COURSE SPECIFICATIONS

Faculty of Pharmacy

Bachelor of Pharmacy

Fifth Year – Elective Courses

2017-2018

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COURSE SPECIFICATIONS

Clinical Nutrition

Fifth Year- Elective Courses
2017-2018

Course Specification of Clinical Nutrition

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Biochemistry Department

Academic year/Level: Fifth year

Date of specification approval: 25/9/2017

B- Basic information:

Title: Clinical Nutrition Code: EL250

Credit Hours: ---

Lectures : 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to explain the principles of clinical nutrition, pathophysiology, diet therapy and management of different diseases.

2-Intended Learning Outcomes of Clinical Nutrition (lLOs):

A- Knowledge and Understanding	
a1	Outline the principles of clinical nutrition and types of nutrients.
a2	Illustrate the body energetics, electrolytes, pH in health and disease state.
a3	Demonstrate the etiology and clinical features of obesity, diabetes, hypertension, cardiovascular diseases, electrolytes and acid base imbalances.
a4	Discuss the principles of diet therapy and management of different diseases.
a5	Illustrate drug-food interaction and food allergies
B- Professional and Practical skills	
b1	Specify therapeutic and dietary interventions of obesity, diabetes, hypertension, cardiovascular diseases, electrolytes and acid base imbalances.
b2	Perform laboratory tests for diagnosis of different diseases.
b3	Advise patients about balanced diet to promote the efficiency of medication.
C- Intellectual skills	
c1	Suggest life style modifications to prevent obesity, diabetes, hypertension, cardiovascular diseases, electrolytes and acid base imbalances.
c2	Select the appropriate drugs and dietary regimens for various disease conditions.
D- General and Transferable skills	
d1	Develop communications skills with public, patients and other health care professionals.
d2	Work effectively as a member of a team.
d3	Use numeracy and computation in determination of body mass index, body weight and atherogenic index.
d4	Practice independent learning needed for continuous professional development.
d5	Write and present reports.
d6	Implement critical thinking and decision making skills.

D- Contents:

Week No.	Lecture (2 hr/ week)	Practical session (2 hrs/week)
1	- Types of nutrients of balanced diet (macronutrients, micronutrients) -Energy requirement and energy expenditure - Diet and therapy - Nutritional assessment and food pyramids	- Introduction to clinical nutrition Calculation of BMR- TEE
2	- Obesity (Definition, assessment, factors affecting obesity)	- Obesity Case studies for obesity
3	- Management of obesity - Drugs of choice for treatment of obesity	- Determination of body mass index Suggestion of life style modification
4	- Diabetes mellitus (DM) -Nutrition therapy and recommendation for DM - Drug of choice for treatment of DM	Metabolic syndrome Case study Calculation of atherogenic index
5	- Definition and types of cardiovascular diseases (CVD) - Risk factors for CVD - Drug of choice for treatment of CVD	**- Activity (report)**
6	- Electrolytes importance - Sodium (functions, homeostasis) -Sodium imbalances: Hypernatremia (signs , symptoms, Pathophysiology, diagnosis, treatment, management) Hyponatremia (signs, symptoms, pathophysiology, diagnosis, treatment, management)	-Diabetes -Case study
7	- Potassium imbalances (hyperkalemia, hypokalemia)	- Electrolytes Case study for electrolytes imbalance
8	- Calcium imbalances (hypercalcemia, hypocalcemia) - Magnesium imbalances (hypermagnesemia, hypomagnesemia)	- Case study for acid base imbalance
9	- The body and pH - pH control (control of acids, control of bases) - Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms, compensation, treatment)	- Case study for hypertension
10	- Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)	- Case study for myocardial infarction
11	Nutrition in cancer patients under treatment	- Collective case studies
12	Nutrition during pregnancy	**-Revision**
13	Food allergy	**- Activity (report)**

14	Drug food interaction	**- Practical exam**
15	- Revision& Open discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activity, reports, internet search, group discussion…)

F- Student Assessment Methods:

1- Written exam to assess a1, a2, a3, a4,a5, c1, c2, d3, d6

2- Practical exam to assess b1, b2, b3, d1, d2, d3, d6

3- Activities to assess d4, d5

4- Oral exam to assess a1, a2, a3, a4, c1, c2, d1, d3, d4, d6

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 5,13
Assessment (3): Practical exams	Week 14

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	40	80%
Practical exam and activities	10	20%
TOTAL	50	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, laboratory equipments (Spectrophotometer, centrifuge) and chemicals.

H- List of References:

1- Course Notes: Student book of Clinical Nutrition approved by biochemistry department 2017.

- Practical notes of Clinical Nutrition approved by biochemistry department 2017.

2- Essential books:

i- Nutrition in Clinical Practice: A Comprehensive Evidence-Based Manual for the Practitioner (second edition); Katz D.L.; Wolter cluer health & Lippincott Williams and Wilkins (2008).

ii- Marks' basic medical biochemistry: a clinical approach (third edition); Lieberman M., Marks A.D., Smith C.M.(2008).

iii- Essentials of medical biochemistry with clinical cases; Bahagavan N.V, Chung-Eun Ha; Elsevier Inc. (2011).

3- Recommended books:

i- Biochemistry (third edition); Garrett R.H. and Grisham C.M.; Thomson learning, Inc (2005).

ii- Clinical Biochemistry made ridiculously simple; Stephen Goldberg. M.D.; Med Master Inc. (2000).

iii- Text book of Biochemistry with clinical correlations (fifth edition); Devlin T.M.; A John Willey& Sons Inc. (2002).

4- Periodicals and websites:

Egyptian J. of biochem. and molecular biology.

British J. of nutrition

Arab J. of Laboratory Medicine,

J. of Cardiovascular diseases.

www.Pubmed.Com

www.sciencedirect.com.

Course Coordinator: Ass. Prof. Dr. Nahla Younis

Head of Department: Prof. Dr. Sahar elswefy

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 25 / 9 / 2017 Date: م

Matrix I of Clinical nutrition course

Course Contents		ILOs of Clinical nutrition course															
		Knowledge and understanding					Professional and practical skills			Intellectual skills		General and transferable skills					
Lectures		a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	d1	d2	d3	d4	d5	d6
1	Types of nutrients of balanced diet (macronutrients, micronutrients)	x				x											
2	Energy requirement and energy expenditure- Diet and therapy- Nutritional assessment and food pyramids		x		x	x				x				x			x
3	Obesity (Definition, assessment, factors affecting obesity)			x						x							
4	Management of obesity- Drugs of choice for treatment of obesity				x					x	x						
5	Diabetes mellitus (DM)-Nutrition therapy and recommendation for DM- Drug of choice for treatment of DM			x	x					x	x						
6	Definition and types of cardiovascular diseases (CVD)- Risk factors for CVD- Drug of choice for treatment of CVD			x	x					x	x						
7	Management of CVD- Diet for hypertensive patients- Drugs of choice for treatment of hypertension				x					x	x						
8	Electrolytes importance- Sodium (functions, homeostasis)		x														
9	Sodium imbalances: Hypernatremia (signs, symptoms, pathophysiology)- Hyponatremia (signs, symptoms, pathophysiology, diagnosis, treatment, management)		x	x	x					x	x						
10	Potassium imbalances (hyperkalemia, hypokalemia)		x	x													

11	Calcium imbalances (hypercalcemia, hypocalcemia)- Magnesium imbalances (hypermagnesemia, hypomagnesemia)		x	x													
12	The body and pH- pH control (control of acids, control of bases)		x														
13	Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms, compensation, treatment)		x	x	x					x	x						
14	Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)		x	x	x					x	x						
15	Revision- Open discussion														x		
Practical sessions																	
1	Glucose tolerance test							x					x				
2	Case study for Diabetes mellitus						x		x			x					x
3	Determination of body mass index													x			
4	Determination of Δ body weight													x			
5	Case study for obesity						x		x			x					x
6	Determination of total lipids							x					x				
7	Determination of lipoproteins							x					x				
8	Calculation of atherogenic index							x						x			
9	Case study for CVD						x		x			x					x
10	Case study for hypertension						x		x			x					x
11	Case study for electrolytes imbalance						x		x			x					x
12	Case study for acid-base imbalance						x		x			x					x
13	Activity (Report)														x	x	

Matrix II of Clinical nutrition Course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment	
						Lecture	Practical session	Self learning	Written exam	Practical exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A4	a1	Types of nutrients of balanced diet (macronutrients, micronutrients)	Student book Essential books	x			x	
2.11	Principles of body function in health and disease states as well as basis of genomic and	A24	a2	Energy requirement and energy expenditure- Diet and therapy- Nutritional assessment and food pyramids	Student book Essential books	x			x	

	different biochemical pathways regarding their correlation with different diseases.			Electrolytes importance- Sodium (functions, homeostasis)	Student book Essential books	x			x	
				Sodium imbalances: Hypernatremia (signs, symptoms, pathophysiology)- Hyponatremia (signs, symptoms, pathophysiology, diagnosis, treatment, management)	Student book Essential books	x			x	
				Potassium imbalances (hyperkalemia, hypokalemia)	Student book Essential books	x			x	
				Calcium imbalances (hypercalcemia, hypocalcemia)- Magnesium imbalances (hypermagnesemia, hypomagnesemia)	Student book Essential books	x			x	
				The body and pH- pH control (control of acids, control of bases)	Student book Essential books	x			x	

				Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms, compensation, treatment)	Student book Essential books	x			x	
				Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)	Student book Essential books	x			x	
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmaco-therapeutic approaches	A27	a3	Obesity (Definition, assessment, factors affecting obesity)	Student book Essential books	x			x	
				Diabetes mellitus (DM)-Nutrition therapy and recommendation for DM- Drug of choice for treatment of DM	Student book Essential books Recommended books Internet	x		x	x	
				Definition and types of cardiovascular diseases (CVD)- Risk factors for CVD- Drug of choice for treatment of CVD	Student book Essential books Recommended books Internet	x		x	x	
				Sodium imbalances: Hypernatremia (signs, symptoms, pathophysiology)- Hyponatremia (signs, symptoms, pathophysiology,	Student book Essential books Recommended books Internet	x		x	x	

				diagnosis, treatment, management)						
				Potassium imbalances (hyperkalemia, hypokalemia)	Student book Essential books	x			x	
				Calcium imbalances (hypercalcemia, hypocalcemia)- Magnesium imbalances (hypermagnesemia, hypomagnesemia)	Student book Essential books	x			x	
				Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms, compensation, treatment)	Student book Essential books Recommended books Internet	x		x	x	
				Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)	Student book Essential books Recommended books Internet	x		x	x	
2.15	Basis of complementary and alternative medicine	A32	a4	Energy requirement and energy expenditure- Diet and therapy- Nutritional assessment and food pyramids	Student book Essential books	x			x	

