

Course title	Infection and Immunity				
Course code	GEMD-302				
Course type	Required				
Level	Undergraduate				
Year / Semester	Year 3, Semester 5				
Teacher's name	George Siakallis				
ECTS	13	Teaching Periods per Week			
		Large Group Learning	Small Group Learning	Laboratories & Skills	Clinical Practice
		6	6	5	6
Course purpose and objectives	<p>The aim of the course is:</p> <ul style="list-style-type: none"> • to provide the students with an understanding of the cellular and molecular mechanisms involved in infection and immunity. • to provide the students with an understanding of different types of pathogens. • to introduce the students to the various clinical manifestations of infective illnesses. • to introduce the students to the preventative, investigative and therapeutic principles underlying the management of infection. • to develop the student's consultation skills and professional competencies in relationship to managing patients with infectious diseases. 				
Learning outcomes	<p><i>At the end of the module the student will be able to</i></p> <p><i>Knowledge</i></p> <ol style="list-style-type: none"> 1. Describe the main types of infectious agents. 2. Explain how infective agents interact with psychosocial and environmental factors in causing illness. 3. Explain what is meant by a contagious period and an incubation period, and why these may not be the same. 4. Discuss the factors which contribute to transmission of infection and how these may be mitigated, including hospital acquired infections. <ul style="list-style-type: none"> • Discuss the importance of vectors in the transmission of infective diseases. 5. Describe the common bacterial causes of human infection, relating them to their associated clinical presentations. 6. Describe how infection may be acute, chronic or acute-on-chronic. 				

7. Explain how infection can cause or exacerbate problems in different body systems – e.g. infection raising blood glucose levels and insulin requirements in Type 1 diabetic patients.
8. Explain how therapeutic strategies which aim to alleviate infection can cause or exacerbate a problem in another body system – e.g. how antibiotic suppression of other bacteria allows *Clostridium difficile* to proliferate.
9. Discuss the nature of 'good bacteria' and of probiotics, highlighting that the majority of bacteria are harmless, and some are beneficial - e.g. in enhancing immunity in the GI tract.
10. Discuss the major classes of antibacterial, antiviral, antifungal, antiprotozoal and antihelminthic their mechanism of action and their main side effects.
 - Apply this knowledge to opportunities and limitations for disease control.
11. Describe the range of organisms against which newly developed antimicrobials are effective.
 - Explain the uses and pitfalls of these agents.
12. Describe the principals of antimicrobial stewardship and infection control.
13. Recognise the common viral causes of human infection, relating them to their associated clinical presentations.
14. Discuss the main classes of antiviral agents, their pharmacology and mechanisms of action.
 - Apply this information to opportunities and limitations for disease control.
15. Explain how viruses can increase the risk of cancer.
16. Describe infections caused by endoparasites and exoparasites.
17. Summarise the range of the body's defence mechanisms against the main types of infectious agents.
18. Describe the first lines of immune defence.
 - Explain how infection develops when these are breached.
19. Describe the cellular and molecular (innate and adaptive) components of the immune system, their basic functions and how responses are mounted against common types of infection.
20. Describe the five types of antibodies, their structural differences, and their utility in the tracking the longevity of an infection (especially IgM and IgG).
21. Define primary and secondary immunodeficiency syndromes.
22. Explain the common causes of immunodeficiency, both pathological and iatrogenic, and the resulting clinical manifestations.

23. Describe the pathophysiology of fever.
24. Explain the basic principles around a strategy for the investigation of a person with a pyrexia of unknown origin (PUO) with a focus on infective causes.
25. Describe the biological basis for immunisation and for its scheduling and outline facilitators and barriers to vaccine uptake.
26. Define the term 'herd immunity' and illustrate its importance using specific examples.
27. Recognise and know how to appropriately report notifiable infectious diseases.

Skills

28. Utilise basic communication skills to gather information from a patient about infection (incl. open and closed questions, listening and facilitating).
29. Undertake basic hygiene procedures, to include hand-washing.
30. Outline the different skills bases of various multi-disciplinary team (MDT) members.
31. Discuss the importance of good communication within the MDT when managing outbreaks of infection.

