

MED 3014 - Biological Safety

| Course Name | Code | Semester | Type of course | Theory (hours) | Work in Group (hours) | ECTS |
|--|---|----------|----------------|----------------|-----------------------|------|
| Biological Safety | MED 3014 | V | Elective | 10 | 16 | 2 |
| Faculty, the educational program and education level | Medical Faculty, one-cycle Program "Medicine" | | | | | |
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| Educational course format | LECTURE LABORATORY WORK IN GROUP | | | | | |
| Educational course volume | <p>Total: 60 hours Contact hours: 30 h, that includes:</p> <ol style="list-style-type: none"> 1. Lecture – 10 h 2. Laboratory -10 h 3. Team work – 6 h 4. Midterm Exam – 2 h 5. Final Exam -2 h <p>Independent work – 30 h</p> | | | | | |
| Prerequisites | MED 2009 | | | | | |
| The purpose (s) of tutorial course/modules | This learning course aims to understand hazardous laboratorial materials and sampling biological material identification, assessment and control in laboratory, to give information about the features of biosafety, laboratory infections and bioterrorism, safety standards, prevention of disease transmission, utilization of infectious hazard by chemical, electrical and fire; decontamination of waste materials. | | | | | |
| Teaching and learning strategy | <p>Lectures will be conducted based on the application of verbal explanation method, demonstration- the method of visual presentation of the information.</p> <p>Laboratory work foresees doing experiments by the students themselves under the teacher's supervision that aims at elaboration of practical clinical skills; the students will also become proficient in laboratory biosafety techniques.</p> <p>In order to develop the skills of making conclusions supported by the arguments the students, during the group work, will defend and justify their opinions, when dealing with situation analysis, and analyze critically the situation created by their course mate. The students will also carry out the analysis of the clinical cases, interpret, classify, assess the data and make synthesis by means of connecting and confluencing of the components comprising the separate issues.</p> | | | | | |

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| | <p>During working in group students will play role-playing games in biosafety rules and will imitate the Bioterrorism cases.</p> |
| <p>Assessment criteria</p> | <p>Maximum score- 100 Final Exam – 40 points Other components of midterm assessment are (total 60):</p> <ul style="list-style-type: none"> • Attendance on lectures - 1 points (1X10=10); • Activity on Laboratory – 10 points: • Activity on Group work -10 points • Role-playing (doctor-patient) games -10 points <p>Midterm Exam – 20 points Laboratory Work is Assessed Based on the Following Criteria (maximum 10 point):</p> <p>10-9 points: Laboratory method is planned correctly, the usage of the laboratory equipment and devices by the student is accurate. The student is able to make method recording correctly, can easily identify the mistakes made and plan the way of correction. The student is able to analyze the method exercised and interpret the results. Laboratory work is carried out accurately and completely;</p> <p>4 points: Laboratory method is planned correctly. The student reveals the relevant knowledge when applying laboratory equipment and devices. The student is able to make method recording correctly, easily identify the mistakes made and plan the way of correction, however, has difficulties in analyzing the results. Laboratory work is performed with minor faults.</p> <p>3 points: Laboratory method is planned correctly. The student is not able to reveal the relevant knowledge when using the laboratory equipment since he/she makes minor mistakes when applying laboratory devices; The student can make method recording correctly but is not able to detect the mistakes made and experiences difficulties in looking for the ways of correction. Laboratory work is carried out with minor faults.</p> <p>2 points: Minor mistakes are made in planning of the laboratory method; the student is not able to reveal the relevant knowledge when using laboratory equipment and devices, is able to make method recording correctly but is not able to detect the mistakes made and relevantly has difficulties in finding the way of correction. Laboratory work is carried out with essential faults.</p> <p>1 point: Essential mistakes are made in planning laboratory method; the student is hardly familiar with the rules of usage of laboratory equipment and devices; the student is able to make method recording but is unable to detect the mistakes made and relevantly has difficulties in finding the ways of correction. Laboratory work is carried out with essential faults.</p> <p>0 point: the student is absolutely unaware of laboratory method and equipment and devices. The task is not fulfilled.</p> <p>Application and Group Work are Assessed Based on the Following Criteria (maximum 10 point)</p> <p>10 points - Student has been able to present complete and thorough knowledge of the subject, a substantial amount of detailed and relevant information. Demonstrate considerable depth of understanding of the studied main and additional literature. Bring forward a balanced view of the main arguments on the issues.</p> <p>9 points - Student has been able to bring forward a consistent number of deductions on most of the topics tackled. make very good comments on the different perspectives on most of the issues. Demonstrates knowledge of the main readers.</p> <p>8 points - Student has been able to bring forward a consistent knowledge, Has properly developed terminology. Demonstrates knowledge of the main readers.</p> |

7 points - Student has been able to present some factual information sufficiently linked with the topic. demonstrate a good understanding of the topics selected. make a good attempt to bring forward a balanced view of some arguments on the issues. Terminology is partially developed.