				Management of obesity- Drugs of choice for treatment of obesity	Student book Essential books Recommended books Internet	x		x	x	
				Diabetes mellitus (DM)-Nutrition therapy and recommendation for DM- Drug of choice for treatment of DM		x		x	x	
				Definition and types of cardiovascular diseases (CVD)- Risk factors for CVD- Drug of choice for treatment of CVD		x		x	x	
			a5	Management of CVD- Diet for hypertensive patients- Drugs of choice for treatment of hypertension		x		x	x	
				Sodium imbalances: Hypernatremia (signs, symptoms, pathophysiology)- Hyponatremia (signs, symptoms, pathophysiology, diagnosis, treatment, management)	Student book Essential books Recommended books Internet	x		x	x	
				Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms,	Student book Essential books Recommended books	x		x	x	

				compensation, treatment)	Internet					
				Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)	Student book Essential books Recommended books Internet	x		x	x	
3.5	Select medicines based on understanding of etiology and pathophysiology of diseases	B7	b1	Case study for obesity	Practical notes		x			x
				Case study for Diabetes mellitus			x			x
				Case study for CVD			x			x
				Case study for hypertension			x			x
				Case study for electrolytes imbalance			x			x
				Case study for acid-base imbalance			x			x
3.6	Monitor and control microbial growth and carry out laboratory tests for identification of infectious and non-infectious diseases	B9	b2	Glucose tolerance test	Practical notes		x			x
				Determination of total lipids			x			x
				Determination of lipoproteins			x			x
				Calculation of athergenic index			x			x
	Program ILOs Exceeding NARS	B16	b3	Case study for obesity	Practical notes		x			x
				Case study for Diabetes mellitus			x			x
				Case study for CVD			x			x

				Case study for hypertension			x			x
				Case study for electrolytes imbalance			x			x
				Case study for acid-base imbalance			x			x
4.8	Select and assess appropriate methods of infection control to prevent infections and promote public health.	C11	c1	Energy requirement and energy expenditure- Diet and therapy- Nutritional assessment and food pyramids	Student book Essential books	x			x	
				Obesity (Definition, assessment, factors affecting obesity)	Student book Essential books	x			x	
				Management of obesity- Drugs of choice for treatment of obesity	Student book Essential books Recommended books Internet	x		x	x	
				Diabetes mellitus (DM)-Nutrition therapy and recommendation for DM- Drug of choice for treatment of DM	Student book Essential books Recommended books Internet	x		x	x	
				Definition and types of cardiovascular diseases (CVD)- Risk factors for CVD- Drug of choice for treatment of CVD	Student book Essential books Recommended books Internet	x		x	x	

				Management of CVD- Diet for hypertensive patients- Drugs of choice for treatment of hypertension	Student book Essential books Recommended books Internet	x		x	x	
				Sodium imbalances: Hypernatremia (signs, symptoms, pathophysiology)- Hyponatremia (signs, symptoms, pathophysiology, diagnosis, treatment, management	Student book Essential books Recommended books Internet	x		x	x	
				Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms, compensation, treatment)	Student book Essential books Recommended books Internet	x		x	x	
				Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)	Student book Essential books Recommended books Internet	x		x	x	
4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease	C12	c2	Management of obesity- Drugs of choice for treatment of obesity	Student book Essential books Recommended books Internet	x		x	x	
				Diabetes mellitus (DM)-Nutrition therapy and recommendation for		x		x	x	

	conditions.			DM- Drug of choice for treatment of DM						
				Definition and types of cardiovascular diseases (CVD)- Risk factors for CVD- Drug of choice for treatment of CVD		x		x	x	
				Management of CVD- Diet for hypertensive patients- Drugs of choice for treatment of hypertension		x		x	x	
				Sodium imbalances: Hypernatremia (signs, symptoms, pathophysiology)- Hyponatremia (signs, symptoms, pathophysiology, diagnosis, treatment, management	Student book Essential books Recommended books Internet	x		x	x	
				Acidosis (respiratory acidosis, metabolic acidosis, signs, symptoms, compensation, treatment)		x		x	x	
				Alkalosis (respiratory alkalosis, metabolic alkalosis , signs, symptoms, compensation, treatment)		x		x	x	

5.1	Communicate clearly by verbal and written means	D1	d1	Case study for obesity	Practical notes		x			x
				Case study for Diabetes mellitus			x			x
				Case study for CVD			x			x
				Case study for hypertension			x			x
				Case study for electrolytes imbalance			x			x
				Case study for acid-base imbalance			x			x
5.3	Work effectively in a team	D4	d2	Glucose tolerance test	Practical notes		x			x
				Determination of total lipids			x			x
				Determination of lipoproteins			x			x
5.4	Use numeracy, calculation and statistical methods as well as information technology tools	D5	d3	Energy needed (energy requirement and energy expenditure)	Student book Essential books	x			x	
				Determination of body mass index	Practical notes		x			x
				Determination of Δ body weight			x			x
				Calculation of athergenic index			x			x
5.5	Practice independent learning needed for continuous professional development	D7	d4	Revision- Open discussion	Student book Essential books Recommended books Internet	x		x		
						x		x		
						x		x		

				Activity (report)	Recommended books Internet		x	x		x
5.9	Implement writing and presentation skills	D11	d5	Activity (report)	Recommended books Internet		x	x		x
5.1O	Implement writing and thinking, problem-solving and decision-making abilities.	D12	d6	Energy needed (energy requirement and energy expenditure)	Student book Essential books	x			x	
				Case study for obesity	Practical notes		x			x
				Case study for Diabetes mellitus	Practical notes		x			x
				Case study for CVD	Practical notes		x			x
				Case study for hypertension	Practical notes		x			x
				Case study for electrolytes imbalance	Practical notes		x			x
				Case study for acid-base imbalance	Practical notes		x			x

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Course Coordinator: Ass. Prof. Dr. Nahla Younis

Head of Department: Prof. Dr. Sahar elswefy

Date: تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 25 / 9 / 2017 م

COURSE SPECIFICATIONS

Drug Design

Fifth Year- Elective Courses
2017-2018

Course Specification of Elective Course Drug Design

University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Medicinal Chemistry Department

Academic year/ Level: Fifth year

Date of specification approval: 3 September 2017

B- Basic information:

Title: Drug Design Code: EL353

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to define properties of combinatorial synthesis drugs.

2-Intended Learning Outcomes of Drug Design (lLOs):

A- Knowledge and Understanding	
a1	Demonstrate QSAR, hydrophobic, electronic & steric properties of drugs.
a2	Mention sources of natural & synthetic drugs.
a3	Illustrate drug discovery, drug development, drug targets& identifying a bioassay.
a4	Outline combinatorial synthesis of drug.
a5	Describe chemical delivery system to urinary tract, brain cancerous cells &eye Dihydropyridine-based drug delivery system.
a6	Explain principles of drug metabolism, prodrug & bioprecursor prodrugs.
B- Professional and Practical skills	
b1	Conduct a research study and analyze the results.
C- Intellectual skills	
c1	Identify and quantify physico-chemical properties of pharmaceutical preparation.
c2	Determine computer-aided tools used in drug design.
c3	Assess drug receptor interactions and the concerning theories.
D- General and Transferable skills	
d1	Improve professional abilities by evaluation of information from different sources.
d2	Work effectively as a member of a team
d3	Apply numeracy in pharmaceutical calculations.

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	-Drug discovery and drug development -Drug targets-Identifying a bioassay	-Physicochemical Properties of Drugs -Relative acid strength (pK_a)
2	-Finding a lead compound Screening of natural products & synthetic' banks'	-Predicting the degree of ionization of a molecule Henderson-Hassalbach equation
3	-Combinatorial synthesis -Computer-aided design	-Absorption/acid-base case Acid Base -Chemistry/Compatibility Cases
4	-Structure determination & Target-orientated drug design	-Water solubility of drugs-Hydrogen Bonds-Common organic functional groups and their hydrogen bonding potential
5	-Drug Metabolism -Clinical trials Conjugation reactions (Phase II) metabolism	-Ionization-ion-dipole bonds Water solubilities of different salt forms of selective drugs-Absorption/Binding Interactions cases
6	-Drug Receptor Interactions -Drug-receptor theories	-Predicting Water Solubility: Empiric Approach (Lemke's method) -Identification of functional groups in anileridine
7	-Forces involved in drug receptor interactions Bioisosterism	-Predicting water solubility: analytical approach-Partition coefficient concept (P)-ClogP
8	-Quantitative structure-activity relationships	-Hydrophilic-lipophilic Values (πV) for organic

		fragments- logP calculation for anileridine
9	-The partition coefficient (P), hydrophobicity constant & Steric factors	-Problems: logP calculations for Ibuprofen,Captopril
10	-Hansch equation, Craig plot & Topliss scheme	-Problems:Clog P calculations for Nadolol,Cefaclor& Lovastatin **-Activity (Cases study)**
11	-Prodrugs and Drug Latentiation carrier-linked prodrugs	-Calculate the logP value for Aspirin, Carphenazine, Codeine, Phonytoin Cyproheptadine,Haloperidol, Chlodiazepoxide, - Binding interactions/solubility case Acid/base chemistry, solubility and absorption case
12	-Bioprecursor prodrugs oxidative activation reductive activation phosphorylation chemical activation	**-Practical exam**
13	.-Chemical delivery systems to: urinary tract, brain, cancerous cells & eye Dihydropyridine-based drug delivery system	
14	-Revision	----------
15	-Open discussion	----------

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activity, internet search)

F- Student Assessment Methods:

1- Written exam to assess a1, a2, a3, a4, a5, a6, c1, c2, c3

2- Activity to assess d1, d2, d3

3- Practical exam to assess b1, c1, d1, d2, d3

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 10
Assessment (3): Practical exams	Week 12

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	40	80%
Practical exam and activities	10	20%
TOTAL	50	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, laboratory equipments and chemicals.

