

**FOURTH YEAR  
INTAKE 2005  
(Academic Year 2008/2009)**

**UNIT CODE:** PHR 4120\*      **UNIT TITLE:** PHARMACY PRACTICE  
PROJECT III

**TYPE**  
Project

**NUMBER OF ECTS CREDITS:** 12

**LEARNING OBJECTIVES**

This unit emphasises the importance of techniques used during field work

**CONTENT**

Field work  
Collection of data and analysis

**ASSESSMENT**

<input type="checkbox"/>	Field work and Progress Report <sup>+</sup>	50%
<input type="checkbox"/>	Poster presentation	30%
<input type="checkbox"/>	Participation at project presentations	20%

**RESULT**

Percentage mark and grade

**LECTURERS**

Anthony Serracino Inglott (Co-ordinator)  
Lilian M. Azzopardi  
Claire Shoemake

Maurice Zarb Adami  
Francesca Wirth

**READING LIST**

- STUART MC. The complete guide to medical writing. 2007 London: Pharmaceutical Press.
- SMITH F. Research methods in pharmacy practice. 2002. London: Pharmaceutical Press.
- JONES DS. Pharmaceutical statistics. 2002. London: Pharmaceutical Press.
- FRANKFORT-NACHMIAS C., NACHMIAS D. ed. Research Methods in the Social Sciences. London: Edward Arnold. 1992.
- PINK, A. The Survey Kit. Thousand Oaks: Sage Publications. 1995.
- KNAPP, T.R. Quantitative Nursing Research, Thousand Oaks: Sage Publications. 1995.
- PATTON, M.Q. Qualitative evaluation and research methods. Thousand Oaks: Sage Publications. 1990.

+ To be submitted by end of first semester of fourth year

\*Pre-requisites: PHR 2018 and P HR 3115.

**UNITCODE:** PHR 4401                      **UNIT TITLE:**                      CLINICAL PHARMACY

**TYPE**

Placement, tutorials

**NUMBER OF ECTS CREDITS:** 20

**LEARNING OBJECTIVES**

A practice-oriented approach is adopted within this module to encompass the pharmacist's intervention in patient care at the patient's bedside as well as at out-patient clinics.

**CONTENT**

Students are assigned for a clinical attachment to experience application of pharmacotherapeutics in the practical scenario. Students will experience clinical factors that influence drug use and delivery of pharmaceutical care.

**ASSESSMENT**

Log book

**RESULT**

Pass or fail

**LECTURERS/DEMONSTRATORS**

Lilian M. Azzopardi (Co-ordinator)  
Marise Gauci  
John Buhagiar  
Owen Farrugia

Anthony Serracino Inglott  
Anton Spiteri  
Conrad Buttigieg Scicluna  
Marie Claire Zammit

**UNITCODE:** PHR 4402      **UNIT TITLE:** PHARMACEUTICAL ANALYSIS

**TYPE**

Placement, tutorials

**NUMBER OF ECTS CREDITS:** 20

**LEARNING OBJECTIVES**

A practice-oriented approach is adopted within this module to encompass activities of a pharmacist in the field of pharmaceutical analysis.

**CONTENT**

Students are assigned for a practical attachment to experience analytical skills within a practical scenario.

**ASSESSMENT**

Log book

**RESULT**

Pass or fail

**LECTURERS/DEMONSTRATORS**

Maurice Zarb Adami (Co-ordinator)  
John Buhagiar  
Owen Farrugia

Claire Shoemake  
Conrad Buttigieg Scicluna  
Marie Claire Zammit

**UNITCODE:** PHR 4404      **UNIT TITLE:** PHARMACY  
ADMINISTRATION

**TYPE**

Placement, tutorials

**NUMBER OF ECTS CREDITS:** 20

**LEARNING OBJECTIVES**

A practice-oriented approach is adopted within this module to encompass activities of a pharmacist in the field of pharmacy administration.

**CONTENT**

Students are assigned for a practical attachment to experience administrative skills within a practical scenario.

**ASSESSMENT**

Log book

**RESULT**

Pass or fail

**LECTURERS/DEMONSTRATORS**

Lilian M. Azzopardi (Co-ordinator)  
Maurice Zarb-Adami  
John Buhagiar  
Owen Farrugia

Anthony Serracino Inglott  
Claire Shoemake  
Conrad Buttigieg Scicluna  
Marie Claire Zammit

**UNITCODE:** PHR 4444      **UNIT TITLE:** HOSPITAL PHARMACY

**TYPE**

Placement and tutorials

**NUMBER OF ECTS CREDITS:** 20

**LEARNING OBJECTIVES**

A practice-oriented approach is adopted within this module to encompass activities of a pharmacist in the field of hospital pharmacy.

