Pharmacology I; Code: 421/1

A- Basic Information

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|---|---|
| **Programme(s) on which the course is given:** | Bachelor of Pharmacy 421/1 |
| **Department responsible for offering the course:** | Department of Pharmacology and Toxicology |
| **Department responsible for teaching the course:** | Department of Pharmacology and Toxicology |
| **Academic year:** | Third year-First Semester |
| **Course title and code:** | Pharmacology I; Code: 421/1 |
| **Contact hours (credit hours):** | Lecture: 2 ,Practical: 3 , Total: 5 |
| **Course Coordinator:** | Dr. Mai Tolba |

B- Professional Information

The course aim and intended learning outcomes are based on that mentioned in the programme specifications, with more course-related specific details.

**1 - Overall Aims of Course**

Upon successful completion of this course, the students should be able to mention accurately the actions and uses of a number of pharmacologically active drug classes and to explain efficiently the mechanisms by which different members of each class act on their target receptors. They should also be able to discuss professionally pharmacokinetics and adverse effects of individual drugs.

**2 -Intended Learning Outcomes of Course (ILOs)**

a- Knowledge and Understanding:

The students should be able to:

a1- define the basis of drug nomenclature, pharmacodynamics (drug-receptor interactions) and pharmacokinetics (absorption, distribution, metabolism and excretion).

a2- mention the pharmacological actions and uses of drugs acting on the autonomic nervous system and cardiovascular system.

a3- explain the mechanisms of action and side effects of previously mentioned drug classes.

b-Intellectual Skills:

The students should be able to:

b1 - evaluate different adverse drug reactions.

b2- criticize different treatment modalities in order to provide optimum drug therapy for patients.

c- Professional and Practical Skills:

The students should be able to:

c1- solve health care problems with a multidisciplinary and integrative approach.

c2- design variable in vitro pharmacological experiments on different drug classes.

c3- handle laboratory animals in a correct and safe way to obtain optimum results without harmful effects on animals.

d- General and Transferable Skills:

The students should be able to:

d1- write structural reports or essay according to the standard scientific guidelines and present reports in group meetings.

d2- work coherently and successfully as a part of a team.

d3- plan and implement efficient and effective modes of working.

**3 -Course Contents**

| Topics | lectures | Contact hours | Teaching staff member |
|---|---|---|---|
| **Principles of drug action:** | | | |
| Definition and Nomenclature of Drugs, Pharmacodynamics (Mechanism of Drug action, Safety, Adverse effects) | 1 | 2 | Assoc. Prof. Dr. Mai Tolba |
| Pharmacokinetics (Absorption, Distribution, Metabolism, Excretion) | 1 | 2 | |
| **Autonomic Nervous System:** | | | |
| Physiology of sympathetic and parasympathetic systems, chemical signaling between cells | 2 | 4 | Assoc. Prof. Dr. Mai Tolba |
| Cholinergic agonists | 1 | 2 | Dr. Esther Tharwat |
| Cholinergic antagonists | 1 | 2 | |
| Adrenergic agonists | 1 | 2 | |
| Adrenergic antagonists | 1 | 2 | |
| **Cardiovascular system:** | | | |
| Introduction to CVS | 2 | 4 | Dr. Haidy Effat |
| Antihypertensive Drugs | 1 | 2 | |
| Antianginal Drugs | 1 | 2 | |
| Antiarrhythmic Drugs | 1 | 2 | Prof. Ebtehal El-Demerdash |
| Drug treatment of Congestive Heart Failure | 1 | 2 | |
| **Total** | **14** | **28** | |

**Practical Topics**

| Practical Topics | Practical sessions | Contact Hours |
|---|---|---|
| Introduction.<br>Isolated organ preparations.<br>General instructions.<br>Pharmacology of autonomic nervous system | 1 | 3 |
| Isolated rabbit intestine<br>Setting up the preparation<br>Dose response curves | 1 | 3 |
| Dose – Response Curve of acetylcholine on isolated rabbit ileum. | 1 | 3 |
| Dose – Response Curve of acetylcholine on isolated frog rectus abdominis. | 1 | 3 |
| Demonstration of the site of action of stimulant drugs. | 1 | 3 |

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|---|---|---|
| Demonstration of the site of action of depressant drugs. | 1 | 3 |
| Demonstration of the site of action of unknown drugs. (Revision) | 1 | 3 |
| Introduction: experimental animals used in pharmacological research, routes of drugs administration.<br>- C.N.S stimulants. (Cortical and spinal) | 1 | 3 |
| Central nervous system Depressants:<br>- Hypnotics.<br>-Tranquilizers. | 1 | 3 |
| Skeletal muscle relaxants. | 1 | 3 |
| Autonomic nervous system action drugs.<br>- Parasympathomimetics.<br>- Ganglionic stimulants. | 1 | 3 |
| Scheme for the identification of drugs acting on the nervous system. (Revision) | 1 | 3 |
| **Total** | **12** | **36** |