H- List of References:

1- Course Notes: Student book of Drug Design approved by medicinal chemistry department 2017.

- Practical notes of Drug Design approved by medicinal chemistry department 2017.

2- Essential Books (Text Books)

i- Burger's medicinal chemistry and drug discovery

Edited by Manfred E.wolff

ii- Compute-aided molecular design

Application of Agrochemicals, Materials & pharmaceuticals

Edited by Charles H.Reynolds,M.Katharine Holloway and Harold K.COX

3- Recommended books

i- The organic chemistry of drug design and drug action ,second edition,Edited by Richard B.Silverman.

ii- Designing Bioactive molecules

Three dimensional Techniques and applications , Edited by Yvonne C.Martin and Peter Willett.

4- Periodicals, Web Sites, etc

http://www.ncbi.nlm.nih.gov/sites/entrez

http://journals.tubitak.gov.tr/chem/index.php

http://www.pharmacopoeia.co.uk/

www.Pubmed.Com

www.sciencedirect.com

Course Coordinator: Prof. Dr. Mohamed El-husseiny El-sadek

Head of department: Prof. Mohamed Baraka

Date: 2017/9/ 3 تم مناقشة واعتماد توصيف المقرر من مجلس القسم المقرر بتاريخ

Matrix I of Elective course (drug design)

Course Contents		ILOs of Elective course (drug design)												
		knowledge and understanding						professional and practical skills	intellectual skills			General and transferable skills		
Lectures		a1	a2	a3	a4	a5	a6	b1	c1	c2	c3	d1	d2	d3
1	Drug discovery and drug development -Drug targets- Identifying a bioassay			x										
2	Finding a lead compound Screening of natural products & synthetic' banks'		x											
3	Combinatorial synthesis Computer-aided design				x					x				
4	Structure determination & Target-orientated drug design									x				
5	Drug Metabolism Clinical trials Conjugation reactions (Phase II)metabolism						x							
6	Drug Receptor Interactions Drug-receptor theories										x			
7	Forces involved in drug receptor interactions Bioisosterism										x			

8	Quantitative structure-activity relationships								x						
9	The partition coefficient (P), hydrophobicity constant & Steric factors	x							x						
10	Hansch equation, Craig plot & Topliss scheme	x							x						
11	Prodrugs and Drug Latentiation carrier-linked prodrugs						x								
12	Bioprecursor prodrugs oxidative activation reductive activation,phosphorylation,chemical activation						x								
13	Chemical delivery systems to: urinary tract, brain, cancerous cells & eye Dihydropyridine-based drug delivery system					x									
Practical sessions															
14	**Physicochemical Properties of Drugs & Application of various calculations (problems)**							x	x			x	x	x	
15	**Activity (case study)**											x	x	x	

Matrix II of Elective course (Drug Design)

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment	
						lecture	practical session	self learning	written exam	practical exam
2.2	Physico-chemical properties of various substances used in preparation of medicines including inactive and active ingredients as well as biotechnology and radio-labeled products.	A9	a1	The partition coefficient (P), hydrophobicity constant & Steric factors	student book, essential books	x			x	
				Hansch equation, Craig plot & Topliss scheme	student book essential books	x			x	
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A12	a2	Finding a lead compound Screening of natural products & synthetic' banks'	student book	x			x	

2.5	Principles of drug design, development and synthesis.	A14	a3	Drug discovery and drug development -Drug targets- Identifying a bioassay	student book ,essential books	x			x	
		A15	a4	Combinatorial synthesis Computer-aided design	student book essential books	x			x	
2.6	Properties of different pharmaceutical dosage forms including novel drug delivery systems.	A17	a5	Chemical delivery systems to: urinary tract, brain, cancerous cells & eye Dihydropyridine-based drug delivery system	student book	x			x	
2.8	Principles of pharmacokinetics and biopharmaceutics with applications in therapeutic drug monitoring, dose modification and bioequivalence studies.	A19	a6	Drug Metabolism Clinical trials Conjugation reactions (Phase II)metabolism	student book	x			x	
				Prodrugs and Drug Latentiation carrier-linked prodrugs	student book	x			x	
				Bioprecursor prodrugs oxidative activation,reductive activation,phosphorylation,chemical activation	student book	x			x	

3.11	Conduct research studies and analyze the results	B17	b1	Physicochemical Properties of Drugs & Application of various calculations (problems)	student book	x			x	
4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C4	c1	Quantitative structure-activity relationships	student book	x			x	
				The partition coefficient (P), hydrophobicity constant & Steric factors	student book	x			x	
				Hansch equation, Craig plot & Topliss scheme	student book	x			x	
				Physicochemical Properties of Drugs & Application of variuo calculations	student book	x			x	
4.6	Apply the principles of bio-informatics and computer-aided tools in drug design	C9	c2	Combinatorial synthesis Computer-aided design	student book	x			x	
				Structure determination & Target-orientated drug design	student book	x			x	
4.11	Assess drug interactions, ADRs and pharmacovigilance.	C14	c3	Drug Receptor Interactions Drug-receptor theories	student book	x			x	
				Forces involved in drug receptor interactions Bioisosterism	student book	x			x	

5.2	Retrieve and evaluate information from different sources to improve professional competencies	D3	d1	Physicochemical Properties of Drugs & Application of various calculations (problems)	Practical notes		x			x
				Activity(case study)	Practical note/internet		x	x		x
5.3	Work effectively in a team	D4	d2	Physicochemical Properties of Drugs & Application of various calculations (problems)	Practical notes		x			x
				Activity(case study)	Practical notes/internet		x	x		x
5.4	Use numeracy, calculation and statistical methods as well as information technology tools	D5	d3	Physicochemical Properties of Drugs & Application of various calculations (problems)	Practical notes		x			x
				Activity(case study)	Practical notes/internet		x	x		x

Course Coordinator: Prof. Mohamed El-husseiny El-sadek

Head of department: Prof. Mohamed Baraka

Date: 2017/9/ 3 تم مناقشة واعتماد توصيف المقرر من مجلس القسم المقرر بتاريخ

COURSE SPECIFICATIONS

Drug-Drug Interaction&Adverse Drug Reactions

Fifth Year- Elective Courses

2017-2018

Course Specification of Elective Course-Drug-Drug Interaction&Adverse Drug Reactions

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University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Pharmacology & Toxicology department

Academic year/Level: Fifth year

Date of specification approval: 3 September 2017

B- Basic information:

Title: Drug-Drug Interaction & Adverse Drug Reaction Code: EL851

Credit Hours: ---

Lectures : 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, the student will be able to summarize adverse reactions and drug-drug interactions mechanism for certain drug groups.

2-Intended Learning Outcomes of Drug-Drug Interaction & Adverse Drug Reaction (lLOs):

A- Knowledge and Understanding	
a1	Determine adverse drug reactions, contraindications and drug-drug interactions.
a2	Identify the impact and mechanism of drug interaction.
a3	Verify toxic profile of certain drug groups.
B- Professional and Practical skills	
b1	Assess toxicity profiles of different xenobiotics.
C- Intellectual skills	
c1	Select the proper drug based on drug-drug interaction and adverse drug reactions.
c2	Assess possible drug interactions in drug combination by integrating knowledge from different sources.
D- General and Transferable skills	
d1	Write and present reports.
d2	Develop critical thinking, problem solving and decision making skills.

D- Contents:

Week No.	Lecture content (2 hrs/week)	Practical session (1 hr/week)
1	- Introduction to drug interaction and adverse reactions	- Sources of scientific data (1)
2	- Mechanisms of drug interaction	- Sources of scientific data (2)
3	- Analgesic and non-steroidal anti-inflammatory drug (NSAID) interactions and adverse reactions	- Basics of scientific writing (1)
4	- Antiarrhythmic drug interactions and adverse reactions	- Basics of scientific writing (2)
5	- Anticoagulant drug interactions and adverse reactions	- Basics of presentation skills (1)
6	Anticonvulsant drug interactions and adverse reactions	- Basics of presentation skills (2)
7	- Antihistamine drug interactions and adverse reactions	- Case reports of drug interaction and adverse reactions (1) **- Activity**
8	- Antihypertensive drug interactions and adverse reactions	- Case reports of drug interaction and adverse reactions (2)
9	- Digitalis glycoside drug interactions and adverse reactions	- Case reports of drug interaction and adverse reactions (3)
10	- Hypoglycaemic agent (antidiabetic) drug interactions and adverse reactions	- Case reports of drug interaction and adverse reactions (4)
11	- Immunosuppressant drug interactions and adverse reactions	- Case reports of drug interaction and adverse reactions (5)
12	- Neuromuscular blocker and anaesthetic drug interactions and adverse reactions	**- Practical exam**

13	- Oral contraceptives and related sex hormone drug interactions and adverse reactions	
14	- Revision	
15	- Open Discussion	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activities)
- Group discussion.

F- Student Assessment Methods:

1- Written exams to assess: a1, a2, a3, c1, c2

2- Activity to assess: d1, d2

3- Practical exams to assess: b1, c1, d1, d2

Assessment schedule

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 7
Assessment (3): Practical exams	Week 12

Weighting of Assessment

Assessment method	Marks	Percentage
Written exam	40	80%
Practical exam and activities	10	20%
TOTAL	50	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show.

H-List of References:

1- Course Notes: Student book of Drug-Drug Interaction&Adverse Drug

Reaction approved by Pharmacology & Toxicology department (2017)

- Practical notes of Drug-Drug Interaction&Adverse Drug Reaction approved by Pharmacology & Toxicology department (2017)

2- Essential Books

i- Stockley's Drug Interactions; Stockley I.H. (2005).