**CONTENT**

Students are assigned for a practical attachment to experience hospital pharmacy practice within a hospital scenario.

**ASSESSMENT**

Log book of practice

**RESULT**

Pass or fail

**LECTURER/DEMONSTRATORS**

Lilian M. Azzopardi (Co-ordinator)  
Maurice Zarb Adami  
Lilian Wismayer  
John Buhagiar  
Owen Farrugia

Anthony Serracino Inglott  
Marise Gauci  
Anton Spiteri  
Conrard Buttigieg Scicluna  
Marie Claire Zammit

**UNITCODE:** PHR 4445      **UNIT TITLE:** CLINICAL ANALYSIS

**TYPE**

Placement and tutorials

**NUMBER OF ECTS CREDITS:** 20

**LEARNING OBJECTIVES**

A practice-oriented approach is adopted within this module to compass activities of a pharmacist in the field of clinical analysis.

**CONTENT**

Students are assigned for a practical attachment to experience clinical analysis skills within a practical scenario.

**ASSESSMENT**

Log book of practice

**RESULT**

Pass or fail

**LECTURERS/DEMONSTRATORS**

Lilian M. Azzopardi (Co-ordinator)  
Maurice Zarb Adami  
Conrad Buttigieg Scicluna  
Marie Claire Zammit

Anthony Serracino Inglott  
John Buhagiar  
Owen Farrugia

**UNITCODE:** PHR 4446      **UNIT TITLE:** INDUSTRIAL PHARMACY

**TYPE**

Placement and tutorials

**NUMBER OF ECTS CREDITS:** 20

**LEARNING OBJECTIVES**

A practice-oriented approach is adopted within this module to compass activities of a pharmacist in the field of industrial pharmacy.

**CONTENT**

Students are assigned for a practical attachment to experience industrial pharmacy skills within a pharmaceutical industry.

**ASSESSMENT**

Log book

**RESULT**

Pass or fail

**LECTURERS/DEMONSTRATORS**

Anthony Serracino Inglott (Co-Ordinator)  
Maurice Zarb Adami  
John Buhagiar  
Owen Farrugia

Lilian M. Azzopardi  
Claire Shoemake  
Conrad Buttigieg Scicluna  
Marie Claire Zammit

**UNIT CODE:** PHR 4112\*                      **UNIT TITLE:** PHARMACY PRACTICE IV

**TYPE**

Lectures, seminars, practicals and tutorials

**NUMBER OF ECTS CREDITS:** 6

**LEARNING OBJECTIVES**

To equip students with knowledge on classes of drugs required in patient counselling  
 To reinforce amongst students an awareness that they are to become members of a prestigious profession and to develop further within them a professional attitude, a sense of responsibility and a comprehensive knowledge of the requirements for an efficient and accurate pharmaceutical service. Opportunities are given for the students to interact with patients, to assess and identify a problem and to give advice to patients.

**CONTENT**

Drugs acting on the Gastrointestinal System:  
     Control of gastric acidity and treatment of peptic ulcers  
     Agents affecting gastrointestinal water flux and motility, emesis  
     Inflammatory bowel disease, constipation and diarrhoea  
 Endocrine and Metabolic Disorders:  
     Thyroid disorders, Diabetes, Anaemia  
 Neurologic Disorders  
     Parkinsonism, Headache, Pain Management  
 Rheumatic disorders, Osteoarthritis and Gout  
 Bone disorders  
 Cancer Chemotherapy  
 Critical Care Therapeutics  
 Infectious Diseases  
 Techniques in Patient Counselling and Education  
 Recent advances in pharmacotherapy  
 Chronotherapeutics  
 Pharmacy Practice and the Healthcare System  
 Assessment of nutritional status, assessment of nutritional risks and estimating nutritional requirements  
 Nutrition support- oral, enteral and parenteral feeding  
 Special diets- vegetarianism, allergies, modified consistency meals  
 Nutrition management in coronary heart disease  
 Nutrition management in diabetes  
 Menu requirements and nutrition analysis of hospital meals  
 Participation at the yearly symposium  
 Practical experience in a community pharmacy

