

# CHEM 3014

## PHARMACOLOGICAL CHEMISTRY

**Credit Points** 10

**Legacy Code** 300920

**Coordinator** Krishant Deo (<https://directory.westernsydney.edu.au/search/name/Krishant Deo/>)

**Description** This subject is aimed at undergraduates with grounding in chemistry and biochemistry who have an interest in a career related to medicinal chemistry. Because it concerns the manner in which foreign molecules can interact with the body's mechanisms it is of direct relevance not only to the pharmaceutical industry but also to the food, agricultural, cosmetic (etc) industries. It conveys the fascination of designing chemical structures for particular uses within biological systems and which overlap the disciplines of chemistry, biochemistry, cell biology and pharmacology. Emphasis is placed upon design of the chemical structure itself rather than an investigation of the specific chemical structure of its site of action in the body. This is reflected in the laboratory work which traces the historical development of drug design, essentially through a process of a series of inorganic syntheses, relevant to a range of common drugs.

**School** Science

**Discipline** Pharmacology

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 3 subject

**Equivalent Subjects** LGYA 5935 - Pharmacological Chemistry

**Assumed Knowledge**

This subject is aimed at undergraduates with a grounding in chemistry and biochemistry.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. Obtain an understanding of the classification of drugs by chemical structure, by pharmacological effect, by target, and by site of action
2. Identify the type of physicochemical and chemical forces that govern the interaction of a drug with its target
3. Obtain an understanding of the stereochemical and conformational requirements of drug-target interactions
4. Obtain an appreciation of the design of drug analogues based upon knowledge of targets and drug structure using quantitative structure-activity relationships (QSAR) methodologies
5. Relate modern methods used to synthesise, purify and analyse drugs in the drug design process and demonstrate this by undertaking experiments which explore structure and biological response
6. Synthesise, characterise, and measure the biological activity of a compound
7. Research and present lecture and written report on an assigned major group of drugs
8. Record the results of and the outcomes of their laboratory investigations demonstrating awareness of the conventions of scientific writing and graphical presentations to produce a formatted manuscript

## Subject Content

1. Introduction to Pharmacological chemistry laboratory to patient
2. Peptide and Protein Structure
3. Nucleic acids
4. An Overview of the Major Drug Classes
5. Enzymes
6. Drug Action at Receptors
7. Introduction to Structure-Activity Relationships
8. Quantitative Structure-Activity Relationships (QSAR)
9. Student topic seminars on major group(s) of drugs: that may include Non Steroidal Anti-Inflammatory Agents, Steroidal Anti-Inflammatory Agents, Adrenocortical Steroids, Local Anaesthetics, General Anaesthetics, Androgens/Anabolic Steroids, Estrogens and Progestins, Cardiovascular Vasodilators, Hypoglycemic Agents, Anti-Depressants, Narcotic Analgesics, Hypnotics/Minor Tranquillizers, Antihistamines, Prostaglandins, Antimicrobial agents such as Penicillin, Tetracycline and Streptomycin, Anticoagulants, Antimalarial Agents, Anticancer Drugs, Antiviral agents, Radio Therapy

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Report		30	N	Individual	N
Report	15 pages, in Times New Roman font, 12 point and 1.5 spaced (including figures and references)	45	N	Individual	N
Final Exam	over weekend	25	N	Individual	N

## Prescribed Texts

- Benjamin, B 2015, Basic principles of drug discovery and development, Academic Press, London. <https://westsydney-primo.hosted.exlibrisgroup.com/permalink/f/1vt0uuc/UWS-ALMA51165977780001571>