6 points - Student has been able to make some good comments on the different perspectives on some of the issues. Make poor deductions on most of the topics tackled. analyse some causes and results of human interactivity related to the issues.

5 points - Student has been able to demonstrate inconsistent comments on the different perspectives on some of the issues. Terminology is partially developed. Present mediocre level of knowledge. Make poor deductions.

4 points - Student demonstrates general overview of the topics. Terminology is not developed. Information sufficiently linked with the topic. Demonstrate irrelevant understanding of the literature.

3 points – Student demonstrates general/superficial and inconsistent knowledge of the subject. No sufficient knowledge of the literature.

2 points - Student demonstrates general comments, no knowledge of the terminology, no consistency.

1 point – Student demonstrates insufficient answer, not terminology awareness, chronologic manner of the answer, mostly wrong, no knowledge of literature.

0 point - Student demonstrates not even elementary knowledge of the topics.

Role playing games (10 grades):

1. Precision of Imitation situation and logical consequence of action - 4 points;
2. Ability of knowledge application - 4 points;
3. Time management - 2 points;

Midterm Exam Is held in the written test form (test consists of 40 multiple-choice questions, each question is rated as 0.5 point) – total 20 points;

Students are admitted to the final examination if they point no less than 51 points through the midterm exam and final examinations.

Final Exam – 40 points

Is held in the written test form (test consists of 80 multiple-choice close questions, each question is rated as 0.5 points).

Students have to score equal or more than 70% from final exam maximum points (40X70/100=28 maximum 28 points from the overall 40 points) to pass the final examination.

Credit will be given to the student if he has collected at minimum 51 scores out of 100.

The students' assessment has to be done in the following way:

Positive rate:

- (A) Excellent- 91 or more points;
- (B) Very Good- 81-90 points;
- (C) Good- 71-80 points;
- (D) Satisfactory- 61-70 point;
- (E) Enough- 51-60 points;

Negative rate:

- (FX) Failure - 41-50 points, 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 points or less, which means that the student's diligence is not sufficient and student has to learn the subject all over again.

The student has the right to pass an examination in the same semester. The interval between the final and additional exams should not be less than 10 days.

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| The basic literature | <ol style="list-style-type: none"> 1. Fleming DO, Hunt DL. Biological Safety Principles and Practices. ASM Press, Washington DC. 4th edition, 2006. 2. Handbook of Bioterrorism and Disaster Medicine. By: Antosia, Robert E.. Boston, MA : Springer US, XVIII, E-book. |
| The auxiliary literature | <ol style="list-style-type: none"> 1. Review of Medical Microbiology & Immunology. Levison, W., Exam&Board Review, 2004. |

The tutorial/learning course content (week by week)

| N3 | Topics | Lecture (hour) | Work in group Appl. (hour) | Lab |
|----|---|----------------|----------------------------|-----|
| | Identification of biosafety and hazard. Laboratory safety program. Risk assessment of biological hazard | 2 | | 2 |
| | Biosafety precautions for bacterial infections. Biosafety precautions for viral infections. Biosafety precautions for protozoa and helminths. Biosafety precautions for mycosis agents. | 2 | | 2 |
| | Midter Exam | | 2 | |
| | Biosafety precautions for Mycobacterium tuberculosis and other airborne pathogens | 2 | 3 | 2 |
| | Guidelines for microbiological and biomedical research laboratories. | 2 | 3 | 2 |
| | Laboratory-associated infections. Hazard control: Primary barriers (Biological safety cabinets and other equipment). Hazard control: Sterilization and disinfection and antisepsis. Biological safety program evaluation . Bioterrorism and biological safety. Infectious waste. Decontamination of waste materials | 2 | | 2 |
| 2 | Final Exam | | 2 | |

Learning Outcomes

| Criteria | Competences |
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| Knowledge and understanding | <p>After this elective course the student will have deep knowledge in:</p> <ul style="list-style-type: none"> • Determine standards of biosafety; • Follow the criteria and procedures of biosafety for the control of laboratory infections; • Get knowledge about the immunization and screening tests for the prevention of laboratory infections; • Be able to list the chemically hazardous materials and get knowledge their storage conditions. |

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| Ability of knowledge application | Define the infectious waste materials and prepare the procedures about their decontamination and transportation techniques. |
| Value | Understands the danger of bioterrorism. |