**ASSESSMENT**

- Part II Written Examination.  
 Questions will contain a spread of questions from the whole syllabus to assess students' knowledge.  
 A three-hour written paper:       95%  
 Section A: compulsory short questions (40 marks)  
 Section B: 4 questions to choose 3 (20 marks)  
 No marks will be allocated to partially correct answers.  
*Held at the end of the second semester after fourth year of the course.*
- Log Book:                               5%. The marks obtained from all practice sessions presented will be considered for the assessment.+

**RESULT**

Percentage mark and grade

**LECTURERS/DEMONSTRATORS**

Lilian M. Azzopardi (Co-ordinator)  
 Claire Sillato Copperstone  
 Denise Ellul

Anthony Serracino Inglott  
 Doris Baldacchino

**READING LIST**

- RANDALL MD, Neil KE. Disease management. 2004. London: Pharmaceutical Press.
- WALKER, R, EDWARDS, C. Clinical pharmacy and therapeutics. 1999. Edinburgh: Churchill Livingstone.
- GREENE, RJ, HARRIS, N. Pathology and therapeutics for pharmacists. London: Pharmaceutical Press. 2000.
- SHANNON, MT, WILSON, B, STANG, CL. Appleton & Lange's Drug Guide: Health professionals edition. 1999. Stamford, Connecticut: Appleton & Lange.
- CIPOLLE, RJ, STRAND, LM, MORLEY PC. Pharmaceutical care practice. 1998. USA: McGraw-Hill.
- FERGUSON N. Osteoporosis in focus. 2004. London: Pharmaceutical Press.
- PATEL A. Diabetes in focus. 2003. London: Pharmaceutical Press
- ELLIOTT R. Critical care therapeutics. 1999. London: Pharmaceutical Press.
- REDFERN P. Chronotherapeutics. 2003. London: Pharmaceutical Press
- AZZOPARDI, L. Validation instruments for community pharmacy: Pharmaceutical care for the third millennium. 2000. Birminghamton, USA: Pharmaceutical Products Press.
- BROWN, TR. ed. Handbook of institutional pharmacy practice. 1992. Bethesda: ASHP.
- DIPIRO, J.T., TALBERT, R.L., HAYES, P.E., YEE, G.C., MATZKE, G.R., POSEY, L.M. Pharmacotherapy: a pathophysiologic approach. 2002, Connecticut: Appleton and Lange.
- HERFINDAL E.T. , GOURLEY,D.R., HART, L.L. Clinical pharmacy and therapeutics. 1992, Baltimore: Williams & Wilkins.
- SPEIGHT, TM, HOLFORD, NHG ed. Avery's drug treatment. 1997. New Zealand: Adis Int.
- PANTON, R, CHAPMAN, S. Medicines management. 1998. London: BMJ books & Pharmaceutical Press.
- McKay, AB, HEPLER, CD, KNAPP, DA. How to evaluate progressive pharmaceutical services. 1987. Bethesda: ASHP.
- LONGE, RL, CALVERT, JC., YOUNG, YL. Physical assessment: a guide for evaluating drug therapy. 1994. Vancouver: Applied Therapeutics Inc.
- YOUNG, LY. KODA-KIMBLE, MA. Handbook of applied therapeutics. 1996. Vancouver: Applied Therapeutics Inc.
- DODDS, L. ed. Drugs in use. 1996. London. The Pharmaceutical Press.
- HOPE RA, LONGMORE JM. Oxford handbook of clinical medicine. Oxford: Oxford medical Publications.
- MORGAN, M, CALNAN, M, MANNING, N. Sociological approaches to health and medicine. 1993. London & New York: Routledge

+ Refer to *Guidelines for Community Pharmacy Practice*

\* *Pre-requisites: PHR 1101, PHR 2103 and PHR 3107.*

**UNIT CODE:** PHR 4308\*      **UNIT TITLE:** PHARMACEUTICS IV

**TYPE**

Lectures and practicals

**NUMBER OF ECTS CREDITS:** 6

**LEARNING OBJECTIVES**

To expose the student to the particular requirements for the treatment of patients in specialised areas, and familiarise them with pharmaceutical procedures which will enable them to function effectively as members of the multidisciplinary health team.

To present a general outlook to Pharmaceutical Biotechnology, the importance of which in pharmaceuticals is rapidly increasing, given the current trend of utilizing endogenous effectors rather than compounds of xenobiotic origin as pharmacological agents.

