

Liverpool John Moores University

Title: INFECTION AND IMMUNITY
Status: Definitive
Code: **5011BMBMOL** (113098)
Version Start Date: 01-08-2019

Owning School/Faculty: Pharmacy & Biomolecular Sciences
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

| Team | Leader |
|-----------------|--------|
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Academic Level: FHEQ5 **Credit Value:** 24 **Total Delivered Hours:** 59.5

Total Learning Hours: 240 **Private Study:** 180.5

Delivery Options

Course typically offered: Standard Year Long

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 32 |
| Practical | 24 |
| Workshop | 2 |

Grading Basis: 40 %

Assessment Details

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|-------------------|--|---------------|---------------|
| Report | Report | Practical report | 30 | |
| Exam | Exam | Written Exam, 1.5 h duration. | 40 | 1.5 |
| Practice | Practical | Practical assessment in the laboratory | 30 | |

Aims

An introduction to the practical and theoretical concepts of microbiology and immunology.

To provide an understanding of the principles and practices involved in the laboratory diagnosis, prevention and treatment of infectious diseases in humans.

Learning Outcomes

After completing the module the student should be able to:

- 1 Review the range of microorganisms involved in human disease processes and the role of normal flora in health and disease; understand the role of antibiotics in the treatment of bacterial infections.
- 2 Understand selected serological, biochemical and molecular methods used in the identification of pathogenic organisms.
- 3 Understand cellular and humoral components of the immune response and discuss their roles.
- 4 Review selected immunological techniques and discuss their use.
- 5 Review the principles of vaccination and the role of immunity in infectious diseases.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

| | | | | |
|----------------------|---|---|---|---|
| Practical report | 2 | 4 | | |
| Exam | 1 | 2 | 3 | 5 |
| Practical assessment | 1 | 2 | | |

Outline Syllabus

Health and safety in the laboratory.

Microorganisms involved in human disease.

Clinical specimens used in the diagnosis and prevention of infectious disease together with an appreciation of normal flora contaminants.

The importance of microbial culture and microscopy procedures for the isolation and identification of suspected pathogens. Biochemical, serological and molecular methods used in identification of bacteria and viruses.

The modes of action of selected antimicrobial chemotherapeutic agents together with methods for determining their effectiveness and potential toxicity. The emergence of bacterial resistance and the value of drug resistance epidemiology.

Overview of Immunity: concepts of self and non-self, innate and adaptive immunity, immune surveillance and tolerance, specificity and diversity of immune response.

Immune cells and tissues. B and T cell receptors and the MHC.

Humoral immunity: antibody structure and function, primary and secondary responses, antigen-antibody interactions, complement, acute phase reactions.

Cellular immunity: antigen presentation, clonal expansion, concepts of immunological memory, cytokines.

Selected immunological techniques, including production and use of antibody

Vaccination: active and passive immunisation; primary and secondary responses; case studies of selected diseases.

Role of immune system in defence processes (e.g. elimination of microorganisms, tumor surveillance, induction of inflammation) and as a therapeutic tool.

Learning Activities

Lectures, videos, practicals.

Notes

Infection and immunity is a core module for Biomedical Science students, designed so they may learn and fully appreciate the importance of microorganisms and the immune system in human health and disease. The module builds upon knowledge and skills developed at level 4 in Microbiology (4017MBBMOL) and Fundamentals of Molecular Biosciences (4011BCBMOL). The content is very practically orientated in order to develop important skills that may later be appreciated in the workplace environment. All students will find it relates to other modules in the programme and that it provides a foundation for Level 6 work.

Students are encouraged to use reviews, papers and subject specific texts. there is a wide range of medical microbiology and immunology textbooks available. Students should have access to one of each.