3- Periodicals and websites

Wikipedia

Course Coordinators: Dr. Samar Rizq

Head of Department: Prof. Mohamed Baraka

Date: تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 3 /9/2017م

Matrix I of Drug-drug interaction& adverse reactions course									
Course contents		ILOs for Drug-Drug interaction course							
		Knowledge and understanding			Professional and practical skills	Intellectual skills		General and transferable skills	
		a1	a2	a3	b1	c1	c2	d1	d2
Lectures									
1	Introduction to drug interaction and adverse reactions		x						
2	Mechanisms of drug interaction		x						
3	Analgesic and non-steroidal anti-inflammatory drug (NSAID) interactions and adverse reactions	x		x			x		
4	Antiarrhythmic drug interactions and adverse reactions	x		x			x		
5	Anticoagulant drug interactions and adverse reactions	x		x			x		
6	Anticonvulsant drug interactions and adverse reactions	x		x			x		
7	Antihistamine drug interactions and adverse reactions	x		x			x		
8	Antihypertensive drug interactions and adverse reactions	x		x		x	x		
9	Digitalis glycoside drug interactions and adverse reactions	x		x		x	x		
10	Hypoglycaemic agent (Antidiabetic) drug interactions and adverse reactions	x		x			x		
11	Immunosuppressant drug interactions and adverse reactions	x		x			x		
12	Neuromuscular blocker and anaesthetic drug interactions and adverse reactions	x		x			x		
13	Oral contraceptives and related sex hormone drug interactions and adverse reactions	x		x			x		
Practical sessions									

1	Sources of scientific data							x	
2	Basics of scientific writing							x	
3	Basics of presentation skills							x	
4	Case reports of drug interaction and adverse reactions				x	x			x
5	Activity							x	x

Matrix II of Drug-drug interaction& adverse reactions course									
National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods		Method of assessment	
						Lecture	Practical session	Written exam	Practical exam
2.13	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	A30	a1	- Analgesic and non-steroidal anti-inflammatory drug (NSAID) interactions and adverse reactions - Antiarrhythmic drug interactions and adverse reactions - Anticoagulant drug interactions and adverse reactions - Anticonvulsant drug interactions and adverse reactions - Antihistamine drug interactions and adverse reactions - Antihypertensive drug interactions and adverse reactions - Digitalis glycoside drug interactions and adverse reactions - Hypoglycaemic agent (Antidiabetic) drug interactions and adverse reactions - Immunosuppressant drug interactions and adverse reactions - Neuromuscular blocker and anaesthetic drug interactions and adverse reactions - Oral contraceptives and related sex hormone drug interactions and adverse reactions	Student book Essential books	x		x	

2.14	Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	A31	a2	- Introduction to drug interaction and adverse reactions - Mechanisms of drug interaction	Student book Essential books	x		x	
2.16	Toxic profile of drugs and other xenobiotics including sources, identification, symptoms, management control and first aid measures.	A33	a3	- Analgesic and non-steroidal anti-inflammatory drug (NSAID) interactions and adverse reactions - Antiarrhythmic drug interactions and adverse reactions - Anticoagulant drug interactions and adverse reactions - Anticonvulsant drug interactions and adverse reactions - Antihistamine drug interactions and adverse reactions - Antihypertensive drug interactions and adverse reactions - Digitalis glycoside drug interactions and adverse reactions - Hypoglycaemic agent (Antidiabetic) drug interactions and adverse reactions - Immunosuppressant drug interactions and adverse reactions - Neuromuscular blocker and anaesthetic drug interactions and adverse reactions - Oral contraceptives and related sex hormone drug interactions and adverse reactions	Student book Essential books	x		x	
3.7	Assess toxicity profiles of different xenobiotics and detect poisons in	B11	b1	- Case reports of drug interaction and adverse reactions	Practical notes		x		x

	biological specimens								
4.11	Assess drug interactions, ADRs and pharmacovigilance.	C14	c1	- Antihypertensive drug interactions and adverse reactions - Digitalis glycoside drug interactions and adverse reactions - Case reports of drug interaction and adverse reactions	Student book Essential books Practical notes	x	 x	x	 x
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C17	c2	- Analgesic and non-steroidal anti-inflammatory drug (NSAID) interactions and adverse reactions - Antiarrhythmic drug interactions and adverse reactions - Anticoagulant drug interactions and adverse reactions - Anticonvulsant drug interactions and adverse reactions - Antihistamine drug interactions and adverse reactions - Antihypertensive drug interactions and adverse reactions - Digitalis glycoside drug interactions and adverse reactions - Hypoglycaemic agent (Antidiabetic) drug interactions and adverse reactions - Immunosuppressant drug interactions and adverse reactions - Neuromuscular blocker and anaesthetic drug interactions and adverse reactions - Oral contraceptives and related sex hormone drug interactions and adverse reactions	Student book Essential books	x		x	

5.9	Implement writing and presentation skills.	D11	d1	- Sources of scientific data - Basics of scientific writing - Basics of presentation skills - Activity	Internet		x		x
5.10	Implement writing and thinking, problem- solving and decision-making abilities.	D12	d2	- Case reports of drug interaction and adverse reactions - Activity	Practical notes Internet		x		x

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Course Coordinators: **Dr. Samar Rizq**

Head of Department: **Prof. Mohamed Baraka**

Date: **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 3 /2017/9م**

COURSE SPECIFICATIONS

Effective Communication

Fifth Year- Elective Courses
2017-2018

Course Specification of Elective Course- effective communication

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University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: -------

Academic year/Level: Fifth year

Date of specification approval: September 2017

B- Basic information:

Title: Effective Communication Code: ELEC

Credit Hours: ---

Lectures : 2 hrs/week

Practical: ---

Tutorials: ---

Total: 2 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to determine effective keys in communication process to make good relationship in work place and general life.

2-Intended Learning Outcomes of Effective Communication (lLOs):

A- Knowledge and Understanding	
a1	Outline the principles of communication process.
a2	Define communication methods.
a3	Identify different people styles.
C- Intellectual skills	
c1	Analyze audience attitude towards oral presentation.
c2	Select appropriate communication tools in different situations.
D- General and Transferable skills	
d1	Interact effectively with public, patients and other health care professionals.
d2	Practise written communications (memos, letters, notes, reports,..etc.).
d3	Organizing oral presentation for the audiences.
d4	Develop critical thinking, problem solving and control fear.

D- Contents:

Week No.	Lecture (2 hrs/ week)
1	Introduction: - Definition of communication - Key elements in communication - Communication tools - Getting and handling information - Nonverbal communication - Applications of communication skills
2	Oral communication: - Listening skills - Speaking skills (what to do and how to say it) - Conflict, criticism and anger - Telephone skills
3	People Styles: - Different people styles
4	People styles under pressure
5	Nonverbal Communication (1): - Behavior - Body language
6	Nonverbal Communication (2): - Space - Attitude
7	Written Communication (1): - Memos, letters - Notes, reports
8	Written Communication (2): - Faxes - Email
9	Communication with the public (1): - Public relations and how to use it - Customer service
10	Communication with the public (2): - Complaints - Summary
11	Communication in the work place: - Supervisors

	- Employees
12	Oral communication/ presentation techniques (1): - Initial planning - Understanding the context for your presentation - Analyzing the audience Characters
13	Oral communication/ presentation techniques (2): - Preparation of oral presentation - Organizing the presentation - Using visual aids in presentation - Delivery of presentation
14	Oral communication/ presentation techniques (3): - Appearance - Handling fear of the presentation - Handling questions
15	- Open discussion

E- Teaching and Learning Methods:

- Lectures
- Self learning (internet search, group discussion…)

F- Student Assessment Methods:

1- Written exam to assess a1, a2, a3, c1, c2, d1, d2, d3, d4

Assessment schedule:

Assessment (1): Written exams	Week 16

Weighting of Assessment:

Assessment method	**Marks**	**Percentage**
Written exam	50	100%
TOTAL	50	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, microphone, recorder, Video.

H- List of References:

1- Course Notes: Student book of effective communication

2- Essential (textbooks):

i- Effective communication skills; Toni Rosenbaum.

ii- People styles at work; Robert Bolton and Dorothy Bolton.

3- Recommended books:

i- Health research oral and written communication techniques; Health department of Ethiopean science and technology commission in collaboration with the Ethiopean public health association and regional state health bureaus.

4- Periodicals and websites

Course Coordinators: **Prof. Dr.**

Date: September 2017

Matrix I of Effective communication course

Course Contents		ILOs of Effective communication course									
		knowledge and understanding			professional and practical skills		intellectual skills		General and Transferable skills			
		a1	a2	a3			c1	c2	d1	d2	d3	d4
1	Introduction: • Definition of communication • Key elements in communication • Communication tools • Getting and handling information • Nonverbal communication • Applications of communication skills	x						x				
2	Oral communication: • Listening skills • Speaking skills (what to do and how to say it) • Conflict, criticism and anger • Telephone skills		x					x				
3	People Styles: Different people styles			x								
4	People styles under pressure			x								
5	Nonverbal Communication (1): • Behavior • Body language		x				x					

6	Nonverbal Communication (2): • Space • Attitude		x				x					
7	Written Communication (1): • Memos, letters • Notes, reports		x					x		x		
8	Written Communication (2): • Faxes • Email		x					x		x		
9	Communication with the public (1): • Public relations and how to use it • Customer service			x					x			
10	Communication with the public (2): • Complaints • Summary			x			x		x			x
11	Communication in the work place: • Supervisors • Employees			x					x			
12	Oral communication/ presentation techniques (1): • Initial planning • Understanding the context for your presentation • Analyzing the audience Characters		x				x				x	x
13	Oral communication/ presentation techniques (2): • Preparation of oral presentation • Organizing the presentation • Using visual aids in presentation • Delivery of presentation		x								Ö	

14	Oral communication/ presentation techniques (3): • Appearance • Handling fear of the presentation • Handling questions		x				x				x	x
15	Open discussion											x

Matrix II of Effective communication							
National Academic Reference Standards NARS		**Program ILOs**	**Course ILOs**	**Course contents**	**Sources**	**Teaching and learning methods**	**Method of assessment**
						lecture	written exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A5	a1	Introduction: • Definition of communication • Key elements in communication • Communication tools • Getting and handling information • Nonverbal communication • Applications of communication skills	Student book Essential books Recommended books	x	x
2.18	Principles of management including financial and human resources.	A37	a2	Oral communication: • Listening skills • Speaking skills (what to do and how to say it) • Conflict, criticism and anger • Telephone skills Nonverbal Communication (1): • Behavior • Body language	Student book Essential books Recommended books	x	x

