Course Specification
(Bachelor)

Course Title:	**Virology**
Course Code:	**CLS 472**
Program:	**Bachelor of Science in Clinical Laboratory**
Department:	**Clinical Laboratory Sciences**
College:	**College of Applied Medical Sciences - Al-Dawadmi Campus**
Institution:	**Shaqra University**
Version:	Template 2024_TP153_ 1
Last Revision Date:	21-08-2024

Table of Contents

A. General information about the course:

Course Identification					
1. Credit hours:	(2+0) credit hours				
2. Course type					
a.	University ☐	College ☐	Department☒	Track☐	Others☐
b.	Required ☒	Elective☐			
3. Level/year at which this course is offered:					
4. Course General Description The course will give an overview of medically important virus families, their replication strategies, and mechanisms for the development of viral infectious diseases. Topics will include taxonomy, replication strategies, pathogenicity and transmission of viruses, and diagnosis, prevention, and treatment of viral diseases. Antiviral immunity and viral evasion will also be covered. Common human viral infections will be the main focus of the course, and emphasis will be put on virus-host interactions as a key to understanding the diversity of viruses and viral diseases.					
5. Pre-requirements for this course (if any): **CLS 241**					
6. Co-requirements for this course (if any): **None**					
7. Course Main Objective(s) • Recall medically important viruses, their pathogenesis, modes of transmission, laboratory diagnosis, prevention, and control. • Reproduce concepts related to viral infections, which may cause serious fatalities. • Recognize medically important viruses by physical and genetic characteristics					

1. Course Identification

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	2 x 13 = 26 hours	
2.	E-learning	4	
3.	Hybrid • Traditional classroom • E-learning	26 hours 4 hours	83.3% 16.6%
4.	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	25
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	5
5.	Others (specify)	
	Total	30

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

Code	Course Learning Outcomes	Code of CLOs aligned with the program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Define the basic terms related to virus, infection, and disease, and recognize the main events of virus infection and spread in the body	K1	Interactive Power point / Lecture, Participation, Self-reading,	Quizzes, Assignments, Written exams, Rubrics
1.2	List the principal characteristics of medically important viruses and the diseases caused by viruses, their pathogenesis, modes of transmission, laboratory diagnosis, treatment, prevention, and control.	K1	Interactive PowerPoint / Lecture, Presentation, Participation, Self-reading,	Quizzes, Assignments, Written exams, Rubrics
2.0	Skills			
2.1	Develop the skills and create an ability to differentiate viruses in regard to nucleic acid structure, mode of transmission, pathogenesis, clinical symptoms, and laboratory diagnosis	S1&S2	Interactive Power point / Lecture, Presentation, Participation, Self-reading, Group discussion Assignment	Quizzes, Assignments, Written exams, Rubrics

2.2	Correlate causative agent (microorganism) and its mode of transmission. Summarized different laboratory diagnosis used in microbiology	S3	Interactive Power point / Lecture, Presentation, Participation, Self-reading, Group discussion assignment	Quizzes, Assignment, Written exams Rubrics
3.0	Values, autonomy, and responsibility			
3.1	Show interest in self-learning for the acquisition of greater knowledge, new information data, or techniques in the field of course for the best utilization of their lectures and tutorials	V1	Presentation Assignments Group Discussion Self-reading	Assignments Presentations Rubrics
3.2	Appraise constructively in a group, cooperating with their leaders and seniors and with other students, thus initiating the value of teamwork and compliance to work through systems	V2&V3	Presentation Assignments Group Discussion Self-reading	Assignments Presentations Rubrics

C. Course Content

No	List of Topics	Contact Hours
1&2	**Course Enrollment and Registration**	
3	Introduction to the course • Viruses are distinct from other living organisms • The history of virology • Living host systems/ Cell culture methods • Serological and immunological methods	2
4.	The function and formation of virus particles. • Physical and biochemical properties Classification of viruses • Capsid symmetry and virus architecture • Enveloped viruses • Complex virus structure • Protein-nucleic acid interactions and genome packaging virus, Receptors: recognition and binding	2
5	Genomes I The structure and complexity of virus genomes Molecular genetics • Virus genetics (both DNA and RNA viruses) • Virus mutants	2
6	Genomes II • Genetic interaction between viruses • Non genetic interaction between viruses • Large DNA genomes and Small DNA genome • Positive strand and Negative strands RNA viruses with examples	2

7	Replication and Expression • Overview of virus replication • Virus replication Cycle for DNA, RNA viruses Expression of genetic information Control of expression in bacteriophage lambda	2
8&9	Midterm Exam	
10	Infection • Immune responses to virus infections in animals Viruses apoptosis and Interferons • Evasion of immune response by viruses (immunity) Virus host interactions	2
11&12	Pathogenesis I • Mechanisms of cellular injury • Viruses and immunodeficiency • Virus-related diseases	4
13	Laboratory identification of viruses in clinical specimens (Part 1) - Direct diagnosis of viruses based on isolation, morphological and Biochemical characters	2
14	Laboratory Diagnosis of viruses in clinical specimens (Part 2) Molecular diagnosis of viruses based on identification of virus nucleic acid, Using DNA probe and PCR	2
15&16	Examples of Viruses Hepatitis viruses (HAV, HBV, HCV, HDV and HEV) retroviruses (HIV HTLV I and HTLV II), Herpes viruses	4
17	Examples of Viruses Encephalitis and Meningitis viruses Rabies, Measles, Mumps, Rubella Viral vaccines and antivirus therapy	2
18	Revision	2
19&20	Final Exam	
	Total Contact Hours	30

C. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Midterm Exam	7&8	30%
2	Quizzes	1-15	10%
3.	Assignment, participation& Presentation	8-16	10%

4	Final Exam	18&19	50%

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

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Louten, J. (2016). Essential of Human Virology, Academic Press.
Supportive References	S. Jane Flint, Vincent R. Racaniello, Glenn F. Rall, Theodora Hatziioannou, Anna Marie Skalka. Principles of Virology, Volume 2: Pathogenesis and Control, 5th Edition
Electronic Materials	www.thailabonline.com/virus.htm http://www.asm.org/ http://www.virologyj.com/ http://www.tulane.edu/~dmsander/garryfavweb.html http://www.yk.rim.or.jp/~aisoai/soft.html http://www.bioprotocol.com/protocolstools/index.jhtm
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
Facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	1- Classrooms ready and equipped with educational media 2- Lecture rooms are air-conditioned 3- Image projector available in the lecture hall 4- Smart Board available in the lecture hall 5- Laptop / Computer. 6- Central Printer and Scanner. 7- Up-to-date scientific books in the library
Technology equipment (projector, smart board, software)	1. Image projector 2. Smart Board 3. Computer with proper software and internet in the lecture hall and all labs 4. Microphones in Lecture rooms
Other equipment (Depending on the nature of the specialty)	

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods

Effectiveness of teaching	• Faculty Member • Educational Affairs Unit in the dept. Peer Reviewers	• Exam questions corrections • Homework correction • course evaluation survey • Analysis of course reports & student's results • surveys
Effectiveness of students' assessment	• Program administrators • Quality Assurance experts and reviewers	Internal reviewing of the course contents, outcomes, reports & and student's results.
Quality of learning resources	Quality Assurance experts and reviewers	Internal reviewing of the course contents, outcomes, reports & and student results.
The extent to which CLOs have been achieved	Course coordinator	C Los measurements Surveys
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewers, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	CLS Departmental Council- College of Applied Medical Sciences- Al-Dawadmi Campus
REFERENCE NO.	2
DATE	21/2/1446 H - 25-8-2024