To expose the student to the particular requirements of patients in specialised areas, and familiarise them with the pharmaceutical procedures which will enable them to function effectively as members of a multidisciplinary health team

To present a general outlook to Pharmaceutical Biotechnology, the importance of which in pharmaceuticals is rapidly progressing, given the current trend of utilising endogenous effectors rather than compounds of xenobiotic origin as pharmacological agents

**CONTENT****Specialised dosage forms**

Radiation medicine, radiology and other aspects of diagnostic imagery.

Consideration of radiological techniques with emphasis on radiopharmaceuticals.

Chemotherapy and treatment of neoplastic disease.

Overview of materials used in the treatment of neoplasms and the pharmaceutical manipulations involved.

Anaesthesia and Resuscitation

Pharmaceutical aspects of local and general anaesthetics and their use in medicine.

**Pharmaceutical Biotechnology**

Definitions, biological response modifiers, examples, classification.

Monoclonal antibodies, Recombinant DNA technology, fermentation and cell culture,

formulation of biotechnology products, in particular stability issues of protein pharmaceuticals.

Analytical techniques used in biotechnology

**Further aspects of antimicrobial therapy**

Cephalosporins, Glycopeptides and lipoglycopeptides: vancomycin, teicoplanin

Fluoroquinolones, First line anti-tuberculous agents, Penicillins, Carbapenems and the

monobactams, Miscellaneous compounds, Anti-fungal agents, Anti-HIV agents, Other anti-viral agents

**ASSESSMENT**

- |                          |  |      |
|--------------------------|--|------|
| <input type="checkbox"/> | Written examination of 3 hours divided into 3 sections | 90 % |
| <input type="checkbox"/> | Practicals:  | 10%  |

**RESULT**

Percentage mark and grade

**LECTURERS/DEMONSTRATORS**

Maurice Zarb Adami (Co-ordinator)

Edwina V Brejza

Paul Caruana

Marie Claire Zammit

Paul Cuschieri

Clarissa Captur

**READING LIST**

- MARTINDALE, W. The Extra Pharmacopoeia. 1996. Pharmaceutical Press: UK (31st edition). ISBN 0853693420.
- AULTON, M. Pharmaceuticals: The Science of Dosage Form Design. 2001. Churchill Livingstone. ISBN 0443055173.
- COLLETT, D., AULTON, M. Pharmaceutical Practice. 1998. Churchill Livingstone. ISBN 044305729X.
- GENNARO, A. Remington: The Science and Practice of Pharmacy. 1997. Mack Publishing Company. (18<sup>th</sup> edition). ISBN 0912734051.
- ANSEL, H., ALLEN, L., POPOVICH, N. Pharmaceutical Dosage Forms and Drug Delivery Systems. 1999. Williams & Wilkins. (7<sup>th</sup> edition). ISBN 0683305727
- KLEGERMAN, M., GROVES, M. Pharmaceutical Biotechnology: Fundamentals and Essentials. 1992. Interpharm Press, Inc. ISBN 0935184376.
- Medical Microbiology by David Greenwood et al, 17<sup>th</sup> Ed, 2007 ISBN 0443102090, Churchill Livingstone
- Goodman and Gillman's The Pharmacological Basis of Therapeutics Laurence L. Brunton et al, 11<sup>th</sup> Ed, 2006 ISBN 0071422803

\* *Pre-requisites: PHR 1301, PHR 2304, PHR 3306, PHR 3307, PAT 1322, PAT 2322 and PAT 3323)*

**UNIT NO:** PHR 4211\*      **UNIT TITLE**      TOTAL QUALITY SYSTEMS II

**TYPE**

Lectures

**NUMBER OF ECTS:** 2**LEARNING OBJECTIVES**

To reinforce the principles, aims and objectives introduced in PHR 3030 - Total Quality Systems I.

**CONTENT**

Goods Inwards Inspection - Sample Inspection, Probability. Acceptance Sampling - Sampling Risks, Construction of Operating Characteristics, Properties of Operating Characteristic, Quality Indices, Specifying an Operating Characteristic. Material Inspection - Selecting the Most Economical A.Q.L., Estimating the Cost of Incoming Inspection, Value of Material to be Inspected, Outcome of Undetected Defective Parts, Minimum Overall Cost (Calculation), Guidelines for taking Samples from a Batch. Jobs Instructions, Equipment and Inspection - Job Instructions, Assistance from Method Study, The Need for Right Equipment, Types of Inspection, Role and Responsibility of Inspectors, Automated Inspection.

**ASSESSMENT**

Written Test held at the end of the second semester.

