

**MED 1003 – Cell, Tissue and Organs System**

Course Name	Code	Semester	Type of course	Theory (hours)	Group work (hours)	ECTS
Cell, Tissue and Organs System	MED 1003	I	Mandatory	28	58	6
Faculty, the educational program and education level	Faculty of Medicine, one-cycle Educational Program “Medicine”					
Author (s)	<p>Professor <b>Leila Akhvlediani</b>, “BAU International University, Batumi”, Medical Faculty, Department of Basic Sciences.                      Mob: 593537072; T: +995422212535; Fax:+995422212537                      Email: <a href="mailto:Leila.akhvlediani@bauinternational-uni.ge">Leila.akhvlediani@bauinternational-uni.ge</a>  <b>Rusudan Vadatchkoria</b> - Associated Professor                      Mob.tel.: (+995) 551262542;                      e-mail: rusudanvadatchkoria@gmail.com; Rusudan.vadatchkoria @bauinternational-uni.ge  <b>Eka Ekaladze</b> – invited teacher                      Mob.tel.: 595 633362; e-mail: ekaekaladze@yahoo.com  <b>Shorena Tukvadze</b> –invited teacher                      Mob.tel.:599 21 71 00; e-mail: sh tukvadze@yahoo.com                      Consultation day -individually</p>					
Educational course format	Lectures, group work, laboratory lessons					
Educational course loading	<p><b>Total:</b> 180 Hours,  <b>Contact hours:</b> 90 h that includes:</p> <ol style="list-style-type: none"> <li>1. Lecture – 28 h (K=0.36);</li> <li>2. Group work –28 h</li> <li>3. Laboratory lessons – 30 h</li> <li>4. Midterms – 2 h</li> <li>5. Final exam -2 h</li> </ol> <p><b>Independent work</b> – 90h</p>					
Prerequisites	No prerequisites					
The purpose (s) of tutorial course/modules	<p>This course aims to teach the cytology, embryology and histology basis of human body. To teach cell and its building blocks, organelles, the structure and function of cytoplasmic membrane, pumps, cell death and general pathologies, the intercellular interactions, cellular division, stem cell and important embryonic development of tissues and organs (organogenesis). Human body tissues: their variety, classification, structure and functions. Human organs and organ systems observation</p>					

<p><b>Teaching methods</b></p>	<p>Teaching methods will include:</p> <ul style="list-style-type: none"> <li>• <b>Lectures</b> – direct verbal contact ( lecture notes-taking, Power Point slides for the lecture will be provided);</li> <li>• <b>Demonstration</b> – Histological and anatomical atlases, models/visual aids, illustrations, slides, cytological and histological prepares of human tissues, organs, structures of organs’ systems visualization and demonstration during the lectures and group work;</li> <li>• <b>Group working</b> - Student performs the task, which is thematically derived from the course, but additionally requires independent working, searching of literary materials from the Internet and processing of information. Student's verbal activity will be assessed.</li> <li>• <b>Laboratory</b> – Student (student’s group) will acquaint lab environment and basic working specifications, rules how to work there safely and accurately with cells under microscope. They will be given appropriate lab task to prepare different tissue preparation for exploring under the microscope. Will be accessed working accuracy and the obtained results. The activity aims, student adaptation with lab environment, development of experiment planning abilities, which gain an independent working and decision making skills.</li> <li>• <b>Synopsis preparation and presentation</b> /- Students choose material from provided problematic topics or independent way, process sufficient material, will work with the books and presents in auditorium for estimation;</li> <li>• <b>Consultation</b> – individual support work (weekly) with students through advices recommendations, answer the questions to achieve a good results of study</li> </ul>
<p><b>Assessment criteria</b></p>	<p><b>Maximum score- 100</b></p> <p><b>1.Midterm assessment -60 scores</b>, that includes:</p> <p>1.1. Attendance– 10 scores (K=0.36);</p> <p>1.2. Activity – 30 score:</p> <p>1.2.1. Group work activity – 5 scores;</p> <p>1.2.2. Laboratory work – 10 score;</p> <p>1.2.3.Synopsis preparation and presentation – 10 scores;</p> <p>1.2.4.Discussion -5 score;</p> <p>1.3. <b>Midterm Exam – 20 scores.</b></p> <p>The final scores for group work activity is calculated by the arithmetic average and correspondently to Appendix 1- Scores Calculation Program</p> <p style="text-align: center;"><b>Group Work are Assessed Based on the Following Criteria</b> (maximum 5 scores)</p> <p><b>5 scores:</b> the answer is clear, the issue is conveyed comprehensively and accurately, Terminology is well reserved. Student is fluent in program covered material, has thoroughly mastered the basic and additional literature. According to the material in a solid knowledge.</p> <p><b>4 scores:</b> answered all the questions, but reduced; Terminological configured; There are no fundamental mistakes; The student is fluent in in the program covered material; Has only mastered the basic literature.</p> <p><b>3 scores:</b> the answer is incomplete; The issue is conveyed satisfactorily; Terminology is insufficient; The student holds the program material, but there are slight mistakes while explaining the theoretical material.</p> <p><b>2 scores :</b> the answer is incomplete; The terminology is incorrect; The corresponding entries of the issue are set out in part; The student has not sufficiently mastered the basic literature; There are fundamental mistakes while presenting theoretical material.</p> <p><b>1 score:</b> The answer is insufficient; The terminology is not used, or is not appropriate; The answer is substantially incorrect. Only the individual fragments are set out in the relevant material.</p>

