

**UNIVERSITY "PROF. DR. ASEN ZLATAROV" - BURGAS
FACULTY OF MEDICINE**

AFFIRMATIVE!

DECAN:

/Prof. Dr. Romyana Yankova/

CURRICULUM

Discipline:

**BIOCHEMICAL THERAPY WITH DR.
SCHUSSLER'S SALTS**

Specialty:

MEDICINE

Professional field:

7.1. MEDICINE

Area of higher education:

7. HEALTH AND SPORT

Educational qualification:

MASTER

Form of study:

FULL-TIME

Burgas, 2024.

EXTRACTS FROM THE CURRICULUM

1. GENERAL PARAMETERS OF THE DISCIPLINE					
Total study employment (hours):		30		Credits:	
				1	
Auditorium Employment		Extracurricular Employment - self-training		Auditorium Employment	
				Extracurricular Employment	
15		15		0,5	
				0,5	
Type of Discipline:		Hours per week: /lectures + exercises/		Course:	
				Semester:	
FREE-CHOICE				<i>II, III, IV</i>	
				<i>winter</i>	
2. STUDY FORMS					
Auditorium Employment:		Hours	Credits	Extracurricular Employment:	
				Hours	Credits
Lectures		9	0,3	Consultation (working with a tutor)	
Seminar classes		6	0,2	Individual work	
Practical lessons		—	—	Abstract	
				0	0,0
3. EVALUATION AND CONTROL					
Forms of evaluation and control					Relative share in the total score
Sessional assessment: exam/test					0.6
Semester (ongoing) assessment:					0.4
Forms of semester control:					
- Attendance at classes					0.6
- Active participation in training sessions					0.4
- Abstract					0.0

ANNOTATION

of the discipline "Dr. Schussler's Biochemical Salt Therapy"

Purpose of the course

The course "Biochemical Therapy with Dr. Schussler's Salts" is designed for students of the specialty "MEDICINE", "MASTER", full-time study.

The objectives of the course "BIOCHEMICAL THERAPY WITH Dr. Schussler's salts" are related to the application of Schussler's salts as a method of treatment that regulates basic biochemical processes at the cellular level.

The content of the course deals with issues related to the role of these minerals, as basic structural elements of the body, for balancing the reabsorption and distribution of the respective trace element in the tissues and maintaining homeostasis in the body. Deficiency or excess of a particular mineral salt leads to characteristic pathophysiological processes and the onset of disease.

Particular attention is paid to the fact that the balance of the 12 essential mineral salts, in the cell and extracellular space, is decisive for their normal functioning.

Structure of the teaching content: lectures, seminar exercises and assignments for independent work are conducted in the teaching of the discipline.

Methods and means of teaching: Teaching methods are a way of working for the university teacher and the student, by means of which the mastery of knowledge, skills and habits is achieved, the students' world view is formed and their abilities are developed. The following methods and means are used in the course "Dr. Schussler's Biochemical Therapy with Salts": lecture with discussion and debate; interactive methods - Heuristic talk, brainstorming, visualization and discussion. The means of multimedia projector and lecture presentation are used. The whole group performs one topic under the guidance of the lecturer. Students are familiarized with the theoretical part beforehand. The seminar exercise ends with a small test on the material from the previous lectures. Credit for the exercise is only given if the student has attended the seminar exercise and passed the test.

Forms of training: the study of the discipline is carried out in the following forms:

1. Lectures in which the basic theoretical knowledge on the topics covered is given. For some of the topics and subtopics that can be studied independently by the students, the lectures are introductory. They reveal the essence of the issues covered by the topics and guide independent work on the recommended literature. Alongside the lecture material, there will be discussions on theoretical issues, problem solving related to the practical application of the methods discussed, didactic tests and case studies, etc.
2. Consultations to clarify basic concepts, statistical characteristics, etc., and guidance on their specific features in order to overcome difficulties in independent work, etc.
3. Independent work of the students is organized through consultations in the lecturers' office hours, through e-mail communication, other forms of work in the

on-line environment, joint work on scientific and professional tasks, covering current tests on a given topic by the lecturer conducting the exercise, etc.