Professional Competencies

32. Explain the differences between endemic, epidemic and pandemic infections.
33. Explain why of their nature, endemic infections cannot be eradicated such that the focus must be on prevention.
34. Discuss the global problem of infection in community and hospital settings.
35. Discuss the global impact of antibiotic resistance.
36. Discuss current vaccine strategies (national and international) and the major opportunities that they offer for disease control.
37. Explain how the optimal management of infections can require input from an MDT that may include an array of medical (general, specialist, sub-specialist), nursing and allied health staff.
38. Outline the specific roles of various MDT members and disease control teams, including Laboratory Technicians, Infection Control Nurses, Microbiologists, Virologists, Public Health Teams, Centres for Disease Control, etc.
39. Demonstrate a commitment to teamwork by respecting the roles of other members of the extended MDT (primary care, secondary care, social and voluntary sectors) and working with them to deliver high quality care.

	<p>40. Outline the principles of good clinical leadership, recognising that doctors may not always be the most expert member of an infection control team.</p> <p>41. Discuss why the patient has a central role in the management of his/her infection using the importance of antibiotic compliance as an example.</p> <ul style="list-style-type: none"> • Describe the role of patient education in the management of infection. <p>42. Describe the importance of considering the occupational impact of work on disease and the impact of disease on work – e.g. brucellosis amongst dairy farm workers.</p> <p>43. Outline the physical and psychological supports that might be required by people with chronic infections.</p>																																		
Prerequisites	None	Required	None																																
Course content	<ul style="list-style-type: none"> • The cellular and molecular biology of immunity • The presentation and progress of infection • Rational approaches to the prevention and diagnosis of infectious diseases • The principles underlying the management of infection with the available modalities including innovative therapeutic approaches 																																		
Teaching methodology	<p>Lectures – normally two face-to-face, two on-line p/week</p> <p>Tutorials – two case-based learning small group sessions, two expert-led class discussions/debates</p> <p>Flipped classroom activities</p> <p>Community and/or hospital visits each week, relating to the case of the week</p> <p>Student centred learning/self-study</p>																																		
Bibliography	<p>Required textbooks/reading</p> <table border="1" data-bbox="373 1503 1390 1870"> <thead> <tr> <th>Authors</th> <th>Title</th> <th>Edition</th> <th>Publisher</th> <th>Year</th> <th>ISBN</th> </tr> </thead> <tbody> <tr> <td>Gillespie and Bamford</td> <td>Medical Microbiology and Infection at a glance</td> <td>4th</td> <td>Wiley-Blackwell</td> <td>2012</td> <td>978-0-47-06-5571-9</td> </tr> <tr> <td>Delves, Martin, Burton and Roitt</td> <td>Roitt's Essential Immunology</td> <td>13th</td> <td>Wiley-Blackwell</td> <td>2017</td> <td>978-1-11-84-1577-1</td> </tr> </tbody> </table> <p>Recommended textbooks/reading</p> <table border="1" data-bbox="373 1944 1390 2116"> <thead> <tr> <th>Authors</th> <th>Title</th> <th>Edition</th> <th>Publisher</th> <th>Year</th> <th>ISBN</th> </tr> </thead> <tbody> <tr> <td>Bass, Burroughs and Carr</td> <td>Master Medicine: General and</td> <td>3rd</td> <td>Churchill Livingstone</td> <td>2009</td> <td>978-0-08-04-5129-9</td> </tr> </tbody> </table>					Authors	Title	Edition	Publisher	Year	ISBN	Gillespie and Bamford	Medical Microbiology and Infection at a glance	4th	Wiley-Blackwell	2012	978-0-47-06-5571-9	Delves, Martin, Burton and Roitt	Roitt's Essential Immunology	13th	Wiley-Blackwell	2017	978-1-11-84-1577-1	Authors	Title	Edition	Publisher	Year	ISBN	Bass, Burroughs and Carr	Master Medicine: General and	3rd	Churchill Livingstone	2009	978-0-08-04-5129-9
Authors	Title	Edition	Publisher	Year	ISBN																														
Gillespie and Bamford	Medical Microbiology and Infection at a glance	4th	Wiley-Blackwell	2012	978-0-47-06-5571-9																														
Delves, Martin, Burton and Roitt	Roitt's Essential Immunology	13th	Wiley-Blackwell	2017	978-1-11-84-1577-1																														
Authors	Title	Edition	Publisher	Year	ISBN																														
Bass, Burroughs and Carr	Master Medicine: General and	3rd	Churchill Livingstone	2009	978-0-08-04-5129-9																														

		Systematic Pathology				
	Feather, Randall and Waterhouse	Kumar and Clark's Clinical Medicine (good diagram p220)	10th	Elsevier	2020	978-0-70-20-7868-2
Assessment	The course will be assessed at the end of Semester 6 with a Summative Final Examination consisting of Single Best Answer MCQs (SBAs) and Short Answer Questions (SAQs). Clinical and consultation skills will be assessed in an OSCE.					
Language	English					