Template
for
Course Specifications

Faculty : Medicine
Department : Clinical pharmacology

Course Specifications

Programme(s) on which the course is given :	MBBCh
Major or minor element of programmes :	Major
Department offering the programme :	Faculty of medicine
Department offering the course :	Clinical pharmacology
Academic year / level :	Third year
Date of specification approval :	29/11/2015

A- Basic information

Title: Clinical pharmacology Code: CPHARM

Lecture: 120 hours Tutorial: Practical 60 hours Total: 180 hours

B- Professional Information

1 - Overall Aims of Course

By the end of the course the students are expected

1-To have knowledge and understanding of pharmacological basis of therapy including pharmacokinetics, mechanisms, effects, side effects, interactions and use of drugs in treatment of common and life threatening illness as well as in prevention of diseases.

2-To develop skills of choosing proper drugs for different types of diseases based on evidence according to the patient's weight, age and health conditions.

3-To develop attitude of judicious use of drugs for patient's benefit and to avoid harmful effects of drugs by recognizing side effects of drugs as well as drug interactions.

2 – Intended Learning Outcomes of Course (ILOs):

At the end of this course, students will be able to:-

a- Knowledge and Understanding:

A1 Define the harmacokinetic, pharmacodynamic and pharmacotherapeutic properties of different groups of drugs affecting body systems.

A2 Record the adverse effects of commonly used drug groups, and their management.

A3 Describe drug interactions and contraindications of drugs in order to avoid harm to the patients.

A4 List clinically relevant age, sex and genetic related variations that affect response to drugs.

A5 Describe the mechanisms of action of drugs with regard pathophysiology of common diseases and recognize the rational for proper choice of drugs in treating them.

A6 Discuss the principles, indications, the relative advantages (benefits) disadvantages (risks) of various pharmacotherapy modalities.

A7 Recall the rational and general guidelines of the use of drugs in the proper dose in special population such as pediatrics, geriatrics, pregnancy and lactation and in cases of liver and/or kidney impairment.

A8 List drugs used in managing patients in life threatening situations.

A9 List drugs used in pre- and post-operative care in general & special situations.

b- Intellectual Skills

B 1. Design rational therapeutic strategies for both acute and chronic conditions that take into account the various variables that influence these strategies.

B 2. Choose the proper drug/s for the proper clinical situation in proper dosage.

B 3. Monitor the effectiveness and side effects of therapy.
B 4. Match proper drugs for selected important diseases based on patient's age, weight and health condition.
B 5. Explain the importance of taking a comprehensive drug history of the patient.
B 6. Design rational therapeutic strategies for both acute and chronic conditions that take into account the various variables that influence these strategies.

c-Professional and Practical Skills

C1. Calculate accurately drug's dosage, bioavailability, plasma half life and volume of distribution in different patient populations.
C2. Distinguish different routes of administrations of drugs (intramuscular, intravenous, intradermal, subcutaneous and others).
C3. Observe, record and analyze the effect of drugs on biological tissues.
C4. Report adverse drug effects and decrease drug-drug interactions.

d-General and Transferable Skills

D1. Employ information technology effectively in the field of clinical pharmacology and search the internet for newly discovered drugs.
D2. Recognize the importance of life-long self-learning and give a strong commitment to it.
D3. Demonstrate respect to all patients irrespective to their socioeconomic levels, culture or religious beliefs and use language appropriate to the patient's culture.
D4. Provide appropriate basic drug education to the patient and his family.
D5. Communicate effectively with other health care professionals to maximize patient benefits and minimize the risk of errors.
D6. Predict the possibility that clinical events are drug related.
D7. Recognize and effectively deal with unethical behavior of other members of healthcare team.

3 – Contents

Topic	No. of hours	Lecture	Tutorial/practical
General pharmacology -*Pharmacodynamics* Receptors, efficacy, potency, agonists and antagonists - *Pharmacokinetics* Absorption, distribution, metabolism & elimination of drugs - Sources and nature of drugs - Dosage forms and routes of drug administration. - Basis and ethics of prescription writing. -Chelators and heavy metals.	**25**	**15** 7 8	**10** 2(practical) 4(practical&skill) 2(practical) 2(practical)
Autonomic pharmacology - Introduction - Acetylcholine receptors agonists and antagonists - Adrenoceptors activating drugs - Adrenoceptors blocking drugs - Neuromuscular blockers - Effect of stimulatory drugs on isolated heart. - Effect of inhibitory drugs on isolated heart. - Effect of stimulatory drugs on isolated	**31**	**15** 1 5 4 3 2	**16** 2(practical) 2(practical) 2(practical)

