|  |  |  |
| --- | --- | --- |
| **Course Title:** | |  | | --- | | **Pharmacology-1** | |
| **Course Code:** | **342 PHCL-3** |
| **Program:** | |  | | --- | | **Pharmaceutical Sciences** | |
| **Department:** | **Pharmacology** |
| **College:** | **Pharmacy** |
| **Institution:** | **Najran University** |

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# A. Course Identification

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1. Credit hours:** | | | | **3 (2+1)** | | | | | | | | | | | | |
| **2. Course type** | | | | | | | | | | | | | | | | |
| **a.** | University | |  | | College | | | 🗸 | Department | | | |  | Others |  |  |
| **b.** | | Required | | | | 🗸 | Elective | | |  |  | | | | | |
| **3. Level/year at which this course is offered:** | | | | | | | | | | | | **6th level/third year** | | | | |
| **4. Pre-requisites for this course** (if any)**:**  **Physiology-2 (283 PHYS-2)** | | | | | | | | | | | | | | | | |
| **5. Co-requisites for this course** (if any)**:** | | | | | | | | | | | | | | | | |
| **None** | | | | | | | | | | | | | | | | |

## 6. Mode of Instruction (mark all that apply)

| **No** | **Mode of Instruction** | **Contact Hours** | **Percentage** |
| --- | --- | --- | --- |
| **1** | **Traditional classroom** | 60 | 100 % |
| **2** | **Blended** | -- | -- |
| **3** | **E-learning** | -- | -- |
| **4** | **Correspondence** | -- | -- |
| **5** | **Other** | -- | -- |

**7. Actual Learning Hours** (based on academic semester)

|  |  |  |
| --- | --- | --- |
| **No** | **Activity** | **Learning Hours** |
| **Contact Hours** | | |
| **1** | **Lecture** | 30 |
| **2** | **Practical classes** | 30 |
| **3** | **Tutorial** | 0 |
| **4** | **Others** (specify) | 0 |
|  | **Total** | 60 |
| **Other Learning Hours\*** | | |
| **1** | **Study** | 45 |
| **2** | **Assignments/Presentation** | 10 |
| **3** | **Library/Self-directed learning** | 5 |
| **4** | **Projects/Research Essays/Theses** | 0 |
| **5** | **Others (**specify**)** | 0 |
|  | **Total** | 120 |

**\*** The length of time that a learner takes to complete learning activities that lead to achievement of course learning outcomes, such as study time, homework assignments, projects, preparing presentations, library times

# B. Course Objectives and Learning Outcomes

|  |
| --- |
| 1. Course Description This course provides students with the basic concepts of general pharmacology, including basics principles of pharmacokinetics, and pharmacodynamics In addition; it involves studying the pharmacological bases of autonomic drugs including parasympathomimetics, parasympatholytics, sympathomimetics and sympatholytics. Moreover, the course involves studying the pharmacological basis of diuretics, drugs affecting cardiovascular system as well as the drugs used in disorders related to blood. In the practical part of course includes: basics of experimental pharmacology, prescription writing and effects of autonomic and cardiovascular drugs on blood pressure and on isolated tissues/organ. |
|  |
| 2. Course Main Objective |
| Students after completion this course will:   * Aware by the general principles of pharmacokinetics and fate of drug in the body. * Acquainted with the general principles of Pharmacodynamics and drug mechanisms of action. * Conversed with the classification, mechanism of action, therapeutic uses, adverse effects, drug interactions, and contraindications of the drugs acting on autonomic nervous system, cardiovascular system and blood |