Methods of evaluation

№	Form of semester control in form of control "Examination"	Points (K) ₁
1.	Attendance at classes	50
2.	Active participation in training sessions	50
3.	Abstract	0
Total:		100

№	Forms of evaluation	Written with interview or test	Points (K) ₂
Option 1 - Written examination on one topic from the syllabus and interview			
1.	Question from the curriculum		100
Option 2 - Test covering questions from all topics in the syllabus			
1.	Test		100

The final grade in the course is formed as a total result of the semester and session evaluation, taking into account their relative share in the total grade according to the following formula:

$$\text{Final score (K)} = 0,4 * K_1 + 0,6 * K_2$$

Final evaluation in points	up to 49	50 to 61	62 to 74	75 to 88	89 and more
Final grade on a six-point system	Weak (2)	Medium (3)	Good (4)	Very good (5)	Excellent (6)

Prerequisites for students' basic knowledge and skills

Students should have knowledge of human anatomy, human physiology, biochemistry. They should also have an understanding of the different types of medicinal preparations approved for use in Bulgaria and have a good knowledge of the legislation in this area - Health Act, Medical Institutions Act, Medicinal Products in Human Medicine Act, etc. Of course, knowledge of the pharmacological application of preparations containing such elements and salts is also needed.

Expected results

After successful completion of the course, students should know the principles of treatment with the original Schussler's salts of the German Homeopathic Union (DHU) in the form of tablets and ointments, and be able to apply them successfully. They will be familiar with the biochemical properties, functional activity, therapeutic possibilities and applications in clinical practice of the 12 Schussler salts of the DHU.

CURRICULUM CONTENT

LECTURES

Topic	hours
<i>Theme 1.</i> Basics of Schussler therapy.	3 hours
1.1. Historical overview	
1.2. The 12 tissue mineral salts.	
1.3. An integrative method for restoring and maintaining health.	
<i>Topic 2.</i> Schussler's salts for pain and inflammation.	2 hours
2.1. Practical aspects in the application of Schussler's salt number 7.	
2.2. Practical aspects in the application of Schussler's salt number 3.	
2.3. Practical aspects in the application of Schussler's salt number 4.	
2.4. Practical aspects in the application of Schussler's salt number 6.	
<i>Topic 3.</i> Schussler salts for tissue strengthening and repair.	2 hours
3.1. Practical aspects in the application of Schussler salt number 1.	
3.2. Practical aspects in the application of Schussler's salt number 2.	
3.3. Practical aspects in the application of Schussler's salt number 11.	
3.4. Practical aspects in the application of Schussler's salt number 12.	
<i>Topic 4.</i> Schuessler salts with active influence on metabolism.	2 hours
4.1. Practical aspects in the application of Schussler's salt number 8.	
4.2. Practical aspects in the application of Schussler's salt number 9.	
4.3. Practical aspects in the application of Schussler's salt number 10.	
4.4. Practical aspects in the application of Schussler's number 5.	
All: 9 hours	

OPERATIONS

Topic	hours
Theme 1. Application of Schussler salts in pain and inflammation - individual approach in different groups of patients, including pregnant women and children.	3 hours
Theme 2. Application of Schussler salts for tissue strengthening and repair.	3 hours
All: 6 hours	

COURSES PROJECT (*abstract*)

Not required.

EXAMINATION QUESTIONNAIRE

TOPIC 1: Basics of Schusslerian therapy.

TOPIC 2: The 12 tissue mineral salts.

Topic 3: Integrative method for recovery and health maintenance.

TOPIC 4: Practical aspects in the application of Schussler's salt number 1, 2, 11 and 12.

TOPIC 5: Practical aspects in the application of Schussler's salt number 3, 4, 6, 7.

TOPIC 6: Practical aspects in the application of Schussler's salt number 5, 8, 9, 10.

TOPIC 7: Dosage and administration of Schussler's salts (tablets and ointments).

PREPARATION LITERATURE

Required

1. Lecture course - Prof. Valentin Stoyanov,
2. Lecture course - Dr. Nonna Petrova

Recommended

1. Basic principles of application of Dr. Schussler's 12 mineral salts. dr. Anastasia Milanova
2. Guide to Schussler Therapy. Г. X. Heppen, T. Feichtinger

Compiled by:

1.....

(Prof. ~~Dr.~~ Valentin Stoyanov)

2.

(Dr. Nonna Petrova)

3.....

(Dr. Dora Pachova)

The curriculum was discussed and approved at a meeting of the Department of ENT, Ophthalmology, Skin and Venereal Diseases, No. from

Secretary, of the CC, "ORLOSVD":

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.....

(Dr.)

Head of Department "ORLOSVD":

.....

(Assoc. Prof. Daniel Petkov)

The curriculum was approved and discussed at the Faculty Council of the Faculty of Medicine, Minutes No. from

Scientific Secretary of the FS, MF:

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(.....)