				Nonverbal Communication (2): • Space • Attitude			
				Written Communication (1): • Memos, letters • Notes, reports			
				Written Communication (2): • Faxes • Email			
				Oral communication/ presentation techniques (1): • Initial planning • Understanding the context for your presentation • Analyzing the audience Characters			
				Oral communication/ presentation techniques (2): • Preparation of oral presentation • Organizing the presentation • Using visual aids in presentation • Delivery of presentation			

				Oral communication/ presentation techniques (3): • Appearance • Handling fear of the presentation • Handling questions			
2.19	Principles of drug promotion, sales and marketing, business administration, accounting and pharmacoeconomics	A38	a3	People Styles: Different people styles	Student book Essential books Recommended books	x	x
				People styles under pressure		x	x
				Communication with the public (1): • Public relations and how to use it • Customer service		x	x
				Communication with the public (2): • Complaints • Summary		x	x
				Communication in the work place: • Supervisors • Employees		x	x
	Program ILOs Exceeding NARS	C18	c1	Nonverbal Communication (1): • Behavior • Body language	Student book Essential books Recommended books	x	x
				Nonverbal Communication (2): • Space • Attitude		x	x

				Communication with the public (2): • Complaints • Summary		x	x
				Oral communication/ presentation techniques (1): • Initial planning • Understanding the context for your presentation • Analyzing the audience Characters		x	x
				Oral communication/ presentation techniques (3): • Appearance • Handling fear of the presentation • Handling questions		x	x
			c2	Introduction: • Definition of communication • Key elements in communication • Communication tools • Getting and handling information • Nonverbal communication • Applications of communication skills	Student book Essential books Recommended books	x	x
				Oral communication: • Listening skills • Speaking skills (what to do and how to say it) • Conflict, criticism and anger		x	x

				• Telephone skills			
				Written Communication (1): • Memos, letters • Notes, reports		x	x
				Written Communication (2): • Faxes • Email		x	x
5.1	Communicate clearly by verbal and written means	D1	d1	Communication with the public (1): • Public relations and how to use it • Customer service	Student book Essential books Recommended books	x	x
				Communication with the public (2): • Complaints • Summary		x	x
				Communication in the work place: • Supervisors • Employees		x	x
			d2	Written Communication (1): • Memos, letters • Notes, reports	Student book Essential books Recommended books	x	x

				Written Communication (2): • Faxes • Email		x	x
5.9	Implement writing and presentation skills	D11	d3	Oral communication/ presentation techniques (1): • Initial planning • Understanding the context for your presentation • Analyzing the audience Characters	Student book Essential books Recommended books	x	x
				Oral communication/ presentation techniques (2): • Preparation of oral presentation • Organizing the presentation • Using visual aids in presentation • Delivery of presentation		x	x
				Oral communication/ presentation techniques (3): • Appearance • Handling fear of the presentation • Handling questions		x	x
5.1O	Demonstrate critical thinking, problem-solving and decision-making	D12	d4	Communication with the public (2): • Complaints • Summary	Student book Essential books Recommended books	x	x

	abilities			Oral communication/ presentation techniques (1): • Initial planning • Understanding the context for your presentation • Analyzing the audience Characters		x	x
				Oral communication/ presentation techniques (3): • Appearance • Handling fear of the presentation • Handling questions		x	x
				Open discussion		x	x

Course Coordinators: **Prof. Dr.**

Date:

Course Specification

Good Manufacture Practice

Fifth Year- Elective Courses

2017-2018

Course specification of GMP

University: Zagazig **Faculty: Pharmacy**

A- Course specifications:

- Program (s) on which the course is given : Bachelor of Pharmacy
- Major or minor element of programs : Major
- Department offering the program : ----------
- Department offering the course : Pharmaceutics and Industrial pharmacy
- Academic year level : Fifth year (Elective course)
- Date of specification approval : September 2017

B- Basic information:

- Title : Good Manufacturing Practice
- Credit Hours : ---- Code : EL652
- Lectures : 2 hrs/ week
- Practical : 2 hrs / week
- Tutorials : ---------
- Total : 3 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to: describe the good practices regarding sampling, packaging, storing, labeling as well as production of different dosage forms

2-Intended Learning Outcomes

A- Knowledge and Understanding	
a1	Define the minimum requirements for GMP
a2	Outline the precautions and safety measures that should be taken during manufacturing processes
a3	Describe the different instruments used for preparation of different dosage forms
a4	Illustrate how to sample, manufacture, package , label and storage different dosage forms
B- Professional and Practical skills	
b1	Demonstrate different techniques used in operating machines
b2	Apply GMP guidelines in different manufacturing processes
C- Intellectual skills	
c1	Differentiate between good and bad practices during different manufacturing processes
D- General and Transferable skills	
d1	Work properly as member of team
d2	Demonstrate critical thinking skills

D- Contents :

Weeks	Lecture contents (2hrs/week)	Practical session (2hrs/week)
1	Pharmaceutical History	Demonstrative videos
2	Good Manufacturing Practice	Demonstrative videos
3	History of GMP	Demonstrative videos
4	Production	Demonstrative videos
5	Quality Control	Demonstrative videos
6	Warehouse	Demonstrative videos
7	Warehouse	Demonstrative videos
8	Quality assurance	Demonstrative videos
9	Key personnel	Demonstrative videos
10	Documentation	Demonstrative videos
11	Personnel hygiene	**- Activity**
12	Personnel Training	**Practical exam**
13	Self inspection, qualification and validation	
14	Complaints, Recalls and Product quality review	
15	Therapeutic Goods Regulators	

E- Teaching and Learning Methods:

Lectures

Practical session

Self learning (activity)

F- Student Assessment methods:

1-Written exams to assess: a1, a2, a3, a4, c1,c2, d1, d2

2- Activity to assess: d1, d2

3-Practical exams to assess: a1, a2, b1, b2, c1,c2, d1, d2

4-Oral exam to assess: a1, a2, a3, a4, c1,c2, d1, d2

Assessment schedule

Assessment (1): Written exams	Week 16
Assessment (2): Practical exams	Week 11
Assessment (3): Practical exams	Week 12
Assessment (4): Oral exams	Week 16

Weighting of Assessment

Assessment method	Marks	Percentage
Written exam	40	80%
Practical exam and activities	10	20%
TOTAL	50	100%

G- Facilities required for teaching and learning:

Black (white) boards, data show

H- List of References:

1- Course Notes: Student book Good Manufacturing Practice approved by pharmaceutics department (2017)

2- Essential Books:

i- Good Manufacturing Practices for Pharmaceuticals, Sixth Edition (Drugs and the Pharmaceutical Sciences), Graham Bunn, Joseph D. Nally, (2006).

3- Recommended Books

i. Good Design Practices for GMP Pharmaceutical Facilities (Drugs and the Pharmaceutical Sciences) Andrew Signore, Terry Jacobs, (2005).

4- Periodicals and websites:

Journal of pharmaceutical sciences

www.Pubmed.com

www.Sciencedirect.com

Course Coordinators: Prof. Dr. Mahmoud Abdel Ghany Mahdy

Head of Department: Prof. Dr. Nagia Ahmed El-Amin El-Megrab

Date: **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 2017/9/25**

Matrix I of GMP course

Course Contents		ILOs of GMP course									
		Knowledge and understanding				Professional and practical skills		Intellectual skills		Transferable and general skills	
		a1	a2	a3	a4	b1	b2	c1	c2	d1	d2
Lectures											
1	Pharmaceutical History	x		x							
2	History of GMP	x									
3	Good Manufacturing Practice	x	x	x						x	x
4	Production	x	x								
5	Quality Control	x									
6	Warehouse	x					x	x			x
7	Quality assurance		x		x	x					
8	Key personnel	x									
9	Documentation	x	x	x				x			
10	Personnel hygiene	x	x	x			x	x	x		
11	Personnel Training			x							
12	Self inspection, qualification and validation	x	x								
13	Complaints, Recalls and Product quality review			x	x						
12	Therapeutic Goods Regulators	x	x								

Practical sessions											
1	Site visits to pharmaceutical companies and industries to apply what they studied theoretically				x	x			x	x	
2	Activity									x	x

Matrix II for GMP

NARS		Program ILOS	Course ILOS	Course content	Sources	Teaching and learning methods			Method of assessment		
						Lecture	Practical session	Self learning	Written exam	Practical exam	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A1	a1.	Pharmaceutical History History of GMP Good Manufacturing Practice Production Quality Control Warehouse Quality assurance Key personnel Documentation Personnel hygiene Personnel Training Self inspection, qualification and validation Complaints, Recalls and Product quality review Therapeutic Goods Regulators	notebook	x		x	x		x
			a2	Practice Production Quality assurance Documentation Personnel	notebook	x	x		x		x

				hygiene Self inspection, qualification and validation Therapeutic Goods Regulators							
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures	A11	a3 .	Pharmaceutical History Production Documentation Personnel hygiene Personnel Training Complaints, Recalls and Product quality review	notebook	x			x	x	x
2.7	Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	A18	a4.	Complaints, Recalls and Product quality review Quality assurance	notebook	x			x	x	x
3.8	3.8 Apply techniques used in operating pharmaceutical equipment and instruments	B13.	b1	Site visits to pharmaceutical companies and industries to apply what they studied theoretically Qulaity assurance	practical notebook		x			x	
			b2	Ware house & personal hygeine	practical notebook		x	x		x	

4.1	4.1 Apply pharmaceutical knowledge in the formulation of safe and effective medicines as well as in dealing with new drug delivery systems.	C1	c1.	Ware house & personal hygeine Documentation	practical notebook& notebook	x		x		x	x
4.2	4.2Comprehend and apply GLP,GPMP, GSP and GCP guidelines in pharmacy practice	C3	c2	Personal hygeine & Site visits to pharmaceutical companies and industries to apply what they studied theoretically	practical notebook& notebook			x			
5.10	5.1o Demonstrate critical thinking, problem-solving and decision-making abilities	D12.	d1	Good Manufacturing Practice Site visits to pharmaceutical companies and industries to apply what they studied theoretically Activity	practical notebook& notebook	x			x	x	
			d2.	Good Manufacturing Practice & ware house Activity							

Course Coordinators: Prof. Dr. Mahmoud Abdel Ghany Mahdy

Head of Department: Prof. Dr. Nagia Ahmed El-Amin El-Megrab

Date: **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ 2017/9/25**

COURSE SPECIFICATIONS

Heterocyclic synthesis of drugs

Fifth year – Elective course

2017-2018

Course Specification of Heterocyclic synthesis of drugs

University: **Zagazig** **Faculty:** **Pharmacy**

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Pharm. Organic chemistry Department

Academic year/ Level: Fifth year

Date of specification approval: September 2017

B- Basic information:

Title: Heterocyclic synthesis of drugs Code: EL550

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 4 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, the student will be able to outline synthesis of pharmaceutically active nuclei using more advanced synthetic protocols.