## 

## 3. Course Learning Outcomes

| **CLOs** | | **Aligned****PLOs** |
| --- | --- | --- |
| 1 | **Knowledge:** |  |
| 1.1 | Students after completion this course will be able to:  Outline the basic principles of Pharmacology, pharmacokinetics and pharmacodynamics, the various routes of drug administration, drug interactions and adverse drug reactions. | K4 |
| 1.2 | Outline the basics functioning of autonomic nervous system, pharmacology of drugs effecting its functioning and also pharmacology of drugs acting on kidney. | K4 |
| 1.3 | Describe the pharmacological basis, mechanism(s) of action and therapeutic uses of drugs acting on the cardiovascular system and blood. | K4 |
| **2** | **Skills:** |  |
| 2.1 | Summarize the basics principle/techniques related to experimental and general pharmacology; handling of prescription and various medical samples related to the course: use of video, computer model, experiment models and drug samples. | S1 |
| 2.2 | Acquaintance basics of Dose response curve; and demonstration of possible responses of drugs on various biological tissues like smooth muscle, heart, blood pressure and on eye: using stipulated software. | S1 |
| **3** | **Competence:** |  |
| 3.1 | Work independently, professionally, and communicate clearly by verbal and written means | C2 |
| 3.2 | Professional use of computer in preparing reports, assignments and oral presentations and to be skilled in the use of electronic library and internet resources for self-directed learning. | C3 |

# C. Course Content

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
|  | **I. Theoretical Section:** |  |
| 1 | Introduction to pharmacology | 1 |
| 2 | Basic principles of Pharmacokinetics | 5 |
| 3 | Basic principles Pharmacodynamics | 5 |
| 4 | Introduction to autonomic nervous system | 1 |
| 5 | Cholinomimetics and cholinesterase inhibitor | 3 |
| 6 | Muscarinic receptors blocking drugs | 1 |
| 7 | Adrenoceptor activating and other sympathomimetics | 2 |
| 8 | Adrenoceptor blocking drugs | 1 |
| 9 | Diuretics | 2 |
| 10 | Antihypertensive drugs | 1 |
| 11 | Treatment of heart failure | 2 |
| 12 | Treatment of angina pectoris | 1 |
| 13 | Agents used in cardiac arrhythmias | 2 |
| 14 | Agents used in hyperlipidemia | 1 |
| 15 | Drugs used in disorder of coagulation | 1 |
| 16 | Agents used in anemias; hematopoietic growth factors | 1 |
| **Total** | | 30 |

|  |  |  |
| --- | --- | --- |
| **No** | **List of Topics** | **Contact Hours** |
|  | **II. Practical Section:** |  |
| 1 | Introduction to Experimental Pharmacology | 2 |
| 2 | Drug dosage forms | 2 |
| 3 | Channels of drug administration | 2 |
| 4 | Drug metabolism: The liver microsomal enzyme system | 2 |
| 5 | Pharmacokinetic models of drug metabolism | 2 |
| 6 | Pharmacodynamic model: drug receptor interaction and signal transduction mechanism. | 2 |
| 7 | Dose-response curve | 2 |
| 8 | Effect of autonomic drugs on rabbit Eye | 2 |
| 9 | Effect of autonomic drugs on frog heart-1 | 2 |
| 10 | Effect of autonomic drugs on frog heart-2 | 2 |
| 11 | Effect of autonomic drugs on dog blood pressure-1 | 2 |
| 12 | Effect of autonomic drugs on dog blood pressure-2 | 2 |
| 13 | Effect of spasmogens and spasmolytics on isolated rabbit intestine. | 2 |
| 14 | Prescription order writing | 2 |
| 15 | Revision | 2 |
| **Total** | | 30 |

# D. Teaching and Assessment

## 1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

| **Code** | **Course Learning Outcomes** | **Teaching Strategies** | **Assessment Methods** |
| --- | --- | --- | --- |
| **1.0** | **Knowledge** | | |
| 1.1 | Students after completion this course will be able to:  Outline the basic principles of Pharmacology, pharmacokinetics and pharmacodynamics, the various routes of drug administration, drug interactions and adverse drug reactions. | Lectures | Theoretical exams |
| 1.2 | Outline the basics functioning of autonomic nervous system, pharmacology of drugs effecting its functioning and also pharmacology of drugs acting on kidney. | Lectures | Theoretical exams |
| 1.3 | Describe the pharmacological basis, mechanism(s) of action, therapeutic uses and adverse reactions of drugs acting on the cardiovascular system and blood. | Lectures  Self-directed learning | Theoretical exams  Assignments |
| **2.0** | **Skills** | | |
| 2.1 | Summarize the basics principle/techniques related to experimental and general pharmacology; handling of prescription and various medical samples related to the course: use of video, computer model, experiment models and drug samples. | Practical Labs | Practical Exams |
| 2.2 | Acquaintance basics of Dose response curve; and demonstration of possible responses of drugs on various biological tissues like smooth muscle, heart, blood pressure and on eye: using stipulated software. | Practical Labs | Practical Exams |
| **3.0** | **Competence** | | |
| 3.1 | Work independently, professionally, and communicate clearly by verbal and written means. | Practical Labs | Observation card |
| 3.2 | Professional use of computer in preparing reports, assignments and oral presentations and to be skilled in the use of electronic library and internet resources for self-directed learning. | Self-directed learning | Assignments |