UNIVERSITY "PROF. DR. ASSEN ZLATAROV" – BURGAS
MEDICAL FACULTY
DEPARTMENT OF OTORHINOLARYNGOLOGY, OPHTHALMOLOGY
AND DERMATOLOGY

Approved by

DEAN:

/ Prof. Rumyana Yankova, PhD/

SYLLABUS

Discipline:	Diagnostical methods and therapeutical approach in patients with hearing disabilities
Specialty:	MEDICINE
Professional field:	7.1 Medicine
Educational qualification degree:	MASTER
Form of training:	REGULAR

Burgas, 2024

EXTRACTS FROM THE CURRICULUM

1. GENERAL PARAMETERS OF THE DISCIPLINE					
Total (academic hours):		60	ECTS:		2
Auditorium classes	Non-auditorium classes		Auditorium ECTS	Non-auditorium ECTS	
30	30		1	1	
Type of Discipline	Number of hours per week: /lectures + practical session/		<i>Course:</i>	<i>Semester:</i>	
Elective	1+1		II	IV	
2. STUDY FORMS					
Auditorium classes:	Academic hours	ECTS	Non-auditorium classes:	Academic hours	ECTS
Lectures	15	0.50	Consultations	10	0,3
Seminars	-	-	Individual work	20	0,7
Practical lessons	15	0.50			
3. ASSESSMENT AND CONTROL					
Forms of assessment and control				Relative share in the total score	
Sessional evaluation: exam				0.4	
Semester (ongoing) assessment:				0.6	
Forms of semester control:					
- Attendance at classes				0.5	
- Active participation in classes				0.5	

ANNOTATION

of the discipline "Diagnostical methods and therapeutical approach in patients with hearing disabilities"

Purpose of the course

The "Diagnostical methods and therapeutical approach in patients with hearing disabilities" course is intended for students of the specialty "Medicine" educational qualification degree "Master" in their second year of study in full-time form and it is elective.

The **Objectives** of the course 'Diagnostical methods and therapeutical approach in patients with hearing disabilities' are concerned to the ability of knowing the diagnostical and therapeutic approaches in patients with hearing disability of conductive and neurosensorial type. The content of the discipline deals with issues related to the types of hearing loss, the age of the patients, the aetiology and pathogenesis of the problem, objective hearing studies and therapeutic approaches.

Particular attention is paid to the fact that the development of normal hearing from early childhood or its restoration is of key importance for the accurate speaking of the children and their neurophysiological development and social adaptation

Structure of the learning content: In teaching the subject are held lectures, practical seminars and self-improvement tasks are given.

Methods of teaching: The teaching methods are a way of work of the university teacher and the student, with the help of which the mastering of knowledge, skills and habits is achieved, the worldview of the students is formed, and their abilities are developed.

In the course 'Diagnostical methods and therapeutical approach in patients with hearing disabilities' are used these methods resources: lectures with discussions, interactive methods – brainstorming, visualization and deliberation. Multimedia is used for the lectures to be presented. Firstly, the students get to know the theoretical part of the discussed question and later the whole group together with the teacher is doing some practical tasks.

Forms of education:

1. Lectures – in which are given the basic theoretical knowledge of the themes. For some of the topics and subtopics that can be studied independently by the students, the lectures are introductory. They reveal the essence of the questions falling within the scope of the topics and direct independent work on the recommended literature. In parallel with the lecture material, there will also be discussions on theoretical topics, solving tasks related to the practical application of the methods considered, the use of didactic tests, causes and other.
2. Consultations for clarification of basic concepts, statistical characteristics and others and guidance on their specific features with a view to overcoming difficulties in independent work and others
3. Students' independent work is organized through consultations in the teachers' reception hours, through e-mail communication, other forms of work in an online environment,

joint work on scientific and professional tasks, covering current tests on a given topic by the teacher conducting the practice and others.

Assessment methods

For the assessment of the students, we use combination of classical and modern methods

Testing control - Verbal evaluation before practice, Tests, Discussions

Semestrial exam – practical exam; Test

Basical knowledge issued by the students before practice

Students should have basal knowledge of anatomy, physiology and biochemistry. They should have some knowledge in the otorhinolaryngological diseases. Should have some basal knowledge of the principles of treatment of hearing disabilities.

Expected results

After the course students will have deeper knowledge of the treatment of hearing disabilities. Its aetiology, pathophysiology, clinical characteristics of the different type of hearing loss and the modern surgical approaches to better outcome for the patients.

