINE MEDICAL INFORMATICS AND BIOSTATISTICS
1.5.	DOMAIN OF STUDY: HEALTH – Sectorally regulated within the European Union
1.6.	STUDY CYCLE: LICENCE
1.7.	STUDY PROGRAME: DENTAL MEDICINE (ENGLISH)

2.2. Data about discipline

2.1.	Name of the discipline in the educational plan: MEDICAL INFORMATICS AND BIOSTATISTICS				
2.2.	Discipline code: MD01C14EN				
2.3.	Discipline type (FD/SD/CD): CD				
2.4.	Discipline regimen (MD/OPD/): MD				
2.5.	The holder of the course activities: 1. Lect. Dr. Eng. Ionuț – Adrian CHIRIAC 2. Lect. Dr. Eng. Radu ILINCA				
2.6.	The holder of the seminar activities : Dr. Eng. Ionuț – Adrian CHIRIAC				
2.7. Year of study	I	2.8. Semester	II	2.9. Type of evaluation (E/C)	E

2. Total estimated time (hours/semester of didactic activity an self preparation/study

I. Academic training (teaching, practical application, assessment)						
3.1. Nr hours/week	3	From which:	3.2. lecture	1	3.3. seminary/ laboratory	2
3.4. Total hours of educational plan	42	From which:	3.5. lecture	14	3.6. seminary/ laboratory	28
Evaluation (nr. of hours) : 1						
II. Self preparation/study						

Time allocation	hours
Study of course materials, textbooks, books, study of the recommended minimal bibliography	20
Additional research in the library, research through the internet	1
Performing specific activities for preparing projects, laboratories, elaborating reviews or other tasks	15
Specific preparation activities for projects, laboratory work, assignments, and reports	11
Tutoring	1

Other activities	0
3.7. Total individual study hours	48
3.8. Total hours per semester (3.4.+ 3.7.)	90
3.9. Number of credits	3

3. Preconditions (where applicable)

4.1. of 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. of competences	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.

4. Conditions (where applicable)

5.1. to conduct the lecture	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. to conduct the seminar / laboratory	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. Course objectives (aligned with the 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 objective	- 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
Presentation of the Discipline Grid Presentation of the Students' Professional Regulation	Didactic project - Exposure, - Information Analysis, Demonstration,	N/A

1.3 Planning a statistical study. Gantt Diagram	- Heuristic conversation, - Directed dialogue through interview,	
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	- 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 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
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). $\chi 2$ Test 6.3. Study Cases and Practical Examples		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		N/A

7.4. Review of statistical methods used in two scientific articles 7.5. Exam Sample Questions		
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, "Statistical Applications - Microsoft Excel - Guide for Practical Works", 2021 – published online on Google Classroom – in the process of publishing printed physical format 3. http://192.168.0.200 – intranet site updated 2022, Laboratory of Medical Informatics and Biostatistics, Faculty of Dentistry, "Carol Davila" University of Medicine and Pharmacy 4. Excel Rentrop & Practical Guide Straton - Marius Roman ISBN/ISSN, 9786066727570, Editura Rentrop & Straton 2021		
8.2. Laboratory/ practical lesson	**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 -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
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		N/A

8.2. Presentation of the Architecture and Requirements of the Excel Application 2		
9. Building and Populating the Database		N/A
10. Qualitative and Quantitative Data Analysis Exercises		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

Recent bibligraphy :

1.Ilinca R, Biostatistics Lecture Notes, 2023 – published online on Google Classroom – in the process of publishing printed physical format
2. 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
3. http://192.168.0.200 – intranet site updated 2022, Laboratory of Medical Informatics and Biostatistics, Faculty of Dentistry, "Carol Davila" University of Medicine and Pharmacy
4. Excel Rentrop & Practical Guide Straton - Marius Roman ISBN/ISSN, 9786066727570, Editura Rentrop & Straton 2021

9. Evaluation

Activity type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Percentage in the 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: 35 min	70%
9.5. Seminary/ practical activity	Continuous student assessment is carried out through the periodic evaluation of the portfolio made up of	Practical assessment Evaluation of homework/tests	30%

	projects carried out during the semester according to the scales established at the discipline level, for each homework 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 homework and obtaining at least the minimum passing level in each homework.		
9.5.1. Individual project (if applicable)	N/A	N/A	N/A
9.6. Minimum performance standard			
Knowledge of p-value, Critical value, measurement level of a variable, relations between variables, at least one inferential statistical test			

Date of completion: **Signature of the course holder** **Signature of the laboratory holder**

Date of approval by the Department Council:
06.11.2026

Signature of the Department Director
Professor Ionescu Ecaterina, PhD