**0 score:** There is no answer or the answer is not appropriate.

**Laboratory work assessment criteria (max 10 score):**

**10-9 scores:** laboratory method is properly planned; student applies laboratory tools and equipment precisely; Student is able to record accurately, to determine mistake and knows the way to correct them; Is able to analyze applied method and interpret the results. Laboratory work is performed accurately and thoroughly.

**8-7 scores:** laboratory method is properly planned; student applies laboratory tools and equipment precisely; is able to record accurately, determine mistakes and correct them. However, he lacks the skills to analyze results. Laboratory work is performed with minor faults.

**6-5 scores:** laboratory method is properly planned; student cannot demonstrate relevant knowledge of laboratory tools and applied equipment; makes minor mistakes in the tools using procedure; makes records, but is not able to notice the mistakes; thus, has some difficulty to correct them. Laboratory work is performed with minor faults.

**4-3 scores:** laboratory method is planned with minor faults; student cannot demonstrate relevant knowledge in laboratory tools and equipment application; makes minor mistakes in the tools using; student makes records, but is not able to notice the mistakes; thus, is difficult to find any ways to correct mistakes. Laboratory work is performed with essential faults.

**2-1 scores:** Laboratory work is planned with essential faults; student is almost unfamiliar with laboratory tools and equipment application; makes records, but is not able to notice the mistakes; thus, is hard to find ways to correct. Laboratory work is performed with essential faults.

**0 score:** Student is absolutely unfamiliar with laboratory methods, tools and equipment. The assignment is not performed.

**Review preparation and presentation's criteria (10 scores max.):**

1. Actuality of appointed problem – 1 score;
2. Academic content - 1 score;
3. Literature data's observation in the frame of subject -1scores;
4. Correspondence between the research methods and research purpose -1 scores;
5. Coherence of argumentation- 1 scores;
6. Correctness of conclusion and the connection with the main text - 1 score;
7. The presented matter's visual and technical aspects - 1 score;
8. Debating and listening culture - 1 score;
9. Accuracy and reliability of indicated references and literature sources – 1 scores;
10. Proper language and speaking style – 1scores.

**Discussion assessment criteria (10 score- max.)**

1. Argumentativeness of represented factual material -2 scores;
2. Complexity of represented factual material -2 scores;
3. Discussion activity – 2 scores;
4. Debating and listening culture - 2 scores;
5. Keeping within the time-limit – 2 scores.

**Midterm Exam – 20 scores**

	<p>Written test - 40 questions, 0,5 score for each) – total 20 scores; Minimal score of midterm assessment (for final exam admission) – is 11.</p> <p><b>Final Exam -40</b> Is held in the written test form (test consists of 80 questions, each question is rated as 0,5 score) total 40 scores. The final exam would accounted as passed in case of maximum 70% or more (<b>40X70 / 100 = 28 scores</b>). Credit will be given to the student if he has collected at minimum 51 scores out of 100. Student's assessment has to be done in the following way: <b>Positive rate:</b> (A) Excellent- 91 or more scores; (B) Very Good- 81-90 scores; (C) Good- 71-80 scores; (D) Satisfactory- 61-70 scores; (E) Enough- 51-60 scores; (FX) Failure - 41-50 scores, <b>Negative rate:</b> (FX) Failure - 41-50 scores, which means that a student needs to work more and an independent and considerable further work is required to pass the exam once again to be re-awarded; (F) Fail - 40 scores or less, which means that the student's diligence is not sufficient and student has to learn the subject all over again. Student can pass the additional exam during the same semester. The time interval between the final and the additional exams should be not less than 10 days</p>
<b>The basic literature</b>	<p>1.Abraham L.Keirszenbaum, Laura L.Tres - <b>Histology and Cell Biology</b>, Elsevier Saunders, 2012; 2.Peter J. Delves, Seamus J. Martin, Dennis R. Burton, Ivan M. Roitt. <b>Roitt's Essential Immunology</b>. 12<sup>th</sup> Edition. Wiley –Blackwell. 2011.</p>
<b>The auxiliary literature</b>	<p><b>Histology &amp; Cells Biology</b> 1.Leslie P.Gartner James L.Hiatt - <b>Color Atlas of Histology</b>, Lippincott Williams&amp;Wilkins, 2012, Chapter 1-7; 2. Bruce Alberts, Alexander Johnson, Julian Levis, Martin Raff keith Roberts Peter Walter - <b>Molecular Biology of the Cell</b>, Garland Science Taylor &amp; Francis Group, 2008</p>

