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: ADVANCED BIOSTATISTICS. PERSONAL DATA PROTECTION IN THE MEDICAL FIELD				
2.2.	Discipline code: MD02OP21EN				
2.3.	Discipline type (FD/SD/CD): CD				
2.4.	Discipline optionality (COD/ED/FAD): ED				
2.5.	Lectures tenure: Lect. Dr. Eng. Radu ILINCA				
2.6.	Practical classes / seminar tenure: Lect. Dr. Eng. Radu ILINCA				
2.7. Year of study	II	2.8. Semester	IV	2.9. Evaluation (E/C/V)	C

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

I. University training						
3.1. Number of hours per week	2	from which:	3.2. lecture	1	3.3. practical class/ seminar	1
3.4. Total hours in the study curriculum	28	from which:	3.5. lecture	14	3.6. practical class/ seminar	14

II. Preparation/ individual study	
Time distribution	hours
Study of lecture materials, textbooks, books, study of the minimum recommended bibliography	22
Additional documentation activity in the library, on online platforms	2
Specific preparation activities for projects, practical classes, preparation of assignments, reports	5
Preparation for presentations or evaluations, preparation for the final examination	2
Tutoring activity	1
Other activities	-
3.7. Total hours of individual study	32
3.8. Total hours per semester (3.4.+3.7.)	28
3.9. Number of credits	2

4. Prerequisites (where appropriate)

4.1. curriculum	- not applicable
4.2. proficiencies	The student must be able to: - navigate and explore data on the internet - correctly define the variables used in a biostatistical study - distinguish between descriptive and inferential statistics

5. Conditions (where appropriate)

5.1. for lecture activity	The teaching activity takes place in the amphitheater. The activity does not require special environmental conditions. The room must provide sufficient capacity for a number of students (approx. 120 people). In terms of infrastructure, the room must be equipped with a computer (including the necessary software applications), a projection screen and a video projector. The projection screen must be large enough to allow the projection of slides in such a way that they are visible from any place in the room. Alternatively, an integrated Smart-Screen projection system can be used. Internet connection and an audio system are optional. If the course activity cannot be carried out in the normal mode (the one described above), due to natural disasters, pandemics, etc., it will be carried out online, with synchronous teaching activities on one of the 2 UMFCD platforms G-Suite or Moodle.
5.2. for practical class/ seminar activity	The teaching activity is carried out in the laboratory room. The activity does not require special environmental conditions. Complete PC workstations are required in proportion to the number of students in the group. All computing equipment must be connected to the internet and have the computer applications (MS – Office) and JASP installed for the optimal development of teaching activities. If the laboratory activities cannot be carried out in the normal mode (the one described above), due to natural disasters, pandemics, etc., they will be carried out online, with synchronous activities on one of the 2 UMFCD platforms G-Suite or Moodle

6. Learning outcomes*

Knowledge	Skills	Responsibility and autonomy

1. In-depth understanding of advanced statistical methods used in biomedical research. 2. Knowledge of modern concepts of statistical inference, logistic regression and generalized linear models 3. Critical awareness of limitations and errors in the interpretation of biomedical medical data from a mathematical perspective 4. Current knowledge of European and national regulations on the protection of personal data (GDPR) 5. Knowledge of the main types of vulnerabilities regarding personal data in a dental office 6. Integration of biostatistics knowledge with personal data protection knowledge	1.Application of advanced statistical techniques in biomedical data analysis 2.Formulation and testing of statistical hypotheses using MS-Excel 3.Critical assessment of data quality and sources of uncertainty in biostatistical studies 4.Correlation of data protection requirements with the collection and analysis processes of sensitive biomedical information	1. Correct management of biomedical data sets, respecting the principles of confidentiality and security 2. Developing a proactive attitude towards preventing risks of breaches in the protection of patient data 3. Adapting statistical analysis strategies to complex and multidisciplinary situations in medical practice 4. Coordinating and guiding other colleagues in the application of biostatistics and data protection principles, contributing to institutional good practices 5. Taking responsibility for the correct application of patient data protection rules

7. Discipline objectives (correlated with learning outcomes)

7.1. General objective	Developing advanced statistical analysis skills applied in biomedical research and forming a critical understanding of the rules regarding the protection of personal data in dental practice and biomedical research
7.2. Specific objectives	1. To apply advanced statistical methods for analysis in order to interpret data obtained from biostatistical studies 2. To correctly use IT tools (JASP) in the processing of statistical data. 3. To identify and critically evaluate sources of error in the analysis of medical data 4. To know and apply regulations on the protection of personal data (including GDPR) in the biomedical context 5. To demonstrate professional responsibility in the collection, storage and use of sensitive patient data