CURRICULUM CONTENT

LECTURES

Nº	Theme of the lecture	Duration
1	Anatomy and physiology of the auditory system	3 hours
2	Research methods of the auditory system and all types of hearing loss	4 hours
3	Conservative treatment and hearing aids	4 hours
4	Surgical treatment for hearing disabilities	4 hours
	Total	15 hours

PRACTICAL SESSIONS

Nº	Topic	hours
1	Anatomy and physiology of the auditory system, types of hearing loss	8 hours
2	Conservative and surgical treatment of hearing disabilities	7 hours
	TOTAL:	15 classes

EXAMINATION QUESTIONNAIRE

1. Anatomy and physiology of the auditory system
2. Research methods of the auditory system
3. Types of hearing loss
4. Therapeutic approaches of sudden hearing loss
5. Hearing aids
6. Surgical techniques for better hearing outcome
7. Cochlear implantation

LITERATURE

Required literature

1. Lectures held by Assoc. Prof. Daniel Petkov, MD, d-r Tsvetelina Grigorova
2. Ear nose throat diseases by Dimov and Georgiev 1998

Recommended literature

1. ABC of Ear, Nose and Throat – sixth edition, Harold Ludman and Patrick J Brodey, 2012
2. Ear, Nose and Throat and Neck Surgery, R.S. Dhillon and C.A. East, 2013

Author:
(Assoc. Prof. Daniel Petkov, MD)

The syllabus is approved by a decision of the Council of the Department of, Protocol № /.....2024

Head of the Department:

(Assoc. Prof. Daniel Petkov, MD)

The syllabus is approved by a decision of the Faculty Council of the Medical Faculty, Protocol №.....

Secretary of the Council of the Medical Faculty:

(Chief Assist. Prof. Ruska Nenkova, PhD)

UNIVERSITY "PROF. Dr. ASEN ZLATAROV" - BURGAS

FACULTY OF MEDICINE

**DEPARTMENT OF "INTERNAL DISEASES, SOCIAL MEDICINE,
EMERGENCY MEDICINE, PHYSIOTHERAPY AND
REHABILITATION"**

Approved by!

DEAN:

/Prof. Rumyana Yankova, PhD/

SYLLABUS

Study discipline: **DIGITAL HEALTH AND
TELEMEDICINE**

Specialty: **MEDICINE**

Professional direction: **7.1. MEDICINE**

Educational and qualification
degree: **MASTER**

Form of education: **REGULAR**

BURGAS 2025

SAMPLES FROM THE CURRICULUM

1. GENERAL PARAMETERS OF THE DISCIPLINE						
Total (academic hours):		60		ECTS:		2
Auditorium classes	Non-auditorium classes			Auditorium ECTS	Non-auditorium ECTS	
30	30			1	1	
Type of Discipline:	Academic hours per week: /lectures + practices/			<i>Course:</i>	<i>Semester:</i>	
MANDATORY	1+1			II	IV	
2. STUDY FORMS						
Auditorium classes:	Academic hours	ECTS	Non-auditorium classes:	Hours	Credits:	
Lectures	15	0.5	Consultations (work with a teacher)	10	0.3	
Seminar classes	15	0.5	Independent work	20	0.7	
Practical classes	—	—				
3. EVALUATION AND CONTROL						
ASSESSMENT AND CONTROL FORMS					Relative share in the total assessment	
Sessional evaluation: exam					0.4	
Semester (ongoing) assessment:					0.6	
Forms of semester control:						
- Attendance at classes					0.25	
- Ongoing testing before each practical lesson					0.125	
- Active participation in classes					0.125	
- Control and tests					0.25	
- Defense of protocols					0.25	

ANNOTATION
of the course “Digital Health and Telemedicine”

Purpose of the course

The course “Digital Health and Telemedicine” is intended for students of the 2nd year, educational and qualification degree “Master”, specialty “Medicine”. Digital health, artificial intelligence, telemedicine, portable sensors, virtual reality – these new technologies will completely change the way patients and doctors perceive healthcare. These new technologies will significantly affect medical practice and the provision of healthcare in the near future. Additionally, the coronavirus pandemic has caused an explosive increase in the need for digital services, including those related to health and medicine. The course examines these new directions in medical science and their practical application

Objectives

To acquire knowledge in the field of digital health, telemedicine, artificial intelligence, virtual reality and their application in medicine and healthcare

Structure of the learning content

- lecture
- seminars
- discussions
- individual and group practical tasks
- analysis of ready-made statistical information, research of scientific literature

Teaching aids:

Multimedia presentations, discussions, solving practical - clinically oriented tasks.

Assessment of acquired knowledge.

When assessing the knowledge of students, a combination of modern and classical methods is applied.