intestine. - Effect of inhibitory drugs on isolated intestine. - Applied skeletal muscle pharmacology. - Applied ocular pharmacology. - Reversal of adrenaline action on blood pressure. - Reversal of acetylcholine action on blood pressure. -Effect of cholinesterase enzyme on A.ch.			 2(practical) 1(practical) 2(practical) 2(practical) 2(practical) 1(practical)
Autacoids & anti-inflammatory - Histamine, serotonin and antagonists - Prostaglandins and other eicosanoids - Polypeptides - NSAIDs - Rheumatic fever - Arthritis	**12**	**8** 3 1 1 3	**4** 2(tutorial) 2(tutorial)
Renal pharmacology -Diuretics: loop, thiazides, k sparing and other diuretics	**6**	**6** 6	- -
Cardiovascular pharmacology - Antihypertensive drugs - Drug therapy of acute coronary syndrome - Drug therapy of heart failure - Antiarrythmic drugs	**18**	**12** 3 3 3 3	**6** 2(tutorial) 2(tutorial) 2(tutorial)
Blood pharmacology - Agents used in treatment of anaemias - Drugs used in clotting disorders: anticoagulants, antiplatelets & fibrinolytics - Drugs used in hyperlipidemia	**10**	**8** 2 4 2	**2** 2(tutorial)
Respiratory pharmacology - Bronchodilators and other agents used in B.A. - Cough medications: antitussives, mucolytics & expectorants - Pharmacology of gases	**6**	**4** 2 1 1	**2** 2(tutorial)
Gastrointestinal pharmacology - Drugs used in peptic ulcer - Prokinetic drugs - Laxatives & antidiarrheal drugs - Antispasmodics & spasmolytics - Drugs of hepatic related disorders	**10**	**6** 1 1 2 1 1	**4** 2(tutorial) 2(tutorial)
Endocrine pharmacology - Hypothalamic & pituitary hormones - Thyroid & antithyroid drugs - Corticosteroids and their antagonists - Gonadal hormones and their antagonists - Pancreatic hormones & antidiabetic agents - Drugs affecting bone & Ca homeostasis	**19**	**15** 2 2 3 3 3 2	**4** 2(tutorial) 2(tutorial)

CNS pharmacology - Sedatives-hypnotic drugs - Antiepileptic drugs - Antiparkinsonian drugs - Antipsychotic drugs & Lithium - Antidepressants - Narcotic analgesics & antagonists - Non narcotic analgesics: NSAIDs, paracetamol and others - General &local anesthetics - Drugs stimulating CNS - Treatment of pain	**21**	**15** 2 1.5 1.5 2 2 2 1 2 1	**6** 2(tutorial) 2(tutorial) 2(tutorial)
Chemotherapy *A) General Chemotherapy* - Principles of antimicrobial drug action - Penicillin and cephalosporins - Chloramphenicol and tetracyclines - Aminoglycosides and polymyxins - Sulphonamides and Quinolones -Urinary tract infection -Treatment of some selected infections *B) Special Chemotherapy* - Antifungal agents - Antiviral chemotherapy - Antimycobacterial drugs - Antiprotozoal drugs - Antihelminthic drugs - Cancer chemotherapy - Drugs and immune system	**19**	**15** **7** 1 2 1 1 2 **8** 1 2 1 1 1 1 1	**4** 2(tutorial) 2(tutorial)
Locally acting drugs	3	1	2(practical)
Total	**180**	**120**	**60**

4 – Teaching and Learning Methods

4.1- **Lectures**: to provide knowledge of course contents and intellectual skills using overhead projectors, PowerPoint presentations &video simulations. Students are divided into 2 groups and each lecture is repeated

4.2- **Practical demonstration**: to show major drug actions in experimental animals using computer programs, electronic Board and different forms of drugs also provided. Students are divided into 12 groups; each group has 2 hours practical session per week.

4.3- **Tutorials**: to discuss clinical problems using clinical case scenarios and discuss facts and concepts in therapy (PBL) using video simulation and electronic board. Students are divided into 12 groups; each group has 2 hours practical session per week.

4.4- **Small group teaching**: mini-lectures in the department where students are divided into 8 groups; each group has 2 hours per week.

