

DEREE COLLEGE SYLLABUS FOR: BMS 4547 Pure and Applied Virology		3/0/3
(Updated: Fall 2025)		UK LEVEL (appropriate only for validated courses): 6 UK CREDITS: 15
PREREQUISITES:	BI 1000 Introduction to Biology I BI 1101 Introduction to Biology II BI 2222 Cell Biology BI 3336 Molecular Biology BMS 3220 Microbiology and Infectious Diseases	
CATALOG DESCRIPTION:	Advanced exploration of both fundamental and practical aspects of virology. Focus is on providing a comprehensive understanding of virion morphology, genome organization, taxonomy and replication strategies. Emphasis is given on pathology, diagnostics, vaccine development, antiviral drug development.	
RATIONALE:	Students will gain an advanced understanding of virology within its pure and practical aspects. Coverage of essential and advanced concepts focusing on understanding the methods that are used in current primary and secondary research as well as medicinal, clinical and diagnostic practice. Viruses will be examined as both drivers of evolution as well as agents of mortality and morbidity highlighting their ubiquitous role. Modern approaches to diagnosis, treatment, antiviral drug development and vaccination strategies will be covered providing students with understanding of the recent advances within the field.	
LEARNING OUTCOMES:	<i>As a result of taking this course, the student should be able to:</i> 1 Demonstrate and apply knowledge of virus morphology, replication strategies, viral pathogenesis, disease, viral epidemiology and virus-host interactions, 2 Discuss general strategies for virus -control, including diagnostic and laboratory investigations, the mode of action of antiviral drugs and vaccine development 3 Evaluate techniques, applications and virological methods in research and for clinical and diagnostic purposes 4 Reflect on the evolutionary role of phages, viruses and viroids as a distinct yet integral branch in the tree of life.	
METHOD OF TEACHING AND LEARNING:	In congruence with the learning and teaching strategy of the college, the following tools are used: • Class lectures, interactive learning (class discussions, group work), video presentations, and practical problems solved in class. • Coursework portfolio, including take-home essays and problem solving. • Exercises and primary source documents are assigned as homework and are discussed and reviewed in class • Use of textbook companion site, CD-ROMs, Blackboard online interactive tools and online resources. • Office hours: students are encouraged to make full use of the office hours of their instructor, where they can ask questions, see their exam paper, and/or go over lecture/lab material. • Use of a blackboard site, where instructors post lecture notes,	

	assignment instructions, timely announcements, as well as additional resources.								
ASSESSMENT:	Summative: <table border="1"> <tr> <td>1st assessment: Midterm Examination</td><td>40%</td></tr> <tr> <td>2nd assessment: Portfolio: Essays and exercises aiming to prepare students for their first and second assessments in terms of content, context and time management</td><td>10%</td></tr> <tr> <td>Final assessment: Final examination</td><td>50%</td></tr> </table> Formative: <table border="1"> <tr> <td>Homework</td><td>0</td></tr> </table> The formative tests aim to prepare students for the examinations. The coursework portfolio examines Learning Outcomes 1 and 2. The midterm examination tests Learning Outcomes 1, 2 and 4. The final examination tests Learning Outcomes 1,2,3 and 4 and is comprehensive. <i>The final grade for this module will be determined by averaging all summative assessment grades, based on the predetermined weights for each assessment.</i>	1 st assessment: Midterm Examination	40%	2 nd assessment: Portfolio: Essays and exercises aiming to prepare students for their first and second assessments in terms of content, context and time management	10%	Final assessment: Final examination	50%	Homework	0
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2 nd assessment: Portfolio: Essays and exercises aiming to prepare students for their first and second assessments in terms of content, context and time management	10%								
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INDICATIVE READING:	REQUIRED READING: Jane Flint, Vincent R. Racaniello, Glenn F. Rall, Theodora Hatzioannou, Anna Marie Skalka, Principles of Virology, Multi-Volume, latest edition, ISBN: 978-1-683-67358-3 RECOMMENDED READING: Pellett PE, Mitra S, Holland TC. Basics of virology. Handb Clin Neurol. 2014;123:45-66. doi: 10.1016/B978-0-444-53488-0.00002-X. PMID: 25015480; PMCID: PMC7152233. Jansz N, Faulkner GJ. Endogenous retroviruses in the origins and treatment of cancer. Genome Biol. 2021 May 10;22(1):147. doi: 10.1186/s13059-021-02357-4. PMID: 33971937; PMCID: PMC8108463. Other sources, including journal articles, research papers etc. recommended by the instructor throughout the semester.								
INDICATIVE MATERIAL: (e.g. audiovisual, digital material, etc.)	REQUIRED MATERIAL: N/A RECOMMENDED MATERIAL: N/A								
COMMUNICATION REQUIREMENTS:	Verbal skills using academic/professional English								

SOFTWARE REQUIREMENTS:	MS Office and Blackboard CMS
WWW RESOURCES:	Microbiology Society (UK) https://microbiologysociety.org/ American Society for Microbiology https://asm.org/
INDICATIVE CONTENT:	1 Foundations of Virology 2 The Infectious Cycle 3 Genomes and Genetics 4 Structure 5 Molecular Virology (from genome to protein) 6. Reverse Transcription and Integration 7. Viral Translation Strategies and regulation of host translation 8. Intracellular Trafficking 9. Assembly, Release, and Maturation 10. Infections of Populations: History and Epidemiology 11. Barriers to Infection 12. Pathogenesis 13. Cellular Transformation and Oncogenesis 14. Vaccines 15. Antiviral Drugs 16. Therapeutic Viruses 17. Virus Evolution 18. The Spectrum of Host-Virus Interactions 19. Unusual Infectious Agents