Current control:

- Oral questioning during the practical session
- Seminars - practical testing and test part

Expected results

After completing the training, students should have the following knowledge and skills:

➤ Digital health, telemedicine, artificial intelligence, virtual reality and their application in medicine and healthcare

CURRICULUM CONTENT:

THEMATIC LECTURE PLAN

1.	Telemedicine – essence, history, challenges	2 hours
2.	Modern aspects of digital health – digital transformation of healthcare and medicine	2 hours
3.	Prospects and future application of digital technologies and telemedicine in medicine and healthcare	1 hour
4.	Digital health and artificial intelligence, virtual reality - prospects for their application in medicine and healthcare	2 hours
5.	Digital health and telemedicine as a means of dealing with socially significant diseases	2 hours
6.	Digital health and telemedicine as a means of dealing with the epidemic situation caused by COVID-19	2 hours
7.	The technological future of medical specialties	2 hours
8.	Digital health technologies that will change the activities of healthcare professionals	2 hours
	TOTAL	15hours

THEMATIC PLAN OF SEMINAR CLASSES AND PRACTICAL EXERCISES

1.	Introduction and relevance of the topic	1 hour
2.	Digital health and telemedicine - essence, history	2 hours
3.	Digital transformation in healthcare	2 hours
4.	Digital health and artificial intelligence, virtual reality - prospects for their application in medicine and healthcare	2 hours
5.	Modern digital trends that will change future cancer care	2 hours
6.	Digital health and telemedicine as a means of dealing with socially significant diseases	2 hours
7.	Digital health and telemedicine as a means of dealing with the epidemic situation caused by COVID-19	2 hours
8.	The technological future of medical specialties, removing barriers in healthcare with 3D printing	2 hours
	TOTAL	15 hours

DISCIPLINE SUMMARY
„Digital Health and Telemedicine"
specialty "Medicine"
Educational and qualification degree "MASTER",

1. Telemedicine - essence, history, challenges
2. Modern aspects of digital health - digital transformation of healthcare and medicine
3. Prospects and future application of digital technologies and telemedicine in medicine and healthcare
4. Digital health and artificial intelligence, virtual reality - prospects for their application in medicine and healthcare
5. Digital health and telemedicine as a means of dealing with socially significant diseases
6. Digital health and telemedicine as a means of dealing with the epidemic situation caused by COVID-19
7. The technological future of medical specialties
8. Digital health technologies that will change the activities of healthcare professionals in the future

LITERATURE:

Mandatory:

1. Lecture course in electronic form on Digital Health and Telemedicine – Assoc. Prof. Dr. Vl. Gonchev
2. Gonchev, V., Review of some modern applications of digital technologies in medicine and healthcare, University Publishing House "Prof. Dr. Asen Zlatarov", 2021 ISBN 978-619-7559-16-3
3. Gonchev, V., Digital health trends in 2021. Blach Sea Journal of Medicine and Public Health 2021, ISSN 2738-8654 Vol. 4, 2022, 94-101
4. Gonchev, V., Technological future of medical specialties, Blach Sea Journal of Medicine and Public Health, ISSN: 2738-8654 Vol. 2, 2021, 97-103
5. Gonchev, V., Some digital health trends that we will monitor in 2021 Management and Education, 16 (6) 2021 ISSN 13126121
6. Gonchev, V., Digital health technologies that will change the activities of nurses in the future Management and Education, 16 (6) 2021 ISSN 13126121

7. Gonchev, In Several contemporary trends that will change future cancer care Blach Sea Journal of Medicine and Public Health, vol.1 2021, № 1, 6-9 ISSN: 2738-8654
8. Gonchev, V., Digital health and artificial intelligence - prospects for their application in medicine, Collection of papers from the anniversary scientific conference with international participation "New approaches in public health and health policy" Pleven, November 26 - 28 2020 ISBN - 978-954-756-254-7, 194-196
9. Gonchev, V., Digital health, telemedicine and COVID-19, vol. Social Medicine, Issue 3, 2019. ISSN 1310-1757 (Print) ISSN 2603-3739, 23-27
10. Mesko, B., Dhunn, Pr., The Technological Future of Medical Specialties, The Medical Futurist 2021
11. Mesko, B., Dhunn, Pr., Digital Health and the fight against COVID-19 pandemic 2020, The medical futurist handbook, 2020
12. Topol, Eric. The creative destruction of medicine: how the digital revolution will create better health care. New York: Basic Books. 2012 ISBN 978-0465025503

Recommended:

1. Vinarova Zh., M. Vukov, Textbook of Telemedicine, ISBN 954-535-269-8, NBU Publishing House, Sofia, 2002
2. Vinarova, Zh., P. Mihova, CD "Workshop MIS Svogia" ISBN 954-535-424-0
3. Mihova, P., Telemedicine Functions of a Medical Information System Sofia, 2014
4. Gonchev, V., Digital Health Trends in 2021. Blach Sea Journal of Medicine and Public Health 2021, ISSN 2738-8654 Vol. 4, 2022, 94-101
5. Gonchev, V., Technological Future of Medical Specialties, Blach Sea Journal of Medicine and Public Health, ISSN: 2738-8654 Vol. 2, 2021, 97-103
6. Gonchev, V., Some digital health trends to watch in 2021 Management and Education, 16 (6) 2021 ISSN 13126121
7. Gonchev, V., Digital health technologies that will change the activities of nurses in the future Management and Education, 16 (6) 2021 ISSN 13126121
8. Gonchev, V., Several contemporary trends that will change future cancer care Blach Sea Journal of Medicine and Public Health, vol.1 2021, № 1, 6-9 ISSN: 2738-8654
9. Gonchev, V., Digital health and artificial intelligence - prospects for their application in medicine, Proceedings of the anniversary scientific conference with international participation "New approaches in public health and health policy" Pleven, November 26-28 2020 ISBN - 978-954-756-254-7, 194-196

10. Karadjova, Zl., Gonchev, V., Possibilities for the application of digital health and telemedicine in medical tourism in the context of the Covid 19 pandemic, journal "Health Policy and Management" issue 20, 2020, ISSN 1313 – 4981 pp. 229-232

Compiled by:

/Prof. Vladimir Gonchev MD, PhD/

The curriculum for the discipline "Digital Health and Telemedicine" for the specialty "Medicine" was adopted at a meeting of the Department of " Internal Diseases, Social Medicine, Emergency Medicine, Physiotherapy And Rehabilitation ", Minutes No. of

Head of Department:

/Prof. Vladimir Gonchev MD, PhD/

The curriculum was adopted and discussed at the Faculty Council of the Faculty of Medicine, Minutes No. of

Scientific Secretary of the Faculty:

(Senior Asst. Prof. Dr. Ruska Nenkova)

**UNIVERSITY "PROF. Dr. ASEN ZLATAROV" - BURGAS
FACULTY OF MEDICINE
DEPARTMENT OF "INTERNAL DISEASES, SOCIAL MEDICINE,
EMERGENCY MEDICINE, PHYSIOTHERAPY AND
REHABILITATION"**

Approved by!

DEAN:

/ Prof. Romyana Yankova, PhD/

SYLLABUS

Discipline:	MEDICAL STATISTICS
Specialty:	MEDICINE
Professional field:	7.1 MEDICINE
Educational qualification level:	MASTER
Form of training:	REGULAR

Burgas, 2025

EXTRACTS FROM THE CURRICULUM

1. GENERAL PARAMETERS OF THE DISCIPLINE			
Total (academic hours):	60	ECTS:	2
Auditorium classes	Non-auditorium classes	Auditorium ECTS	Non-auditorium ECTS
15	15	1	1
Type of Discipline	Number of hours per week:	Course:	Semester
Elective	1+1	II	IV

2. EDUCATIONAL FORMS					
<i>Auditorium classes:</i>	<i>Academic hours</i>	<i>ECTS</i>	<i>Non-auditorium classes:</i>	<i>Academic hours</i>	<i>ECTS</i>
Lectures	15	0.5	Consultations (work with a teacher)	15	0.5
Practical exercises	15	0.5	Independent work	15	0.5

3. EVALUATION AND CONTROL	
<i>Forms of assessment and control</i>	<i>Relative share in the total score</i>
Sessional evaluation: exam	0.4
Semester (ongoing) assessment:	0.6
Forms of semester control:	
- Active participation in classes	0.2
- Colloquiums	0.3
- Coursework	0.5

ANNOTATION

of the course "Medical Statistics"

The "Medical Statistics" course is intended for students of the specialty "Medicine", 2nd year, 4th semester, Master's degree.

Goals

The aim of the course in Medical Statistics is to deepen and expand the knowledge and skills acquired by students in the study of the mandatory statistics discipline from the previous semester. The training in the discipline should build on them with new knowledge about the possibilities, conditions and specifics of the application of methods for statistical processing and analysis in the field of medicine, as well as skills and competencies for applying these methods in solving specific practical tasks using modern statistical software tools.

Structure of the learning content

The topics included in the course cover: data presentation and processing; basic methods of statistical inference - studying differences (hypothesis testing and variance analysis), studying dependencies (correlation and regression analysis), dynamic statistical analysis; introduction to a statistical software product.

