



NURS N111F Fundamentals of Microbiology and Pharmacology

Course Outline

Term:	Autumn Term
Course coordinators:	Class A: Dr. Zoe WU (ywu@hkmu.edu.hk) Class B: Dr. Simon YAU (syau@hkmu.edu.hk) Class C: Dr. Ivy SY (isy@hkmu.edu.hk)

Introduction

NURS N111F *Fundamentals of Microbiology and Pharmacology* is a one-term, five-credit, foundation level course offered to first year students of the *Bachelor of Nursing with Honours in General Health Care* and the *Bachelor of Nursing with Honours in Mental Health Care programmes*. This course introduces the essential microbiology concepts, with an emphasis on prevention and control of different types of infections. Besides, this course also develops students' understanding about the principles of pharmacology.

Aims

The aim of this course is to equip students with fundamental theories in various areas of microbiology and pharmacology that underpin Nursing Therapeutics courses in subsequent years of study. Through this course, students can acquire essential concepts and knowledge related to microorganisms and their modes of transmission, which build the basis for scientifically-accepted infection prevention and control practices. Moreover, fundamental concepts in pharmacology are also introduced to equip students with basic concepts about the mechanisms of action of common drugs targeting different health problems.

Course intended learning outcomes (CILOs)

Upon successful completion of the course, students should be able to:

1. Describe the microbial diversity and factors influencing their growth;
2. Describe the chain of infection, and explain methods for infection prevention and control;
3. Explain the pathogenesis of infections;
4. Explain the emergence of antimicrobial resistance;
5. Describe the principles and mechanisms of drug action;
6. Explain the mechanisms of therapeutic and toxic effects of selected drugs;
7. Describe rationales of new drug design and development, and appraise recent advances in pharmacology; and
8. Describe the laws and regulations governing quality and safety of pharmaceutical products.

Assessment strategies

Continuous assessment: 50% (one test, 30%; one laboratory report, 20%)

Examination: 50% (one written examination)

Teaching Plan

Week	Topic	Lecture hour	Tutorial hour	Lab work hour
Microbiology				
1	Introduction to microbiology	4	1	3
2	Interaction between microbe and host	4		
3	Transmission of communicable diseases	4	1	--
4	Pathogens and associated diseases	4	1	--
5	Infection and immunity	4	1	--
6	Microbial genetics	4	1	--
7	Antimicrobial resistance	4		--
Pharmacology				
8	Introduction to pharmacology	4	1	--
9	Introduction to common drug categories (1)	4	1	--
10	Introduction to common drug categories (2)	4		--
11	Drug toxicity and clinical toxicology	4	1	--
12	Drug discovery, development and regulation	4	1	--
13	Pharmacology in new era	4	1	--
Total:		52	10	3

Textbooks

Katzung, B.G. & Trevor, A.J. (2021). *Basic & Clinical Pharmacology*. (15th ed.). McGraw-Hill.

Tortora, G.J., Funke, B.R., & Case, C.L. (2018). *Microbiology: An Introduction* (13th ed.). Pearson.

References

Brown, A.E. & Smith, H.R. (2017). *Benson's Microbiological Applications: Laboratory Manual in General Microbiology* (14th ed.). McGraw-Hill.

Brunton, L.L., Hilal-Dandan R. & Knollman, B.C. (2018). *Goodman and Gilman's The Pharmacological Basis of Therapeutics* (13th ed.). McGraw Hill.

Burchum, J.R. & Rosenthal, L.D. (2019). *Lehne's Pharmacology for Nursing Care* (10th ed.). Elsevier.

Cowan, M.K. & Smith, H. (2021). *Microbiology: A Systems Approach* (6th ed.). McGraw-Hill.

Engelkirk, P.G., Fader, R.C., & Duben-Engelkirk, J.L. (2019). *Burton's Microbiology for the Health Sciences*. (11th ed.). Wolters Kluwer.

Greenwood, D., Barer, M.R., Slack, R.C.B., & Irving, W. (2018). *Medical Microbiology: A Guide to Microbial Infections* (19th ed.). Churchill Livingstone/Elsevier.

McCustion, L.E., DiMaggio, K.J., Winton, M.B., Yeager, J.J. (2021). *Pharmacology: A Patient-Centered Nursing Process Approach* (10th ed.). Elsevier Saunders.

Ritter, J.M., Flower, R., Henderson, G., Loke, Y.K., MacEwan, D. & Rang, H.P. (2020). *Rang & Dale's Pharmacology* (9th ed.). Elsevier.

Shors, T. (2020). *Krasner's Microbial Challenge: A Public Health Perspective* (4th ed.). Jones & Bartlett Learning.

Vallerand, A.H. & Sanoski, C.A. (2021). *Davis's Drug Guide for Nurses* (17th ed.). F. A. Davis Co.

Recommended journals

Clinical Microbiology Reviews.

Annual Review of Pharmacology and Toxicology.