4.5- **Discussion sessions during office hours.**

5 – Student Assessment Methods

5.1 - Midterm (MCQ) to assess Knowledge & understanding
Intellectual skills
Practical skills

5.2 - Mid year (MCQ) to assess Knowledge & understanding
Intellectual skills

			Practical skills
5.3 -	Activities - Attendance - Log book	to assess	Practical skills General and Transferable Skills
5.4 -	Objective structured practical exam (OSPE) -Experimental electronic exam -Clinical case scenarios	to assess	Intellectual skills Practical skills
5.5 -	Final written Exam Short essay questions (2 papers, 75 marks for each) (each paper include 25 marks MCQs)	to assess	Knowledge & understanding Intellectual skills
5.6-	Structured oral Exam (2 sessions, 10 marks each)	to assess	Intellectual skills Practical skills Attitude

Assessment Schedule

Assessment 1	1- Midterm (MCQ)	week	8th
Assessment 2	2- Mid year (MCQ)	week	16th
Assessment 3	3- Activities - Attendance - Log book	week	
Assessment 4	4- Practical Exam (OSPE) -Experimental electronic exam -Clinical case scenarios	week	32nd
Assessment 5	5- Final written Exam Short essay questions (2 papers, 75 marks for each) (each paper include 25 marks MCQs)	week	33rd
Assessment 6	6- Final oral Exam (2 sessions, 10 marks each)	week	34th

Weighting of Assessments

1- Midterm (MCQ)	20	7%
2- Mid year (MCQ)	30	10%
3- Activities - Attendance - Log book	 5 5	3%
4- OSPE -Experimental electronic exam -Clinical case scenarios	 20 50	23%
5- Final written Exam Short essay questions (2 papers, 75 marks for each) (each paper include 25 marks MCQs)	150	50%
6- Structured oral Exam (2 sessions, 10 marks each)	20	7%
Total	300	100%

Any formative only assessments

6 – List of References

6.1- Course Notes	Staff Members of Mansoura Clinical Pharmacology Department.
6.2- Essential Books (Text Books)	Basic and clinical pharmacology "last Edition, edited by Katzung, Lange Medical Books. Clinical Pharmacology " Laurence: D.R. last edition, Edited by Bennet, P.N. and MI Brown"Churchill Livingstone Edinburgh London and New York" Latest
6.3- Recommended Books	-Goodman, Louis D., and Gilman, Alfred, eds 2015. "The pharmacological basis of therapeutics New York: Macmillan Publishing Company "Pharmacotherapy" A Pathophysiological Approach fourth
6.4- Periodicals, Web Sites, …etc	-Medline web sites -Journal of Exp. Pharmacology and Therapeutics. -Journal of pharmacological Review. -British Journal of pharmacology. -European Journal of pharmacology

7 – Facilities Required for Teaching and Learning

1) Lecture halls: provided with overhead projector & data show

2) Experimental & Tutorial classes: provided with data show, electronic board & internet line where we explain effect of drug on animal tissues, also discuss clinical cases

3) Library: General library in the building of faculty where most recent textbooks are available.

4) Virtual lab: each group is 25 students for training on virtual animal experiments & formative exams.

Course Coordinator : Prof. Mohamed-Hesham Daba

Head of Department : Prof. Hussein M. El-Beltagy

Topics	ILOs																									Assess-ment
	A									B						C				D						
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	7	
General ph.																											
Pharmacodynamics	√			√																							
-Pharmacokinetics	√			√																							
-Sources and nature of drugs	√	√			√																						written CME oral
- Dosage forms and routes of drug administration.																	√										
- Basis and ethics of prescription writing.													√	√		√	√		√	√	√	√	√	√	√	√	
-Chelators and heavy metals.	√	√	√								√	√	√	√													
Autonomic ph.																											
-Introduction																											
- Acetylcholine receptors agonists and antagonists	√	√	√	√	√	√	√	√									√		√		√						
- Adrenoceptors activating drugs & adrenoceptors blocking drugs	√	√	√	√	√	√	√	√									√		√		√						written CME oral
- Neuromuscular blockers																											
- Effect of stimulatory drugs on isolated heart.	√	√	√	√	√	√	√	√									√		√		√						
- Effect of inhibitory drugs on isolated heart.																		√									
- Effect of stimulatory drugs on isolated intestine.																		√									
- Effect of inhibitory drugs on isolated intestine.																		√									
- Applied skeletal muscle pharmacology.																		√									
- Applied ocular pharmacology.																		√									
- Reversal of adrenaline action on blood pressure.																		√									