## 

## 2. Assessment Tasks for Students

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Assessment task\*** | **Week Due** | **Percentage of Total Assessment Score** |
| **1** | Mid- term Exam-1 | 6th Week | 15% |
| **2** | Mid- term Exam-2 | 10th Week | 15% |
| **3** | Weekly Practical Quizzes | Per semester | 5% |
| **4** | Student Activity/Assignment/Presentation | 12th Week | 5% |
| **5** | Observation card (practical) | Per semester | 5% |
| **6** | Final Practical Examination | 15th Week | 15% |
| **7** | Final Theoretical Examination | 16-17th Week | 40% |
|  |  |  |  |

**\*Assessment task** (i.e., written test, oral test, oral presentation, group project, essay, etc.)

# E. Student Academic Counseling and Support

|  |
| --- |
| **Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :** |
| * Office hours (2 hours per week + appointment). * Office hours are announced in the office door and course blackboard. * Student counseling: as required per week. * Students support via blackboard discussions, E-mail, and WhatsApp messages. |

# F. Learning Resources and Facilities

## Learning Resources

|  |  |
| --- | --- |
| **Required Textbooks** | 1. B. Katzung. Basic & Clinical Pharmacology. 14th Edition by B.G. Katzung. 2. Lippincott's Illustrated Reviews: Pharmacology, 6th Edition by K. Whalen. |
| **Essential References Materials** | 1. B. Katzung. Basic & Clinical Pharmacology. 14th Edition by B.G. Katzung. 2. Power point slides. 3. Practical log book |
| **Electronic Materials** | 1. Pub Med 2. Science direct. 3. Medscape. 4. **www.dlaf.nu.edu.sa** |
| **Other Learning Materials** | 1. Ex-pharm. 2. Drug metabolism Model. 3. Pharmacodynamics and drug receptor Model. 4. Microsoft word software. |

## 2. Facilities Required

| **Item** | **Resources** |
| --- | --- |
| **Accommodation**  (Classrooms, laboratories, demonstration rooms/labs, etc.) | 1. Suitable lecture room equipped with data show and internet and sufficient number of seats. 2. Suitable laboratories equipped with health and safety tools, internet and sufficient number of seats. 3. Blackboard collaborative system for e-learning in NU. |
| **Technology Resources**  (AV, data show, Smart Board, software, etc.) | 1. Data show. 2. Computer software listed above. 3. Internet and Wifi- access. |
| **Other Resources**  (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list) | 1. Expharm 2. Pharmacal software 3. Different drug dosage forms. 4. Drug samples demonstration lab |

# G. Course Quality Evaluation

| **Evaluation**  **Areas/Issues** | **Evaluators** | **Evaluation Methods** |
| --- | --- | --- |
| Effectiveness of teaching strategies | Head of departments  and students | Direct  Indirect (Questionnaires) |
| Effectiveness of student assessment | Department Faculty members  and department council | Direct  Direct |
| Achievement of CLOs | Students  Department faculty member | Indirect (Questionnaires)  Direct |
| Quality of learning resources | Students | Questionnaires (Indirect) |

**Evaluation areas** (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

**Evaluators** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

**Assessment Methods** (Direct, Indirect)

# H. Specification Approval Data

|  |  |
| --- | --- |
| **Council / Committee** | Pharmacology department council |
| **Reference No.** | Council No. 7, 1441-1442 H |
| **Date** | 24/04/1442 |