2-Intended Learning Outcomes of Heterocyclic synthesis of drugs (lLOs):

A- Knowledge and Understanding	
a1	Underline the basis of drug design and development.
a2	Define synthetic routes for different heterocyclic pharmaceutical compounds.
B- Professional and Practical skills	
b1	Handle basic laboratory equipments and chemicals effectively and safely.
b2	Synthesize, purify, and identify the synthesized pharmaceutically active derivatives.
b3	Use spectroscopic tools for analysis of synthesized pharmaceutical compounds.
C- Intellectual skills	
c1	Demonstrate competency to select appropriate methods of synthesis, identification of active substances.
c2	Interpret experimental results and published literature.
D- General and Transferable skills	
d1	Implement tasks during preparation of chemical target compound with other members in the lab
d2	Adopt ethical and legal chemistry labs safety guidelines
d3	Manage time and put plan for identifying, synthesis and purification of chemical target compounds
d4	Implement writing skills through lab reports and discussion of results
d5	Demonstrate critical thinking in using different spectroscopic tools to analyze data

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	- Synthetic routes to some 5-membered ring drugs (ex. Nitrofurans and phensuximide)	- Synthesis of pyrazole moities
2	- Synthetic routes to some 5-membered ring drugs	- Lab synthesis of imidazole moities
3	- Synthetic routes to some 5-membered ring drugs	- Lab synthesis of pyrrol moities **- Activity**
4	- Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	- Lab synthesis of quinazoline nucleus
5	- Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	- Lab synthesis of theinopyrimidine nucleus
6	- Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	- Lab synthesis of phthalazine nucleus
7	- Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	- Spectroscopic elucidation of synthesized five membered derivatives **- Practical exam (1)**
8	- Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	- Spectroscopic elucidation of synthesized six membered derivatives
9	- Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	- Spectroscopic elucidation of quinazoline derivatives **- Activity (spectroscopy case study)**
10	- Reduced 6-membered pi deficient heterocyclic drugs	- Database search for research point

		- Literature survey on synthetic route of pharmaceutical active drugs
11	- Reduced 6-membered pi deficient heterocyclic drugs	- Use of online resources on chemistry research - Training on writing a research report
12	- Synthetic routes to Meso-ionic heterocyclic drugs	- **Practical exam (2)**
13	- Synthetic routes to Meso-ionic heterocyclic drugs	
14	- Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	
15	- Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Self learning (activity, internet search on some selected topics….)

F- Assessment methods:

1- Written exams to assess a1, a2, c1, d5

2- Activity to assess c2, d4, d5

3- Practical exams to assess b1, b2, b3, c1, c2, d1, d2, d3, d4, d5

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 3, 9
Assessment (3): Practical exams	Week 7, 12

Weighting of Assessment

Assessment method	Marks	Percentage
Written exam	40	80%
Practical exam and activities	10	20%
TOTAL	50	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, Laboratory equipment (spectrophotometer) and Chemicals.

H- List of References:

1- Course Notes: Student book of Heterocyclic synthesis of drugs approved by Pharmaceutical organic chemistry department (2017)**.**

- Practical notes of Heterocyclic synthesis of drugs approved by Pharmaceutical organic chemistry department (2017)**.**

2- Essential Books:

i- Organic Chemistry (eighth edition); Solomons T.W.G. & Fryhle C.B.; John Wiley and Sons Inc., USA (2004).

ii- The Organic Chemistry of Drug Synthesis (Volume 7); Lednicer D.; John Wiley and Sons Inc., USA (2008).

3- Recommended books:

i- Organic Chemistry (sixth edition); Morrison R.T. and Boyd R.N.; Allyn and Bacon, Prentice-Hall Inc, USA (1992).

4- Periodicals

Journal of Organic Chemistry

Journal of Chemical Society, Perkin Transactions 1

Journal of American Chemical Society

Course Coordinators: Prof.

Head of Department: Prof. Hanan Abd ElRazeq

Date: تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 9 /9/2017م

Matrix I of Heterocyclic synthesis of drugs course

Course Contents		ILOs of Heterocyclic synthesis of drugs course											
		Knowledge and understanding		Professional and practical skills			Intellectual skills		General and transferable skills				
Lectures		**a1**	**a2**	**b1**	**b2**	**b3**	**c1**	**c2**	**d1**	**d2**	**d3**	**d4**	**d5**
1	Synthetic routes to some 5-membered ring drugs (ex. Nitrofurans and phensuximide)	x	x				x						
2	Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	x	x				x						
3	Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	x	x				x						
4	Reduced 6-membered pi deficient heterocyclic drugs	x	x				x						
5	Synthetic routes to Meso-ionic heterocyclic drugs	x	x				x						x
6	Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	x	x				x						x
Practical sessions													
1	Laboratory safety measures			x						x			
2	Lab Synthesis of different pharmaceutically active nuclei				x		x		x	x	x	x	
3	Spectroscopic elucidation of the synthesized derivatives					x	x	x	x			x	x
4	Literature surveys and database training							x				x	
5	Activities							x				x	x

Matrix II of Heterocyclic synthesis of drugs course										
National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment	
						Lecture	Practical session	Self learning	Written exam	Practical exam
2.5	Principles of drug design, development and synthesis.	A14	a1	Synthetic routes to some 5-membered ring drugs (ex. Nitrofurans and phensuximide)	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	Student book Essential books Recommended books Internet	x		x	x	

				Reduced 6-membered pi deficient heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to Meso-ionic heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
		A15	a2	Synthetic routes to some 5-membered ring drugs (ex. Nitrofurans and phensuximide)	Student book Essential books Recommended books Internet	x		x	x	
					Student book Essential books Recommended books Internet	x		x	x	

				Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Reduced 6-membered pi deficient heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to Meso-ionic heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	

3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	Laboratory safety measures	Practical notes		x			x
3.4	Synthesize, purify, identify, and/or standardize active substances from different origins.	B6	b2	Synthesis of pharmaceutical targets	Practical notes		x			x
			b3	Spectroscopic elucidation of the synthesized derivatives	Practical notes		x			x
4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C8	c1	Synthetic routes to some 5-membered ring drugs (ex. Nitrofurans and phensuximide)	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to some selected common 6-membered pi deficient heteroaromatic drugs	Student book Essential books Recommended books Internet	x		x	x	

				Synthetic routes to benzo-fused 6-membered pi deficient heteroaromatic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Reduced 6-membered pi deficient heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to Meso-ionic heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Lab Synthesis of different pharmaceutically active nuclei	Practical notes		x			x

				Spectroscopic elucidation of the synthesized derivatives	Practical notes		x			x
4.13	Analyze and interpret experimental results as well as published literature	C16	c2	Spectroscopic elucidation of the synthesized derivatives	Practical notes		x	x		x
				Literature surveys and database training	Internet		x	x		x
				Activity (spectroscopy)	Internet		x	x		x
5.3	Work effectively in a team	D4	d1	Lab Synthesis of different pharmaceutically active nuclei	Practical notes		x			x
				Spectroscopic elucidation of the synthesized derivatives	Practical notes		x			x
5.6	Adopt ethical, legal and safety guidelines	D8	d2	Laboratory safety measures	Practical notes		x			
				Lab Synthesis of different pharmaceutically active nuclei	Practical notes		x			x
5.8	Demonstrate creativity and time management abilities	D10	d3	Lab Synthesis of different pharmaceutically active nuclei	Practical notes		x			x
5.9	Implement writing and	D11	d4	Lab Synthesis of different pharmaceutically active nuclei	Practical notes		x			x

	presentation skills									
				Spectroscopic elucidation of the synthesized derivatives	Practical notes		x			x
				Literature surveys and database training- Activities	Internet		x	x		x
5.1O	Demonstrate critical thinking, problem-solving and decision-making abilities	D12	d5	Synthetic routes to Meso-ionic heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Synthetic routes to simple 7-membered unsaturated heterocyclic drugs	Student book Essential books Recommended books Internet	x		x	x	
				Spectroscopic elucidation of the synthesized derivatives	Practical notes		x	x		x
				Activities	internet		x	x		x

Course Coordinators: **Prof.**

Head of Department: **Prof. Hanan Abd ElRazeq**

Date: **تم مناقشة و إعتماد توصيف المقرر من مجلس القسم بتاريخ 9 /9/2017م**

COURSE SPECIFICATIONS

Instrumental Analysis

Fifth Year- Elective Courses
2017-2018

Course Specification of Elective Course- Instrumental Analysis

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University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program(s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Major

Department offering the program: -------

Department offering the course: Analytical Chemistry Department

Academic year/Level: Fifth year

Date of specification approval: 27 August 2017

B- Basic information:

Title: Instrumental Analysis Code: EL150

Credit Hours: ---

Lectures : 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course:

On completion of the course, students will be able to outline composition, mechanism of analytical instrument as well as the theory and application of spectrophotometry, potentiometry, conductometry and chromatography.

