



# Course Specification

— (Bachelor)

<b>Course Title:</b> Virology
<b>Course Code:</b> 2054209-3
<b>Program:</b> Bachelor of Biotechnology
<b>Department:</b> Department of Biotechnology
<b>College:</b> Faculty of Science
<b>Institution:</b> Taif University
<b>Version:</b> V4
<b>Last Revision Date:</b> 3/1445 – 9/2023



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## A. General information about the course:

### 1. Course Identification

<b>1. Credit hours:</b>					
<b>3 (2 Lecture, 1 Lab)</b>					
<b>2. Course type</b>					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	<input type="checkbox"/> Others
B.	<input type="checkbox"/> Required		<input checked="" type="checkbox"/> Elective		
<b>3. Level/year at which this course is offered: (8<sup>th</sup> Level/ 4<sup>th</sup> Year)</b>					
<b>4. Course general Description:</b>					
Identify viruses and their interactions with the related hosts. Topics covered include: Structure of viruses, classification of viruses, viral replication, virus-host relationship with examples of some viral diseases for human and animals, epidemiology of viral infections, methods of diagnosis of viral infection, viral vaccines, and antiviral drugs.					
<b>5. Pre-requirements for this course (if any):</b>					
2054104-3, Microbial Biotechnology					
<b>6. Co- Pre-requirements for this course (if any):</b>					
None					
<b>7. Course Main Objective(s):</b>					
Recognize the molecular structure of viruses from different families (human-animal), Explain how to classify viruses, identify new methods of viral infection diagnosis, and explain how to produce different types of vaccines.					

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	45	100%
2	E-learning		
3	Hybrid <ul style="list-style-type: none"> <li>● Traditional classroom</li> <li>● E-learning</li> </ul>		
4	Distance learning		

### 3. Contact Hours (based on the academic semester)



No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	15
3.	Field	
4.	Tutorial	
5.	Others (specify)	
<b>Total</b>		<b>45</b>

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	List and describe how to produce plants that resist viruses.	<b>K 1</b>	Lecture	Written Exams
1.2	Recognize different classes of viruses.	<b>K 1</b>	Lecture	Written Exams
1.3	Describe how viruses can be assembled and released	<b>K 5</b>	Lecture	Written Exams
<b>2.0</b>	<b>Skills</b>			
2.1	Evaluate the consequences of viral infections.	<b>S2</b>	Project	Written Exam
2.2	Analyze the different ways of viral transmission. (Viruses pathogenesis).	<b>S2</b>	Problem Solving	Report
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1	Adapt to academic and professional morals in educational institutions	<b>V1</b>	Discussion	Report
3.2	Participate in a team work	<b>V1</b>	Discussion	Report

## C. Course Content

No	List of Topics	Contact Hours
1.	History and origin of viruses, and their general properties.	<b>2</b>
2.	Virus structures and functions of virus components.	<b>4</b>





3.	Viral taxonomy and morphology.	2
4.	Herpes viruses and parvoviruses.	2
5.	Picornaviruses and retroviruses.	2
6.	Mode of viruses' transmission, their efficiency to penetrate host cells, and virus replication.	4
7.	Most important viral diseases of human and animals.	2
8.	Most important viral diseases of human and animals.	2
9.	Methods of viral infection diagnosis.	2
10.	Virus genetic changes and interaction.	2
11.	Virus genetic changes and interaction.	2
12.	Virus infection consequences and production of plants that resist viruses.	4
<b>Total</b>		<b>30</b>

#### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	Week 7	20%
2.	Periodical exam	Week 10	10%
3.	Report	Week 11	10%
4.	Practical Exam	Week 15	20%
5.	Final Exam	Week 16	40%

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

#### E. Learning Resources and Facilities

##### 1. References and Learning Resources

<b>Essential References</b>	<ul style="list-style-type: none"> <li>- John B. Carter and Venetia A. 2007. Virology principles and applications, Saunders School of Biomolecular Sciences, Liverpool John Moors University, UK.</li> <li>- Wagner, Edward K. Basic virology, 3rd ed. Malden, MA: Blackwell Pub., 2008.</li> </ul>
<b>Supportive References</b>	<ul style="list-style-type: none"> <li>Alberts B. et al. (2004) Essential Cell Biology, 2nd edition,</li> <li>- Garland Brown W. M. and Brown P. M. (2002) Transcription.</li> <li>- Taylor and Francis Cooper G. M. and Hausman R. E. (2004) The Cell: a Molecular Approach, 3rd edition, ASM Press.</li> <li>- Drlica K. (2004) Understanding DNA and Gene Cloning, 4th edition, Wiley</li> <li>- Lodish H. et al. (2004) Molecular Cell Biology, 5th edition, Freeman</li> <li>- Pollard T. D. and Earnshaw W. C. (2004) Cell Biology, Saunders</li> <li>Reece R. J. R. (2004) Analysis of Genes and Genomes, Wiley</li> <li>Weaver R. F. (2005) Molecular Biology, 3rd edition, McGraw-Hill</li> </ul>
<b>Electronic Materials</b>	<ul style="list-style-type: none"> <li>- The Universal Virus Database, ICTVdB</li> </ul>





	- Virology principles and applications book; John B. Carter and Venetia A. Saunders - NBCI website ( <a href="https://www.ncbi.nlm.nih.gov">https://www.ncbi.nlm.nih.gov</a> )
<b>Other Learning Materials</b>	1. Software: Clustal W 2. Biosafety system in the lab for practical exercises.

## 2. Required Facilities and equipment

Items	Resources
<b>facilities</b> (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ol style="list-style-type: none"> <li>One classroom 2 hours per week for each section</li> <li>Laboratory 3 hours per week for each practical section</li> </ol>
<b>Technology equipment</b> (projector, smart board, software)	Data show, Smart board, and internet connection.
<b>Other equipment</b> (depending on the nature of the specialty)	PCR machine, water bath, oven, Shaking incubator, ELISA reader, trans-illuminator, gel documentation system Micropipettes, Master mix, DNA Primers, glassware, DNA and RNA isolation kits. Cloning, RT-PCR (one step), PCR and ELISA kits and PCR beads.

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Peer Review, Students	Direct (Independent Reviewer), Indirect (survey)
Effectiveness of Students assessment	Faculty members	Direct (Random Correction)
Quality of learning resources	Students	Indirect (survey)
The extent to which CLOs have been achieved	Faculty members	Direct
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

<b>COUNCIL /COMMITTEE</b>	<b>DEPARTMENT COUNCIL</b>
<b>REFERENCE NO.</b>	<b>6</b>
<b>DATE</b>	<b>5/11/2023</b>