



## Course Syllabus of Biosafety and biosecurity

Faculty: Medicine and Health Sciences  
Department: Health Sciences  
Program: Bachelor in Medical laboratory

I. General information about the course instructor :							
Name	Dr. Mohammed Abdulwahid Almorish	Office Hours(3 Hours Weekly )					
Location & phone number	Sana'a 777590437	Sat	Sun	Mon	Tue	Wed	Thu
Email	Almorish70@gmail.com	1	1	-	-	-	1
II. General information about the course:							
1.	Course Title :	Biosafety and Biosecurity					
2.	Course Code and Number :	BMLL 06					
3.	Credit Hours :	Credit Hours				Total	
		Theoretical	Seminar/Tutorial	Practical	Training		
		2			-	2	
4.	Study Level and Semester:	elective					
5.	Pre-requisites:	None					
6.	Co-requisites:	None					
7.	Program in which the course is offered:	Bachelor in Medical laboratory					
8.	Teaching Language:	English					
9.	Instruction location:	University of Science and Technology, Sana'a ,Yemen					



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عميد الكلية:  
د. عبدالله المخلافي

رئيس القسم:  
د. عبد الحبيب القباطي

المراجع :

د. ابراهيم السبل

د. حمه د الحناص

الموصف:  
د. محمد المرش

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### III. Course Description

This course is concerned with the essential knowledge of the critical aspects of biosecurity, biosafety, how to assess risks for biohazards in the laboratory setting and the strategies to appropriately manage these risks. The course will mainly focus on biosafety measures (facility design and construction, laboratory equipment, Personal Protective Equipment, Good Laboratory Practices, laboratory accidents, biohazards waste management and regulatory aspects). The teaching strategies will include lectures, group working, laboratory visit, self-learning and assignment. The students will be evaluated through case report assessment, written exam and evaluation of assignments.

### IV. Course Aims: This course is aimed to:

1. Provide the student the knowledge about the biosecurity and biosafety and the relationship between them.
2. Enable the students to describe Biosafety and Biocontainment Concepts & Strategies.
3. Demonstrate components of a risk assessment for microorganisms (agent, host, environment, behavioral)
4. Provides the student with the general biosafety practices and procedures applicable to all laboratories handling infectious agents.
5. Learn the student how to construct laboratory waste management strategies and treatment methods for infectious agents.

### V. Course Intended Learning Outcomes (CILOs):

1. Demonstrate biosafety & biosecurity concepts and strategies.
2. Identify components of a risk assessment for biological hazard and risk management strategies and outline the biosecurity and biosafety issues to be incorporated into the management program.
3. Define the Biological Safety Cabinet (BSC), Autoclaves and personnel protective equipments (PPE).
4. Outline disinfectants, germicide, sanitizer, virucide, immunization and other applicable terms used to describe decontaminants.
5. Verify the range of hazards unique to working with pathogens in the laboratory.
6. Use different methods to manage biohazard in the laboratory.
7. Administrate biosafety and biosecurity information clearly in written, electronic and verbal forms and communicate ideas and write planning strategies in biorisk and waste management.



المراجع :  
د. ابراهيم السبل  
د. حمود الحناص

الموصف :  
د. محمد المرش

## VI. Course Contents :

### Theoretical Aspect:

No.	Course Units	Sub-topics	Week due	Contact Hours
1	Biosafety and Biosecurity (BSS) Introduction	<ul style="list-style-type: none"> <li>- Definition,</li> <li>- Responsibilities</li> <li>- Program Organization &amp; Administration</li> </ul>	1 <sup>st</sup>	2
2	Laboratory Biosafety	<ul style="list-style-type: none"> <li>- Use of safety equipment</li> <li>- Health hazards</li> <li>- Safe work procedures</li> <li>- Emergency procedures</li> </ul>	2 <sup>nd</sup>	2
3	Biological Materials	<ul style="list-style-type: none"> <li>- Microorganisms</li> <li>- Parasites</li> <li>- Toxins</li> <li>- Prions</li> <li>- Recombinant DNA</li> <li>- Animals</li> <li>- Viral Vectors</li> </ul>	3 <sup>rd</sup>	2
4	Risk Groups and Containment Levels	<ul style="list-style-type: none"> <li>- Risk Factors</li> <li>- Risk Groups</li> <li>- Relationship of Risk Groups with Biosafety Levels</li> <li>- Laboratory Acquired Infections</li> </ul>	4 <sup>th</sup>	2
5	Biosafety Cabinets (BSC)	<ul style="list-style-type: none"> <li>- Class I</li> <li>- Class II</li> <li>- Class III BSC</li> <li>- Effective Use of BSCs.</li> </ul>	5 <sup>th</sup>	2
6	Sterilization and Disinfection	<ul style="list-style-type: none"> <li>- Autoclaves</li> <li>- Ultraviolet Lamps</li> <li>- Chemical Disinfectants</li> <li>- Laboratory Spills</li> <li>- Incident Reporting</li> </ul>	6 <sup>th</sup>	2
7	Biosecurity Concepts and Strategies	<ul style="list-style-type: none"> <li>- Challenges of a biosecurity program for microorganisms</li> <li>- Components of a biosecurity program</li> <li>- an emergency response plan for breaches of biosecurity</li> </ul>	7 <sup>th</sup>	2
8	Midterm exam		8 <sup>th</sup>	2
9	Biorisk Assessment	<ul style="list-style-type: none"> <li>- Traditional Risk Assessment Approaches for Biorisk</li> <li>- Factors affecting risk assessment (agent, host, environment, behavioral)</li> <li>- Roles and Responsibilities for Risk Assessment</li> </ul>	9 <sup>th</sup>	2

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10	Facility Design and Controls	<ul style="list-style-type: none"> <li>- Building a new biocontainment laboratory</li> <li>- Laboratory Design Best Practices.</li> <li>- Facility Design Factors.</li> <li>- Risk- Based Design Decisions</li> </ul>	10 <sup>th</sup>	2
11	Biosafety Management Program	<ul style="list-style-type: none"> <li>- Structure of a biosecurity and biosafety management program</li> <li>- Responsibilities for management, committees, biosafety officers and individuals.</li> <li>- Biosecurity and biosafety issues to be incorporated into the Program</li> </ul>	11 <sup>th</sup>	2
12	Operations and Maintenance concepts	<ul style="list-style-type: none"> <li>- Components of a maintenance program for containment Laboratories.</li> <li>- Routine, preventive and predictive maintenance</li> <li>- maintenance issues for architectural, mechanical and security systems</li> </ul>	12 <sup>th</sup>	2
13	Waste management	<ul style="list-style-type: none"> <li>- Treatment methods for infectious agents.</li> <li>- Biohazards Waste Handling Procedures</li> </ul>	13 <sup>th</sup>	2
14	Final Term Exam		14 <sup>th</sup>	2
Total number of weeks and hours			14	28

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مجلس إدارة ضمان الجودة والاعتماد  
 كلية العلوم والتكنولوجيا  
 APPROVED

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