2-Intended Learning Outcomes of Instrumental Analysis (lLOs)

A- Knowledge and Understanding	
a1	Mention principles of instrumental analysis.
a2	Describe composition and mechanism of each studied instrument.
a3	Illustrate theories of spectrophotometry, potentiometry, conductometry and chromatography.
a4	Demonstrate composition and mode of operation of potentiometer, conductometer and spectrophotometer.
a5	Specify validation of analytical procedures.
a6	State the concentrations of different analytes using various expressions.
B- Professional and Practical skills	
b1	Handle and dispose chemicals safely.
b2	Apply spectrophotometric, potentiometric and conductometric techniques for determination of some compounds.
C- Intellectual skills	
c1	Interpret results obtained from different methods applied for determination of different pharmaceutical compounds.
c2	Analyze obtained analytical results.
c3	Decide the use of the most appropriate standardization method for different compounds.
D- General and Transferable skills	
d1	Work as member of team.
d2	Adopt safety guidelines.
d3	Manage time and perform a task within time limit.
d4	Implement writing and presentation skills.

D- Contents:

Week No.	Lecture (2 hrs/week)	Practical session (2hrs/week)
1	Introduction to instrumental methods of analysis: - Background - Choosing of analytical method - Performance characteristics - Precision, accuracy, sensitivity dynamic range, selectivity	- Safety guidelines
2	Electrochemical methods: - Classification of electrochemical methods - Potentiometer - Electrode potential - Reference electrodes, NHE. SCE, silver/silver chloride	- Instrumentation of pH-meters and types of electrodes
3	- Indicator electrodes, metallic indicator electrodes, membrane indicator electrodes (glass electrode), antimony electrode, quinhydrone electrode	- pH- measurement
4	- Application of potentiometry - Direct measurements, - - Potentiometric titration, end point determination neutralization titration , redox titration , precipitation titration	- Redox Potentiometric titration
5	- Conductometry, Introduction , Equivalent conductance Λ - Instruments used in conductometric determination - Conductivity bridge (Kohlrausch Bridge) - Cells used in conductometric measurements	- Neutralization, potentiometric titration
6	- Conductometry, Application of conductivity, Direct or absolute measurements, Conductometric titrations	- Complexometric, potentiometric titration
7	Spectroscopy: - Electromagnetic Radiation, Light as energy, Bouguert-lambert's la, Chromophore, Auxchrome, Bathochromic shift , Hypsochromic shift	- Spectroscopic principles and determination of λ_{max}

	, Effect of pH on absorption spectra	
8	- Spectrophotometry - Instrumentation, Colorimetry, General requirements of the colored product, General requirement of an ideal chromogen	**- Practical exam (1)**
9	- Spectrophotometer, Light source, Monochromator, Sample compartment, Light detector, Types of Transducer, Signal processor (meter or recorder) - Application of spectrophotometry	- Determination of $KMnO_4$ spectrophotometrically - Presentation (1)
10	Spectrofluorimetry: - Luminescence, molecular emission , theory of fluorescence and phosphorescence, fluorescence spectra, instrumentation	- Beer's law and regression equation - Paper chromatography
11	- Advantage of spectroflurometry factors affecting fluoresce intensity, application of spectroflurometry.	**- Activity** - Presentation (2)
12	Chromatography: - Introduction, comparison between the classical and modern L.C	**- Practical exam (2)**
13	- Theoretical aspects , principles of chromatography , parameters of chromatography , techniques of chromatography	
14	- Gas chromatography, principles, instrumentation, factors governing the retation compounds, detectors for GC, application of GC , HPLC , types of HPLC , SFC	
15	- Electrophoresis, HPCE, quantitative chromatographic analysis , densitometry	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (activity, reports, internet search, group discussion…)

F- Student Assessment Methods:

1- Written exam to assess a1,a2,a3,a4,a5,a6,c3

2- Activity to assess b2, c3, d1, d3

3- Practical exam to assess b1,b2,c1.c2,c3,d1,d2,d3,d4

Assessment schedule:

Assessment (1): Written exams	Week 16
Assessment (2): Activity	Week 11
Assessment (3): Practical exams	Week 8,12

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	40	80%
Practical exam and activities	10	20%
TOTAL	50	100%

G- Facilities Required for Teaching and Learning:

- Black (white) board, Data show, laboratory equipments (pH meter, spectrophotometer, electrodes) and chemicals.

H- List of References:

1- Course Notes: Student book of Instrumental analysis approved by Analytical chemistry department (2017).

- Practical notes of instrumental analysis approved by analytical chemistry department (2017).

2- Essential (textbooks):

i- Vogel's Textbook of Quantitative Inorganic Analysis including Elementary Instrumental Analysis (fourth edition); G. Svehla; Longman Inc., New York (1978).

3- Recommended books:

i- Chemical Analysis: Modern Instrumental Methods and Techniques (fourth edition); Rouessac F., Rouessac A.; John Wiley & Sons, Ltd., New York (1998).

ii- Instrumentation in Analytical Chemistry; Burman S.A.; American Chemical Society, Washington (1982).

4- Periodicals and websites

Analytical Letters Journal

Analyst Journal

Journal of pharmaceutical and biomedical analysis

Course Coordinators: Prof. Hisham Ezzat

Head of Department: Prof. Magda ElHenawi

Date: تم مناقشة وإعتماد توصيف المقرر من مجلس القسم بتاريخ 27 /8/ 2017م

Matrix I of Instrumental Analysis course

Course Contents		ILOs of Instrumental Analysis course														
		Knowledge and understanding						Practical skills		Intellectual skills			General and transferable skills			
		a1	a2	a3	a4	a5	a6	b1	b2	c1	c2	c3	d1	d2	d3	d4
Lectures																
1	Introduction to instrumental methods of analysis: - Background - Choosing of analytical method - Performance characteristics, precision, accuracy, sensitivity, dynamic range, selectivity	x				x	x									
2	Electrochemical method: - Classification of electrochemical methods - Potentiometer - Electrode potential - Reference electrodes, NHE. SCE , silver/silver chloride	x			x	x										
3	- Indicator electrodes, metallic indicator electrodes, membrane indicator electrodes (glass electrode), antimony electrode, quinhydrone electrode		x	x												
4	-Application of potentiometry Directr measurements, potentiometric titration, end point determination neutralization titration , redox titration , precipitation titration					x						x				
5	- Conductometry, Introduction , Equivalent conductance - Instrumentments used in conductometric determination - Conductivity bridge (Kohlrausch Bridge) Cells used in conductometric measurements		x	x	x											

6	- Conductometry, Application of conductivity, Direct or absolute measurements, Conductometric titrations			x								x				
7	Spectroscopy: - Electromagnetic Radiation, Light as energy, Bouguert-lambert's la, Chromophore, Auxchrome, Bathochromic shift , Hypsochromic shift , Effect of pH on absorption spectra	x			x											
8	-_Spectrophotometry Instrumentation, Colorimetry, General requirements of the coloured product, General requirement of an ideal chromogen	x														
9	- Spectrophotometer, Light source, Monochromator, Sample compartment, Light detector, Types of Transducer, Signal processor (meter or recorder), Application of spectrophotometry		x	x								x				
10	Spectrofluorimetry: - Luminescence, molecular emission , theory of fluorescence and phosphorescence, fluorescence spectra, instrumentation		x	x	x											
11	- Advantage of spectroflurometry factors affecting fluoresce intensity, application of spectroflurometry.		x	x								x				
12	Chromatography: - Introduction, comparison between the classical andmodern L.C		x	x												
13	- Theoretical aspects , principles of chromatography , parameters of chromatography , techniques of chromatography	x	x	x												
14	- Gas chromatography, prencipiles, instrumentation, factors governing the retation compounds, deterctors for GC, application og GC , HPLC , types of HPLC , SFC	x	x	x			x					x				
15	- Electrophorsis, HPCE, quantative chromatographic analysis , densitometry	x	x	x		x	x					x				
Practical sessions																
1	Safety guidlines							x					x	x		

2	Instrumentation of pH-meters and types of electrodes								x				x	x	x	
3	pH- measurement								x	x	x	x	x	x	x	
4	Redox Potentiometric titration								x	x	x	x	x	x	x	
5	Neutralization potentiometric titration								x	x	x	x	x	x	x	
6	Complexometric potentiometric titration								x	x	x	x	x	x	x	
7	Spectroscopic principles and determination of λ_{max}								x	x	x		x	x	x	
8	Determination of $KMnO_4$ spectrophotometrically								x	x	x	x	x		x	
9	Presentation I												x		x	X
10	Beer's law and regression equation								x	x	x		x		x	
11	Paper chromatography								x	x	x	x	x	x	x	
12	Activity								x			x	x		x	
13	Presentation II													x	x	X

Matrix II of Instrumental Analysis course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment	
						Lecture	Practical session	Self learning	Written exam	Practical exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1	Introduction to instrumental methods of analysis: - background - Choosing of analytical method - Performance characteristics, precision, accuracy, sensitivity, dynamic range, selectivity Electrochemical methods: - Classification of electrochemical methods - Potentiometer - Electrode potential - Reference electrodes, NHE. SCE , silver/silver chloride Spectroscopy: - Electromagnetic Radiation, Light as energy, Bouguert-lambert's la, Chromophore, Auxchrome, Bathochromic shift , Hypsochromic shift , Effect of pH on absorption spectra - Spectrophotometry: - Instrumentation, Colorimetry, General requirements of the colored product, General requirement of an	Student book Essesntial book	x			x	

				ideal chromogen Chromatography - Theoretical aspects , principles of chromatography , parameters of chromatography , techniques of chromatography - Gas chromatography, principles, instrumentation, factors governing the retation compounds, detectors for GC, application of GC , HPLC , types of HPLC , SFC - Electrophoresis, HPCE, quantitative chromatographic analysis , densitometry						
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a2 a3	- Indicator electrodes, metallic indicator electrodes, membrane indicator electrodes (glass electrode), antimony electrode, quinhydrone electrode - Conductometry, Introduction , Equivalent conductance Λ -Instruments used in conductometric determination - Conductivity bridge (Kohlrausch Bridge) - Cells used in conductometric measurements - Spectroscopy	Student book Essesntial book Recommended books Internet	x		x	x	