- Reversal of acetylcholine action on blood pressure. -Effect of cholinesterase enzyme on A.ch	√	√	√	√	√	√		√	√	√	√			√			√	√		√	√	√	√				
Autacoids - Histamine, serotonin and antagonists	√	√	√					√									√										
- Prostaglandins and other eicosanoids	√	√	√							√							√										
- Polypeptides	√	√	√																								
- NSAIDs	√	√	√		√		√			√																	
- Rheumatic fever									√	√	√	√	√		√	√		√	√	√	√	√	√	√	√	√	
- Arthritis									√	√	√	√	√		√	√		√	√		√	√	√	√	√		
CVS - Antihypertensive drugs	√	√	√		√	√	√	√																		**Written** **Cases** **Oral**	
- Drug therapy of acute coronary syndrome	√	√	√		√	√	√	√																			
- Drug therapy of heart failure	√	√	√		√	√	√	√																			
- Antiarrythmic drugs	√	√	√		√	√	√	√	√	√	√	√	√		√	√		√	√		√	√	√	√	√	√	
-Ischemic heart diseases "Angina + Myocardial infractions"																											
- Hypertension									√	√	√	√	√		√	√		√	√	√	√	√	√	√	√		
- Heart failure									√		√	√	√		√	√		√	√	√	√	√	√	√	√	**Written** **Cases** **Oral**	
Renal ph.	√	√	√		√	√	√	√			√																
Resp. ph. - Bronchodilators and other agents used in B.A.	√	√	√		√	√	√	√																			

- Cough medications: antitussives, mucolytics & expectorants	√	√	√		√	√	√	√																	**Written Oral**
- Pharmacology of gases		√						√																	**Written Cases Oral**
- Bronchial asthma										√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√
Blood ph.																									
- Agents used in treatment of anaemias	√	√	√		√	√	√			√	√	√	√	√	√	√	√		√	√	√	√	√	√	√	√
- Drugs used in clotting disorders: anticoagulants, antiplatelets & fibrinolytics	√	√	√	√	√	√	√	√				√			√		√		√	√	√		√			
- Drugs used in hyperlipidemia	√	√	√		√	√	√					√			√											
GIT																									
- Drugs used in peptic ulcer	√	√	√		√	√	√					√													
- Prokinetic drugs	√	√	√		√	√	√					√													
- Laxatives & antidiarrheal drugs	√	√	√		√	√	√					√													
- Antispasmodics & spasmolytics	√	√	√		√	√	√					√													
- Drugs of hepatic related disorders	√	√	√		√	√	√					√							√	√	√	√			
- Peptic ulcer case										√	√	√	√	√√	√		√		√√	√	√	√	√	√	√√	√√
- Diarrhea case										√					√		√			√	√	√	√	√		
Endocrine ph.																									
- Hypothalamic & pituitary hormones	√	√	√		√	√	√					√													
- Thyroid & antithyroid drugs	√	√	√		√	√	√	√	√			√													
- Corticosteroids and their antagonists	√	√	√		√	√	√					√													
- Gonadal hormones and	√	√	√		√	√	√																		

their antagonists - Pancreatic hormones & antidiabetic agents	√	√	√		√	√	√	√	√			√													
- Drugs affecting bone & Ca homeostasis	√	√	√		√	√	√																		
- Diabetes case -Thyrotoxicosis case									√ √	√ √	√ √	√ √	√ √	√ √		√ √	√ √		√ √	√ √	√ √	√ √	√ √	√ √	√ √	√ √	**Written Cases Oral**
Chemo Therapy **A) General Chemotherapy** - Principles of antimicrobial drug action - Penicillin and cephalosporins - Chloramphenicol and tetracyclines - Aminoglycosides and polymyxins - Sulphonamides and Quinolones -Urinary tract infection -Treatment of some selected infections	√	√	√		√	√	√		√	√	√	√	√	√		√	√		√	√	√	√	√	√	√	**Written Cases Oral**
B) Special Chemotherapy - Antifungal agents - Antiviral chemotherapy - Antimycobacterial drugs - Antiprotozoal drugs - Antihelminthic drugs - Cancer chemotherapy - Drugs and immune system	√	√	√		√	√	√		√	√	√	√	√	√		√	√		√	√	√	√	√	√	√	
CNS - Sedatives-hypnotic drugs	√	√	√	√	√	√	√				√														
- Antiepileptic drugs - Antiparkinsonian drugs	√ √	√ √	√ √		√ √	√ √	√ √				√ √														

- Antipsychotic drugs & Lithium	√	√	√		√	√	√					√												
- Antidepressants	√	√	√		√	√	√					√												
- Narcotic analgesics ,antagonists & non narcotic analgesics: NSAIDs, paracetamol and others	√	√	√		√	√	√		√			√									√	√			
- General &local anesthetics	√	√	√		√	√	√		√			√													
- Drugs stimulating CNS	√	√	√		√	√	√		√			√													**written Oral**
- Treatment of pain										√	√	√	√	√			√		√	√	√	√	√	√	√	√	