Subject	**BASICS OF SCIENTIFIC RESEARCH**
Study Programme	Three-year specialized studies for qualified radiology technologists
Code	SRT 327
Study year	Third
Semester	Sixth
Total classes	100
Credits	4.5
Type of subject	Obligatory
Preconditions	To meet the criterion to enroll the third year
Operated by	Chair of Internal medicine
Professor in charge	Prof. D-r Olivera Stojceva-Taneva - University Clinic of Nephrology
Other teaching staff	Prof. D-r Sunica Petrovska – Institute for Physiology Prof. d-r Elena Trajkovska Dokic – Institute fro Microbiology Prof. d-r Ljubica Georgievska Ismail – University Clinic for cardiology
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Key words	Studies for radiology technologists, social subjects, basics of scientific work
Learning objectives	1. Students will perceive basic principles of scientific method and processes of performing research in biomedicine 2. Students will develop critical thinking about data-resources 3. Students will acquire basic principles of scientific research ethics, team work and the importance of authorship 4. Students will perceive the basic principles of the Evidence Based Medicine and its application 5. Students will acquire rules and knowledge to be able to prepare a successful presentation of a scientific paper as a poster or power-point
Short contents	**Theory (10 classes):** 1. General concept of science, scientific perspective of the world, scientific method 2. Ethics in scientific research 3. Planning a research – creating own bibliographic database - Conducting research (stages of scientific method) – Experimental method 4. Writing a scientific paper: components of a research paper 5. Quality of scientific writing, presentation of scientific research 6. Evidence based medicine 7. Biomedical databases, literature citing **Practice (9 classes)** 1. Responsible conduct and ethics in scientific research: Case analysis and discussion (working in small groups) 2. Explaining the principles of elaborating a diploma work (seminar topic), making an outline and defining tasks and deadlines for the seminar work 3. Model of a diploma work by critical analysis of a published scientific paper - Working in small groups 4. Writing an abstract out of the elaborated published paper, individual effort of each student 5. Preparing a power-point presentation of the elaborated paper that has been analyzed previously 6. Explaining the principles of preparing a diploma work (seminar topic), review and allocation of tasks and deadlines for the seminar work **Seminar (30 classes):**

<table>
<tr><td></td><td>1. Developing skills to create a plan, design and execute a research project
2. Creating a seminar topic – a version of the diploma work</td></tr>
<tr><td>Organization</td><td>Theory: 10 classes
Practice: 9 classes
Seminars:30 classes</td></tr>
<tr><td></td><td>Preparing a diploma work under menthorship: 60 classes</td></tr>
<tr><td>Learning methods</td><td>Interactive teaching, practice and seminars</td></tr>
<tr><td>Anticipated learning results</td><td>1. Knowledge and understanding: the student will acquire basic knowledge to conduct a scientific research in the field of biomedicine.
2. Essential skills: The student will be competent to make a plan, design and conduct a research project for preparing a diploma work</td></tr>
<tr><td>Specific teaching recommendations</td><td>The student is obliged to actively follow all the anticipated activities in order to be endorsed
Scoring student' activities:
<table>
<tr><td>Type of activity</td><td colspan="2">Score</td></tr>
<tr><td></td><td>Min</td><td>Max</td></tr>
<tr><td>Teaching*</td><td>6</td><td>10</td></tr>
<tr><td>Practice presence</td><td>6</td><td>9</td></tr>
<tr><td>Practice - activity</td><td>7</td><td>12</td></tr>
<tr><td>Continuous verification – MCQ test</td><td>18</td><td>30</td></tr>
<tr><td>Continuous verification – writing an abstract</td><td>12</td><td>22</td></tr>
<tr><td>Seminar work</td><td>9</td><td>15</td></tr>
<tr><td>Prsentation</td><td>2</td><td>2 (+4)</td></tr>
<tr><td></td><td>60</td><td>100 (+4)</td></tr>
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<tr><td>Verification of knowledge</td><td>Conditional criteria:
1. The student is required to have a minimum score in teaching and practice and seminars in order to be able to approach the MCQ test and perform a seminar work

The final score is calculated according to the table, and on the basis of a sum of scores of all the activities, including the score of the seminar work</td></tr>
<tr><td>Literature</td><td>Basic:
1. Зафировска К, Георгиевска-Исмаил ЉЂ . Авторизирани предавања
2. Марушић и сор. Увод у знанствени рад у медицини. Медицинска наклада:Загреб, 2004.
3. Силобрчић В. Како саставити, објавити и оцјенити знанствено дело. Медицинска наклада: Загреб, 2003.
4. International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals: writing and editing for biomedical publication. Updated april 2011. (http://www.icmje.org пристапено - октомври 2011).
5. Спироски М Ж .Научниот труд - Д а се напише и да се објави. Институт за имунобиологија и хумана генетика: Скопје, 2002
6. Панзова В. Наука како занает. Ф илозофски факултет: Скопје, 2003</td></tr>
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