## 4 - Teaching and Learning Methods

- Lectures (Tools: board, overhead projector, data show)
- Tutorials

- **Student Assessment Methods**
- Periodic exam to assess knowledge and understanding detailed in item 2a
- Practical exam to assessprofessional and practical skills detailed in item 2c
- Final written exam to assess knowledge and understanding detailed in item 2a and intellectual detailed in items 2b
- Oral exam to assess knowledge and understanding detailed in item 2a, intellectual detailed in items 2b and transferable skills detailed in items 2d

**Assessment Schedule**

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|---|---|---|
| Assessment 1 | Periodic exams | Week 6 |
| Assessment 2 | Practical exam | Week 13 |
| Assessment 3 | Oral exam | Week 15 |
| Assessment 4 | Final written exam | Week 15 |

**Weighting of Assessments**

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|---|---|
| Final-term Examination | 60.00 % |
| Practical Examination | 20.00 % |
| Oral Examination | 10.00 % |
| Periodic examination | 10.00 % |
| **Total** | **100 %** |

## 5 - List of References

**1- Course notes**

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**2- Essential books (textbooks)**

Lippincott's Illustrated Reviews , Pharmacology, 6th edition, 2014.

**3- Recommended books**

Pharmacology. Rang & Dale's,8th edition, 2015

Basic & Clinical Pharmacology. Katzung, Master & Trevor. 13th edition, 2014

**4- Periodicals, Web sites, etc**

Journal of Pharmacology and Experimental Therapeutics

Journal of biochemical pharmacology

European journal of Pharmacology

www.ncbi.nlm.nih.gov

## 6 - Facilities Required for Teaching and Learning

Equipments, Study halls, Laboratories, Animal house, Glassware, Books, Audiovisual tools

***Course Coordinator:*** Dr.Mai Tolba
***Head of Department:***Prof. Ebtehal El-Demerdash

**Date: September 2018**

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|---|---|
| **Course name** | Pharmacology I |
| **code** | 421/1 |

# Course matrix

| **Course content** | a1 | a2 | a3 | b1 | b2 | c1 | c2 | c3 | d1 | d2 | d3 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Theoretical part** | | | | | | | | | | | |
| Definition and Nomenclature of Drugs, Pharmacodynamics | ■ | | ■ | | | | | | | | |
| Pharmacokinetics | ■ | | | | | | | | | | |
| Physiology of sympathetic and parasympathetic systems, chemical signaling between cells | | | ■ | | | | | | | | |
| Cholinergic agonists | | ■ | ■ | ■ | ■ | | | | | | |
| Cholinergic antagonists | | ■ | ■ | ■ | ■ | | | | | | |
| Adrenergic agonists | | ■ | ■ | ■ | ■ | | | | | | |
| Adrenergic antagonists | | ■ | ■ | ■ | ■ | | | | | | |
| Introduction to CVS | | | ■ | | | | | | | | |
| Antihypertensive Drugs | | ■ | ■ | ■ | ■ | | | | | | |
| Antianginal Drugs | | ■ | ■ | ■ | ■ | | | | | | |
| Antiarrhythmic Drugs | | ■ | ■ | ■ | ■ | | | | | | |
| Drug treatment of Congestive Heart Failure | | ■ | ■ | ■ | ■ | | | | | | |
| **Practical part** | | | | | | | | | | | |
| General instructions. Pharmacology of autonomic nervous system | | | | | | ■ | | | ■ | ■ | ■ |
| Isolated rabbit intestine Setting up the preparation Dose response curves | | | | | | ■ | ■ | | ■ | ■ | ■ |
| Dose – Response Curve of acetylcholine on isolated rabbit ileum. | | | | | | ■ | ■ | | ■ | ■ | ■ |
| Dose – Response Curve of acetylcholine on isolated frog rectus abdominis. | | | | | | ■ | ■ | | ■ | ■ | ■ |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| Demonstration of the site of action of stimulant drugs. | | | | | | | | | | | |
| Demonstration of the site of action of depressant drugs. | | | | | | | | | | | |
| Demonstration of the site of action of unknown drugs. (Revision) | | | | | | | | | | | |
| Introduction: experimental animals used in pharmacological research, routes of drugs administration.<br>- C.N.S stimulants. (Cortical and spinal) | | | | | | | | | | | |
| Central nervous system Depressants:<br>- Hypnotics.<br>-Tranquilizers. | | | | | | | | | | | |
| Skeletal muscle relaxants. | | | | | | | | | | | |
| Autonomic nervous system action drugs.<br>- Parasympathomimetics.<br>- Ganglionic stimulants. | | | | | | | | | | | |
| Scheme for the identification of drugs acting on the nervous system. (Revision) | | | | | | | | | | | |

**تم الاعتماد فى (محضر مجلس قسم الأدوية و السموم)**
**جلسة رقم (1 ) بتاريخ 10 -9-2019**