**LECTURERS**

Claire Shoemake (Co-ordinator)  
Stephen Ferrito

\* *Pre-requisite: PHR 3030.*

**UNIT NO:** PHR 4311\*      **UNIT TITLE:** MEDICINAL CHEMISTRY III

**TYPE**

Lectures and seminars

**NUMBER OF ECTS:** 4

**LEARNING OBJECTIVES**

To reinforce, extend and integrate the knowledge and understanding of the underlying concepts principles and methods of drug design introduced in PHR2026 Medicinal Chemistry I and PHR 3205 Pharmaceutical Analysis and Medicinal Chemistry II

**CONTENT**

The Discovery, Design and Development, including Structure-Activity Relationships (SAR) and where relevant, the pro-drug approach as an integral part of the drug design process, of the following:

Drugs used in musculoskeletal and joint disease, including non-steroidal anti-inflammatory drugs (NSAIDS), disease modifying anti-rheumatic drugs (DMARDS), selective inhibitors of cyclo-oxygenase -2 (Cox -2 inhibitors).

Opioid Analgesics.

Drugs used in diabetes, including insulins and antidiabetic agents.

Drugs used in Parkinsonism and related disorders.

Phenytoin and other antiepileptics.

Other drug classes e.g., catecholamines, anti-virals .

Steroid biosynthesis, SAR, stereochemical considerations and nomenclature.

The development of drugs based on structural modifications to endogenous peptides: DNA recombinant drugs, e.g., human insulin, human growth hormone.

An overview of anti cancer drugs with special reference to the structural modalities that make them effective at their particular targets.

Video seminars on pain, NSAIDS toxicity and NSAID pro-drug, human growth hormone.

**ASSESSMENT**

Exam of 3hours held at the end of the second semester.

**RESULT**

Percentage mark and grade

**LECTURERS**

Claire Shoemake (Co-ordinator)

Mary-Ann Sant Fournier

George Peplow

*\*Pre-requisites: PHR 1026, PHR 2026, PHR 3205 and CHE 3141.*

**UNIT CODE:** PHR 4110                      **UNIT TITLE**                      THE PHARMACIST IN SOCIETY

**TYPE**

Lectures, seminars and tutorials

**NUMBER OF ECTS CREDITS:** 2

**LEARNING OBJECTIVES**

To familiarize the student with the laws and regulations relating to pharmacy in Malta  
 To become aware of the ethical dimension of the various activities in the area of pharmacy practice.  
 To provide a sound understanding of the principles underlying European and Maltese legislation relating to medicines regulation  
 To make students aware of the importance of regulation and its implications  
 To understand issues relating to the market authorisation of medicinal products and their post market surveillance  
 To understand how pharmacies, distributors and manufacturers of medicinal products are inspected

**CONTENT**

Pharmacy laws: Department of Health Constitution Ordinance, Medical and Kindred Professions Ordinance  
 Duties and obligations  
 Other general rules: General duties and obligations (The Medical and Kindred Professions Ordinance: part IV), Duty to the public, General obligations, Specific duties, Other general duties, Registers to be kept by managing apothecary, Stocks of medicine, Security of medicines  
 Dispensing of medicines: General disposition: prescription writing, labelling;  
     Specific provisions as regards poisons and narcotics: dispensing (The Dangerous Drugs Ordinance, The Medical and Kindred Professions Ordinance); Restricted drugs,  
 Summarized rules for the control of dangerous drugs  
 Ethics, Law and the Pharmacy Profession  
 Pharmacist-patient relationships  
 Inter and intra-professional relationships  
 Ethics in research  
 Ethics and the pharmaceutical industry  
 Introduction to pharmaceutical regulatory affairs  
 An overview of global issues, different approaches to regulation, first and second wave markets  
 The European Union and free movement of goods: liberalisation of trade versus restriction and control  
 Medicines regulation:-placing a medicinal product on the market.  
 Good Manufacturing Practice (GMP), Good Distribution Practice (GDP) and Good Clinical Practice (GCP)  
 The rational use of medicinal products in terms of a regulatory framework  
 Pharmacovigilance and post marketing surveillance  
 National issues versus harmonization: current initiatives and developments in the regulatory field

**ASSESSMENT**

Written test of 2 hours held at the end of the second semester.