#### The tutorial/training course content

Nº	Subjects	Lecture (hour)	Labor (h)	Work in group (hour)
1	Procariotic and eucariotic cells. Cell structure, cell organelles structure and functions, cellular skeleton, cell membranes, organelles, genome. Cells' chemical composition and	3	4	2

	biosynthesis. Visualizing Cells. Microscopy technics and methods.			
2	Prokaryotic structure, genomic replication, ion permeability, gene expression, signal transduction mechanisms. Viruses and phages structure and life cycle.	3	2	2
3	Cell cycle. Mitosis. Caryokinesis. Cytokinesis. Control of the cell division and grow. Cell Junction, Cell Adhesion and Extracellular matrix. Cancer's cytological and genetic aspects.	3	4	2
4	Sexual reproduction: Meiosis. Germ cells. Gametogenesis: oogenesis, spermatogenesis.	3	2	2
5	Cytological and embryological basis if fertilization, implantation and embryogenesis. Stem cells, cell death.	3	2	2
	<b>Midterm</b>			2
6	Genesis of body plan. Development of multicellular organism. Specialized tissue, stem cells and tissue renewal –regeneration	3	4	2
7	Pathogens, Infection and Innate Immunity. Cell biology of infection. The adaptive immune system. Method of sterilization in the clinic area..	3	2	2
8	Variety, classification, structure and functions of human body tissues: epithelial, connective, nervous and muscles	3	4	2
9	Osteogenesis. Blood and Hematopoiesis.	2	4	4
10	Observation oh human body organs' system.	2	2	4
	<b>Final Exam</b>			2

### Learning Outcomes

Criteria	Competences
<b>Knowledge and Understanding</b>	<p>Student has the deep and consistent knowledge about cells, tissues and human body general organization. Student is able to:</p> <ul style="list-style-type: none"> <li>• Explain the structure of prokaryotic and eukaryotic cells;</li> <li>• Describe biologic macromolecules, physical and functional structure of cytoplasmic membrane, transport mechanisms, metabolic pathways in cell and cellular signalization.</li> <li>• Explain chemical compounds of cells and synthesis processes;</li> <li>• Describe the cell cycle, mitosis and meiosis processes;</li> <li>• Describe gametogenesis process: oogenesis, spermatogenesis;;</li> <li>• Describe the cellular mechanism of fertilization and implantation.</li> <li>• Explain embryogenesis process;</li> <li>• Describe histogenesis and organogenesis processes;</li> </ul>

	<ul style="list-style-type: none"> <li>• Explain the beginning of life, genetic inheritance, molecular basis of genetic diseases, the principles of gene therapy;</li> <li>• Knowledge about stem cell and stem cell therapy;</li> <li>• Relationship between pathogens and immunity;</li> <li>• Describe the human body tissue (classification, structure and functions);</li> </ul>
<b>Applying Knowledge</b>	<p>Student will be able to apply theoretical knowledge in practice:</p> <ul style="list-style-type: none"> <li>• to differentiate the cells variety and tissue types of human body by the microscope images;</li> <li>• to operate with illustrative material to support theoretical knowledge about tissues and organ system by visual aids;</li> <li>• Knows sterilization methods of clinic area</li> <li>• Received knowledge has to be activated and widely applied for other biological and medical disciplines on the basis of the close logical and systematic connections with the main goal to design the theoretical foundation of human body comprehension by students as the complicated coherent system, where each particular structure is mutually connected, dependent and mutually determined by each others.</li> </ul>
<b>Making Judgment</b>	<p>Student defines the basics of normal structure and function of the human body at the cell level to system level; the cellular preliminary mechanisms of the pathologies and realizes the expected consequence. Will be able to make a decision with multidiscipline approach.</p> <p>Student is able to collect and interpret properly the incomplete and abstract data of the human cells, tissues, organs and system of organs organization with the following drawing of the valid conclusions.</p> <p>On the base of the theoretical and practical knowledge the scientific thinking and logical reasoning skills has to be formed to allow the student working out the appropriate strategy in the concrete academic situation</p>
<b>Communication Skills</b>	<p>Student can manage the different form of academic and scientific information from different sources (classic and electronic library, the Internet) to work fast and to look for the relevant information effectively; these found materials student is able to plane, processed, analyzed, and to make the best use for the report with the proper conclusions as in in writing, as well as in verbal form.</p> <p>Student can working in group, has watching, listening, summarizing, asking and answering questions abilities, is able to participate in the discussion. During the education process the professional and friendly relationship well be formed with the older (professors / teachers) and younger (this and other groups students) colleagues, communication with any person regardless of their social, cultural, religious or ethnic affiliation.</p>