An important prerequisite for the quality of research activity is the derivation and correct formulation of the theses and questions regarding the object of research and the purpose of the research. In statistical terms, these are questions about the totality and units through which the mass phenomenon – the object of research – manifests itself; the signs, properties and characteristics that must be covered; what is intended to be revealed as scientific knowledge about the phenomenon and what conclusions and solutions follow for practice. Considering that the most commonly used method of observation is the sample method, the emphasis is placed on the methodological and organizational prerequisites for the correct application of representative surveys to obtain justified conclusions about the phenomena under study. The course covers some basic statistical methods and models that provide opportunities for revealing significant factor relationships and dependencies based on samples, as well as for the analysis of other important aspects in the manifestation of phenomena.

The modern development of information technologies allows and makes it imperative to use powerful software tools in the processing and conducting of statistical data analysis. The training in the discipline provides for the presentation of the capabilities of an appropriate software product for the implementation of the studied statistical methods and models and the formation of skills in students for its application.

Teaching methods

- **Lecture training** – Lectures are conducted through multimedia presentations combined with additional explanations and consideration of numerous relevant examples.

- **Practical exercises** – Students are previously familiarized with the theoretical part. During the exercises, under the guidance of the teacher, they apply the studied methods to solve specific problems using statistical software. Particular attention in the exercises is paid to the selection of appropriate examples and tasks illustrating the application of the studied methods in the field of medicine.

- **Specific features of the class schedule** - lectures necessarily precede practical exercises in the class schedule.

- Forms of cooperation between students and the teaching team – consultations with teachers to clarify basic concepts, the application of statistical inference methods, mastering the work with statistical software to solve practical problems, etc.; joint work with teachers on research tasks.

Forms of independent work – Students' independent work is based on lectures, practical exercises and recommended literature. The nature of the course material requires systematic independent work after each lecture and after each practical exercise in order to acquire lasting knowledge and skills.

Assessment methods

The achievement of the set goals of the training in the discipline *Medical Statistician* is controlled through an overall semester assessment of the performance of the tasks set during classes and independent coursework.

Prerequisites for students' basic knowledge and skills

To successfully master the course material, students need to have acquired knowledge of the basic statistical concepts, descriptive statistics and statistical inference methods presented in the mandatory statistical discipline from the previous semester and have the skills to carry out the calculation procedures.

Expected results

After successfully completing the course, students acquire knowledge and skills for applying methods for statistical processing and data analysis in the field of medicine and for using a statistical software package in solving specific practical tasks, which will be necessary both in subsequent training courses and in their future professional activities.

CURRICULUM CONTENT

A. LECTURES

Topic	hours
Topic 1. Medical statistics as a scientific discipline Definition of medical statistics as a scientific discipline. Use of Statistics in medicine and healthcare. Measurement and scales. Stages of empirical statistical study.	1 hours
Topic 2. Empirical distributions Essence of empirical distributions . Typical forms of distribution Frequency distributions – one-dimensional and two-dimensional frequency analysis . Graphical frequency representation distributed it.	1 hours
Topic 3. Basics generalizing characteristics of empirical statistical distributions Population and representative sample . Measures of central tendency. Statistical dispersion (variation). Measures of dispersion: range of variation, standard deviation, variance. Coefficients of variation. Skewness and kurtosis. Coefficients of skewness and kurtosis. Normal distribution.	2 hours
Topic 4. Statistics evaluation The essence of statistical inference. Interval estimates. Maximum error and confidence interval. Determining the minimum sample size for estimating	1 hours

parameters in the population. Determining the sample size for quantitative variables. Determining the sample size for qualitative variables.	
Topic 5. Statistical testing of hypotheses	2 hours
The essence of statistical hypothesis testing . Basic concepts. Critical area . Power of the criterion . Algorithm for hypothesis testing . Criteria for Hypothesis testing . Hypothesis testing in independent samples . Hypothesis testing in dependent samples . Nonparametric criteria for hypothesis testing .	
Topic 6. Analysis of variance	2 hours
One-way analysis of variance . Dispersion ratio. Post hoc analysis. Interpretation of the results of one-way analysis . Analysis of variance . Directions and features of multivariate analysis of variance .	
Topic 7. Correlation and analysis in fuzzy conditions.	2 hours
Basic concepts of correlation analysis . Essence . Correlation and determination coefficients . Correlation coefficients for categorical variables. Linear and nonlinear dependence .	
Topic 8. Regression analysis	1 hours
Linear regression . Dependence model . Statistical significance of a model . Multiple Regression (multivariate analysis). Requirements and methods for including variables in the multiple regression model. Interpretation of the results of the processing.	
Topic 9. Dynamic statistical analysis	2 hours
The development as a function of time . Compound elements of development . Basic guidelines of dynamic statistical analysis. Analysis of the speed of development – growth rates, rates , averages rates . Analysis of the main trend. Methods for modeling the trend. Analysis of fluctuations .	
Topic 10. Creating standards in medicine	1 hours
Nature of norms . Martin 's method for creating norms . Percentile method for creating norms .	
	Total: 15 hours