**RESULT**

Percentage mark and grade

**LECTURERS**

Lilian M. Azzopardi (Co-ordinator)  
 Maryanne Ciappara  
 Lilian Wismayer

Anthony Serracino-Inglott  
 Sandra Mifsud Bonnici

**READING LIST**

- Laws of Malta for Pharmacy
- EU Directive 2001/83/EC (<http://europa.eu>)
- Medicines Act of 2003  
(<http://www.gov.mt/frame.asp?l=1&url=http://justice.gov> » .mt/)

**UNIT CODE:** CPH 4020\*      **UNIT TITLE:** PHARMACOLOGY G

**TYPE**

Lectures, seminars and practicals

**NUMBER OF ECTS CREDITS:** 8

**LEARNING OBJECTIVES**

- I. To review the pharmacology of drugs used in anaesthesia and analgesia,
- II. To expose the students to the various neurophysiological processes involved in addiction, depression and anxiolysis. To discuss the latest developments on the various pharmacological classes used to treat and control these processes including drugs of abuse, antidepressants, neuroleptics and sedative-hypnotics
- III. Clinical concepts in the application of PK/PD in optimising regimens for the individual patient
- IV. Computer aided learning sessions (PCAL) and problem based learning interactive sessions for the clinical applications of basic pharmacological principles

This study unit will allow the students to provide a framework for the evaluation and interpretation of reports and medical literature, and the application of these principles to the selection of effective drug therapy, with the translation of pharmacological effect into an appropriate therapeutic effect. This unit will also provide the necessary tools, using evidence based medicine and problem based learning, for the students to correctly analyse the appropriate applications of any novel drugs, as they are introduced in clinical practice.

**CONTENT**

Drugs of abuse and addiction; drug administration, absorption and metabolism; tolerance, withdrawal and dependence; behavioural effects of psychoactive drugs

**Drug action:** CNS depressants, stimulants, tricyclic antidepressants, hallucinogens, narcotics, volatile solvents, cannabis derivatives, designer drugs

**Animal research:** reward pathway; treatment strategies

Affective disorders; depression and bipolar disorders

Monoamine hypothesis of depression; animal models of depression

Antidepressant drugs: MAOIs, TCAs, SSRIs, novel drugs

Other therapies: ECT, lithium

Neuroleptics and schizophrenia

Sedative hypnotics and anxiolytic drugs

Barbiturates: mode of action, abuse, toxicity, tolerance and dependence

Benzodiazepines: structure, mode of action, receptors clinical use

Serotonergic drugs: 5HT receptor ligands

General anaesthetics: mode of action, classification, pharmacokinetics and side effects

Inhaled and injectable general anaesthetics

Local anaesthetics: mode of action at cellular level, receptor modulation, classification, pharmacokinetics and side effects

Opioid analgesics: classification, pharmacokinetics, side effects, tolerance

Interpatient variation in clinical pharmacokinetic and population kinetics

Therapeutic drug monitoring and computer software in clinical pharmacokinetics

Stereoselectivity in pharmacokinetics

PK/PD in clinical applications and in drug development and variable drugs

PCAL Computer added packages:

Recombinant DNA Technology in clinical drug development

Clinical application of choice of analgesics (NSAIDs, opioids, non opioids)

Clinical applications of drugs used in chronic respiratory and neurological disorders

Analytical pharmacology and the interpretation of chromatographic data in clinical setting

Clinical applications of drugs used in cardiovascular disorders and hypertension

Problem based learning in clinical gastropharmacology, oncology and endocrine therapy

**ASSESSMENT**

Written assignments and final integrated and synoptic examination of 3 hours held at the end of the fourth year.

**RESULT**

Percentage mark and grade

**LECTURERS**

Roger Ellul Micallef  
Frederick Fenech  
Charles Scerri  
Mariella Zammit

Janet Mifsud  
Anthony Fenech  
Doriette Soler

**READING LIST**

- BRODY, LARNER, MINNEMAN. Human Pharmacology - Molecular to Clinical.
- MOSBY, HARDMAN, LIMBIRD, MOLINOFF, RUDDEN and GILMAN (Eds). Goodman and Gilman's The Pharmacological Basis of Therapeutics, Pergamon Press.
- LAURENCE AND BENNETT. Clinical Pharmacology. Churchill Livingstone
- RANG, DALE AND RITTER. Pharmacology. Churchill Livingstone.
- ROWLAND AND TOZER. Clinical Pharmacokinetics: concepts and applications. Lippincott, Williams & Wilkins.
- SHARGEL AND YU. Applied Biopharmaceutics. McGraw-Hill.

\* *Pre-requisites: PHR 2010, PHR 2011, PHR 3010 and PHR 3011.*