

In the Name of God



**Hamadan University of Medical Sciences and Health Services
Educational Deputy of the University
Center for Studies and Development of Medical Sciences Education**

Theory/Practical Lesson Plan Form

Dear Colleagues,

As the teaching-learning process is one that requires careful planning to achieve its objectives, the preparation of a lesson plan at the beginning of the educational process (as a map and guide for instructors and students) is essential. It serves as one of the main tools for the educational activities of instructors. Therefore, we kindly ask all instructors to pay utmost attention to completing the lesson plan.

Course and Instructor Details (Completing all items in this section is essential)

Field	Details
Course Title	General Virology
Instructor(s)	Dr. Ali Teimouri, Dr. Farid Azizi Jalilian, Dr. Nastaran Ansari, Dr. Shahab Mahmoudvand
Course Coordinator	Dr. Ali Teimouri
Head of Department	Dr. Ali Teimouri
Credit Hours	Theory: 3 units
Program & Level	Master's Degree
Semester	First Semester, Academic Year 2023–2024
Teaching Location	Faculty of Medicine, Department of Virology

Session-by-Session Syllabus (Theory — 3 Units)

Session	Topic(s)	Expected Learning Outcomes (Behavioral)	Learning Domain	Teaching Method(s)	Duration (hrs)	Teaching Aids	Assessment Method(s)
1	Principles of Virology	1. Explain why viruses are studied. 2. Describe the history of virology. 3. Define viruses. 4. Discuss classification principles.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
2	Viral Replication Cycles	1. Describe stages of viral replication cycle. 2. Explain viral pathogenesis. 3. Explain one-step growth cycle.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
3	Viral Genomes	1. Explain Baltimore classification principles. 2. Describe structure and complexity of viral genomes. 3. Explain DNA virus genomes.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
4	Virus Attachment & Entry I	1. Explain general principles of viral attachment. 2. Describe virus-induced	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam

		signaling in cells. 3. Explain viral entry pathways. 4. Describe virus–cell membrane fusion.					
5	Virus Attachment & Entry II	1. Describe uncoating in enveloped viruses. 2. Describe uncoating in non-enveloped viruses. 3. Explain viral entry into the nucleus.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
6	RNA Synthesis from RNA Templates	1. Describe nature of RNA templates. 2. Explain RNA synthesis machinery. 3. Describe mechanisms of initiation. 4. Explain positive- and negative-strand RNA synthesis.	Knowledge	Discussion, direct observation	2	PowerPoint, whiteboard	Written exam
7	RNA Synthesis from DNA Templates	1. Describe features of viral RNA polymerases. 2. Explain transcription by RNA polymerase II. 3. Describe viral proteins that redirect host	Knowledge	Discussion, direct observation	2	PowerPoint, whiteboard	Written exam

		polymerase systems.					
8	DNA Virus Genome Replication	1. Describe DNA synthesis by host replication machinery. 2. Explain origin features in viral DNA replication. 3. Evaluate genome replication limitations in some viruses.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
9	Reverse Transcription & Genome Integration	1. Review retrovirus history. 2. Describe retroviral genomic features. 3. Explain genome integration steps. 4. Explain reverse transcription in hepadnaviruses.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
10	Viral Protein Synthesis I	1. Describe protein synthesis in eukaryotes. 2. Explain viral strategies for translation diversity.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
11	Viral Protein Synthesis II	1. Explain control and inhibition of translation during	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam

		infection. 2. Identify proteins involved in inhibiting viral translation in various viruses.					
12	Intracellular Transport of Viruses	1. Describe nuclear accumulation of viruses. 2. Explain accumulation at the plasma membrane. 3. Explain interactions of viral proteins with intracellular membranes. 4. Describe genome transport to viral assembly sites.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
13	Viral Assembly & Egress	1. Identify methods for studying viral assemblies in cells. 2. Explain viral protein complex formation. 3. Describe how viruses acquire envelopes.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam
14	Viral Vaccines	1. Explain origins of vaccination. 2. Describe how	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam

		vaccines work. 3. Explain vaccine production.					
15	Antiviral Drugs	1. Describe history of antiviral drugs. 2. Provide examples of antivirals and explain their mechanisms.	Knowledge	Lecture, discussion	2	PowerPoint, whiteboard	Written exam

Grading Scheme (Total: 20 points)

Assessment Type	Date	Assessment Tool	Points
Project Presentation	—	Research on a specific topic from session content	3
Final Exam	Jan 15, 2024	Written descriptive exam	15
Other	—	Q&A and group participation during sessions	2
Total	—	—	20

References

1. **Principles and Practice of Virology** — core textbook.