B. PRACTICAL EXERCISES

Topic	hours
Topic 1. Basic concepts	1 hour
General population and sample . Statistical knowledge , measurement , basic types measuring rocks . Types statistical samples .	
Topic 2. Introduction to statistical software	1 hour
Basic menus . Data preparation	
Topic 3. Frequency analysis	1 hour
One -dimensional and two-dimensional frequency analysis. Procedures for one-dimensional and two -dimensional Frequency distribution . Graphical representation of processing results. Editing diagrams .	
Topic 4. Variational analysis	2 hours

Indicators for average level . Indicators for dispersion . Indicators for the form of the distribution . Variational analysis with statistical software product. Interpretation of results from processing .

Topic 5. Statistical testing of hypotheses **2 hours**

Hypothesis testing for independent samples . Student 's t- test for independent samples . Hypothesis testing in dependent samples . Procedures with statistical software product. Analysis of results. Nonparametric criteria for hypothesis testing .

Topic 6. Analysis of variance **2 hours**

One-way analysis of variance . Procedures with statistical software product. Test for equality of variances. A posteriori analysis.

Topic 7. Correlation analysis in fuzzy conditions. **2 hours**

Scatter plot . Correlation coefficients and determination . Coefficient of linear Pearson correlation . Rank correlation coefficient Spearman 's correlation . Kendall's concordance coefficient . Correlation coefficients for categorical variables. Procedures with statistical software product and interpretation of processing results.

Topic 8. Regression analysis **2 hours**

Single linear regression . Model validation and prediction (assessment of model adequacy, standard error of estimate, analysis of residuals and statistical significance of function parameters) with a software product. Multivariate regression analysis.

Topic 8. Regression analysis **2 hours**

Single linear regression . Model validation and prediction (assessment of model adequacy, standard error of estimate, analysis of residuals and statistical significance of function parameters) with a software product. Multivariate regression analysis.

Topic 9. Dynamic statistical analysis **2 hours**

Analysis of the speed of development of phenomena – growth rates, rates, average rates. Analysis of the main tendency (trend). Methods for modeling the trend.

Total: 15 hours

EXAM QUESTIONNAIRE

1. The role of statistics in medicine and healthcare. Planning scientific studies. Basic concepts, measurement scales, types of samples.
2. Empirical statistical distributions. Frequency analysis. Graphical representation
3. Analysis of variance. Average values.
4. Statistical dispersion (variation), skewness and kurtosis
5. Statistical evaluation.
6. Statistical testing of hypotheses. Parametric and non-parametric criteria.
7. Analysis of variance.
8. Correlation analysis . Correlation coefficients and determination .
9. Regression analysis.

10. Dynamic statistical analysis.
11. Creation of standards in medicine.

PREPARATION LITERATURE

Mandatory

1. Petrova, N., Medical Statistics, Plovdiv Medical Publishing House "Raykov", 2015.
2. Traneva, V., Quantitative methods and optimization , Avant-garde prima , Sofia , 2020
3. Traneva, V., Some Applications of Statistics in Economics , Avangard prima , Sofia , 2022
4. Kalinov , K., Statistical methods in behavioral and social Sciences , NBU, 2013
5. Peeva, K., Biostatistics for medical professionals with examples in IBM® SPSS® Statistics (textbook with manual) for practically exercises for students by medicine and medical specialists) Ed . " Alpha " Vision " , Old Zagora , 2017 .
6. HK, Ramakrishna . Medical Statistics , Springer Science+Business Media Singapore , 2017.

Recommended

1. Grancharova, G., P. Hristova, Medical Statistics, Publishing Center of MU-Pleven, 2004
2. Dimitrova , J., R. Dimitrova , System for teaching statistics and statistical calculations with Microsoft Excel, <https://www.btu.bg/statexcel/>
3. Traneva, V., Quantitative Methods and Optimization, Avangard- Print Publishing House , Sofia, 2020
4. Traneva V. "Some Applications of Statistics in Ecology", Sofia, Avangard Prima, 2021

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The curriculum was adopted and discussed at the Faculty Council of the Faculty of Medicine, Protocol No 18 /13.01.2025.

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