8. Contents

8.1. Lecture	Teaching methods	Observations
1.1. Review of the Discipline Sheet 1.2 Review of the Regulations on the Professional Activity of UMFCD Students 1.3. Presentation of the fundamental concepts of biostatistics	Didactic project - Exposure, - Information Analysis, Demonstration, - Heuristic conversation, - Directed dialogue through interview, - Questionnaire-based interview	N / A
2. Inferential statistical tests: Kendall, Kruskal Wallis 2.1. Case studies and practical examples	**Classroom/Informatics Laboratory** Course support: - Power Point presentation - multimedia educational software	N / A
3.1. Inferential statistical tests: ANOVA, F - Test, Wilcoxon 3.2. Case studies and practical examples	- the website of the discipline, accessible only from the local network (intranet) - course support manual (electronic, multimedia and printed format)	N / A
4.1. Principles of Regressions 4.2. Linear regressions 4.3. Case studies and practical examples	- practical demonstration support (Internet use) **Technical equipment:**	N / A
5.1. Logistic, Poisson and Cox regressions 5.2. Case studies and practical examples	- local computing network - Internet network and Internet services - independent and networked workstations	N / A
6.1. Principles of Personal Data Protection 6.2. Case studies and practical examples	- computer-aided training and assessment software (Veyon and Moodle) - multimedia equipment	N / A

7.1. Practical examples of Personal Data Protection in Dentistry
7.2. Colloquium Simulation
	- 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

Recent bibliography:

1. Ilinca R, Biostatistics – *online lecture notes*
2. Scott D et al, Introduction to Statistics, Ed. Rice University, SUA, 2022, Online Edition

3. Moore D et al, The Basic Practice of Statistics 9th Edition, Ed. McMillan, Learning, SUA, Marea Britanie, 2021, ISBN: 978-1319244378
4. Ilinca R, Advanced Elements of biostatistics – *online lecture notes*

8.2. Practical classes/ seminar	Teaching methods	Observations
1.1.Presentation of the Laboratory - Initiation on the working method and use of the local computer network and Internet access. Labor Protection 1.2. Presentation and Introduction to JASP 1.3. Presentation of the database used	Didactic project - Exposure, - Information Analysis, Demonstration, - Heuristic conversation, - Directed dialogue through interview, - Questionnaire-based interview **Classroom/Informatics Laboratory** Course support:	N / A
2.1.Implementation using MS - Excel of the Kendall, Kruskal Wallis, Spearman, Fisher Exact Test tests 2.2. Critical analysis of the obtained results	- 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	N / A
3.1.Implementation using MS - Excel of the ANOVA, F - Test, Wilcoxon tests 3.2. Critical analysis of the obtained results	format) - practical demonstration support (Internet use) **Technical equipment:** - local computing network	N / A
4.1.Implementation using MS - Excel of Linear Regression 4.2. Critical analysis of the obtained results	- Internet network and Internet services - independent and networked workstations	N / A
5.1.Implementation using JASP of Logistic Regression, Poisson and Cox 5.2. Critical analysis of the obtained results	- computer-aided training and assessment software (Veyon and Moodle) - multimedia equipment - video projector - projection screen	N / A
6.1. Protection of personal data 6.2. Simulation of cyber attack on personal data in the study database	- blackboard If the course activity cannot be carried out face-to-face, online platforms will be used synchronously:	N / A

7.1. Practical simulation Colloquium
7.2. Practical evaluation
	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

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1. Ilinca R, Biostatistics – *online lecture notes*

2. Scott D et al, Introduction to Statistics, Ed. Rice University, SUA, 2022, Online Edition
3. Moore D et al, The Basic Practice of Statistics 9th Edition, Ed. McMillan, Learning, SUA, Marea Britanie, 2021, ISBN: 978-1319244378
4. Ilinca R, Advanced Elements of biostatistics – *online lecture notes*
5. Goss Sampson M, Statistical Analysis in JASP a guide for Students, resursă online: https://jasp-stats.org/wp-content/uploads/2022/04/Statistical-Analysis-in-JASP-A-Students-Guide-v16.pdf

9. Assessment

Activity type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Percentage of final grade
9.4. Lecture	The final check is focused on the evaluation of the knowledge and skills acquired during the semester based on a multiple-choice test: conceptual understanding of the concepts presented, correct identification of the appropriate statistical tests for each type of problem studied	Colloquim	60%
9.5. Practical classes/ seminar	Continuous assessment of students is carried out through periodic evaluation of the results obtained in each laboratory work during the semester according to the scales established at the level of the Discipline: understanding the problem, implementation using MS-Excel, interpretation of the results obtained	Practical Evaluation	40%
9.5.1. Individual project (if any)	N/A	N/A	N/A
Minimum performance standard			

The minimum performance standard (corresponding to grade 5) requires:
    1. knowledge of the preliminary conditions for applying the statistical tests of interest studied
    2. choice of the appropriate statistical test for the study in hand			