				- Spectrophotometer, Light source, Monochromator, Sample compartment, Light detector, Types of Transducer, Signal processor (meter or recorder), Application of spectrophotometry - Spectrofluorimetry - Luminescence, molecular emission , theory of fluorescence and phosphorescence, fluorescence spectra, instrumentation - Advantage of spectroflurometry factors affecting fluoresce intensity, application of spectroflurometry. - Chromatography - Introduction, comparison between the classical						

				andmodern L.C - Theoretical aspects , principles of chromatography , parameters of chromatography , techniques of chromatography - Gas chromatography, principles, instrumentation, factors governing the reaction compounds, detectors for GC, application of GC , HPLC , types of HPLC , SFC - Electrophorsis, HPCE, quantitative chromatographic analysis						
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a4	Electrochemical method: - Classification of electrochemical methods - Potentiometer - Electrode potential Reference electrodes, NHE. SCE , silver/silver chloride Spectroscopy: - Electromagnetic Radiation, Light	Student book Essesntial book Recommended books Internet	x		x	x	

				as energy, Bouguert-lambert's la, Chromophore, Auxchrome, Bathochromic shift , Hypsochromic shift , Effect of pH on absorption spectra - Spectrofluorimetry Luminescence, molecular emission , theory of fluorescence and phosphorescence, fluorescence spectra, instrumentation						
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A13	a5	Introduction to instrumental methods of analysis: - Background - Choosing of analytical method - Performance characteristics, precision, accuracy, sensitivity, dynamic range, selectivity Electrochemical method: - Classification of electrochemical methods - Potentiometer - Electrode potential - Reference electrodes, NHE. SCE , silver/silver chloride Chromatograpgy: - Electrophoresis, HPCE, quantitative chromatographic	Student book Essesntial book	x			x	

				analysis , densitometry						
2.17	Methods of biostatistical analysis and pharmaceutical calculations	A36	a6	Introduction to instrumental methods of analysis: - Performance characteristics, precision, accuracy, sensitivity, dynamic range, selectivity Chromatography: - Gas chromatography, principles, instrumentation, factors governing the retation compounds, detectors for GC, application of GC , HPLC , types of HPLC , SFC - Electrophoresis, HPCE, quantitative chromatographic analysis , densitometry	Student book Essesntial book	x			x	
3.2	Handle and dispose chemicals and pharmaceutical preparations safely	B2	b1	Safety guidelines	Practical notes		x			X
3.4	Extract, isolate, synthesize, purify, identify, and/or standardize active	B6	b2	- pH- measurement - Redox Potentiometric titration - Neutralization potentiometric titration	Practical notes Internet		x	x		x

	substances from different origins.			- Complexometric potentiometric titration - Spectroscopic principles and determination of λmax - Determination of KMnO4 spectrophotometrically - Beer's law and regression equation - Paper chromatography - Determination of KMnO4 spectrophotometrically						
4.3	Apply qualitative and quantitative analytical and biological methods for QC and assay of raw materials as well as pharmaceutical preparations	C4	c1 c2	- pH- measurement - Redox Potentiometric titration - Neutralization potentiometric titration - Complexometric potentiometric titration - Spectroscopic principles and determination of λmax - Determination of KMnO4 spectrophotometrically - Beer's law and regression equation	Practical notes Internet		x	x		x

				- Paper chromatography						
4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C8	c3	Electrochemical method - Application of potentiometry Direct measurements, potentiometric titration, end point determination neutralization titration , redox titration , precipitation titration - Conductometry, Application of conductivity, Direct or absolute measurements, Conductometric titrations Spectroscopy - Spectrophotometer, Light source, Monochromator, Sample compartment, Light detector, Types of Transducer, Signal processor (meter or recorder), Application of spectrophotometry Spectrofluorimetry - Advantage of spectroflurometry factors affecting fluoresce intensity, application of	Student book Essesntial book Recommended books Practical notes Internet	x	x	x	x	x

				spectroflurometry. Chromatography: - Gas chromatography, principles, instrumentation, factors governing the retation compounds, detectors for GC, application of GC , HPLC , types of HPLC , SFC - Electrophoresis, HPCE, quantitative chromatographic analysis , densitometry - pH- measurement - Redox Potentiometric titration - Neutralization potentiometric titration - Complexometric potentiometric titration - Spectroscopic principles and determination of λmax - Determination of KMnO4 spectrophotometrically - Beer's law and regression equation						

5.3	Work effectively in a team	D4	d1	Practical sessions	Practical notes Internet	x	x			X
5.6	Adopt ethical, legal and safety guidelines	D8	d2	Safety guidelines	Practical notes	x				x
5.8	Demonstrate creativity and time management abilities	D10	d3	Practical sessions presentations	Practical notes Internet	x	x			x
5.9	Implement writing and presentation skills	D11	d4	Presentations	Internet	x	x			x

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Course Coordinators: Prof. Hisham Ezzat

Head of Department: Prof. Magda ElHenawi

Date: تم مناقشة وإعتماد توصيف المقرر من مجلس القسم بتاريخ 27 /8/ 2017م

Course Specification
Manufacturing and production of crude drugs of natural origin
Fifth Year- Elective Courses

2017-2018

Course Specification of Manufacturing and production of crude drugs of natural origin

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University: Zagazig Faculty: Pharmacy

A- Course specifications:

Program (s) on which the course is given: Bachelor of Pharmacy

Major or Minor element of programs: Elective

Department offering the program: ----------

Department offering the course: Pharmacognosy

Academic year Level: Fifth year /Second term

Date of specification approval: 16 September 2017

B- Basic information:

Title: Manufacturing and production of crude drugs of natural origin
Code: EL752
Credit Hours: ---------
Lectures: 2 hrs/week

Tutorials: ----------

Total: 2 hrs/week

C- Professional information:

1-Overall aim of the course

By the end of the course, the student will be able to explain the fundamental knowledge about Manufacturing and production of crude drugs of natural origin.

2-Intended learning outcomes (ILOs):

A- Knowledge and Understanding	
a1	Illustrate the principles of collection and storage of medicinal herbs.
a2	Describe both physical and chemical properties of active ingredients used in preparation of plant extract.
a3	State GLP guidelines and validation procedures in standardization of crude drugs.
a4	Outline the principles of isolation, purification and identification of pharmaceutical compounds of plant origin and manufacture of teas.
a5	Enumerate standardization methods of pharmaceutical compounds from medicinal herbs.
a6	Describe properties of formulations of herbal medications.
a7	Identify pharmacological properties of some herbal medications used in some specific health problems.
B- Professional and Practical skills	
b1	Use pharmaceutical terms and abbreviations properly.
b2	Construct a research study and analyze the results.
C- Intellectual skills	
c1	Select appropriate methods of standardization of active substances in herbal medicine
c2	Analyze information using scientific and library based knowledge for preparation, screening and standardization of active substances in herbal medicine.
D- General and Transferable skills	
d1	Reprocess information from different sources to improve the professional skills in preparation, screening and standardization of active substances in herbal medicine..
d2	Work effectively as a member of a team.
d3	Write reports and present it**.**
d4	Demonstrate, decision making and problem solving in preparation, screening and standardization of active substances in herbal medicine.

D-Course Content :

Week No.	Lecture contents (2hrs/lec.)
1	Collection of Medicinal Herb
2	Storage of Medicinal Herbs
3	Crude drugs extract
4	Crude drugs extract
5	Methods of making and standardization of crud drugs
6	Methods of making and standardization of crud drugs
7	Formulation of plant extracts into dosage form
8	Screening and processing of plant material for potential pharmaceutical needs
9	Screening and processing of plant material for potential pharmaceutical needs
10	Manufacturing of Teas
11	Manufacturing of Teas
12	Pharmaceutical Products of Medicinal Herbs
13	Pharmaceutical Products of Medicinal Herbs
14	Quality Control of Pharmaceutical Products of Medicinal Herbs
15	Quality Control of Pharmaceutical Products of Medicinal Herbs

E-Teaching and learning methods:

- Lectures
- Tutorials
- Self learning (activity)

F-Student assessment:

1-Written exams **to assess:** a1, a2 , a3, a4, a5, a6, a7, b1.
3-Activities **to assess:** b1,c1, c2, d1, d2, d3, d4.

Assessment schedule:

Assessment method	Weeks
Assessment (1): Written exam	16
Assessment (2): Oral exam	16

-Weighting of assessment:

Assessment method	Marks	Percentage
Written exam	50	100 %
Total	50	100 %

G -Facilities required for teaching and learning:

- **For lectures:** Black (white) boards, data show.

H-References:

The Medicinal Plant Industry; R.O.B. Wijesekera

Course Coordinators: Prof. Sameeh EL Dahmi
Head of department: Prof. Azza ElShafae
Date: تم مناقشة وإعتماد توصيف المقرر من مجلس القسم بتاريخ 16 / 9 /2017 م

Matrix I of Manufacturing and production of crude drugs of natural origin

Course Contents		ILOs of Manufacturing and production of crude drugs of natural origin														
		knowledge and understanding							professional and practical skills		intellectual skills		Transferable and general skills			
		a1	a2	a3	a4	a5	a6	a7	b1	b2	c1	c2	d1	d2	d3	d4
	Lectures															
1	Collection of Medicinal Herb	**x**	x						**x**	**x**						
2	Storage of Medicinal Herbs	**x**							x	x	x	x	x			
3	Crude drugs extract	**x**							**x**	**x**						
4	Methods of making and standardization of crud drugs		x	**x**					**x**	**x**	**x**	**x**				
5	Formulation of plant extracts into dosage form		x				**x**		**x**	**x**						
6	Screening and processing of plant material for potential pharmaceutical needs	x			x	x	x		**x**	**x**		**x**				
7	Manufacturing of Teas				**x**				**x**	**x**	x	x	x	x	x	
8	Pharmaceutical Products of Medicinal Herbs							**x**	**x**	**x**		**x**				
9	Quality Control of Pharmaceutical Products of Medicinal plants	x	x		x	x	x		**x**	**x**	x	x	x	x	x	
10	activities (Pharmaceutical Products of Medicinal Herbs)												**x**	**x**	**x**	**x**

Matrix-II of Manufacturing and production of crude drugs of natural origin

National Academic Reference Standards NARS		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods		Methods of assessment	
						lecture	self learning	written exam	oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1	Collection of Medicinal Herb Storage of Medicinal Herbs Crude drugs extract	Student book	x		x	x
2.2	Physico-chemical properties of various substances used in preparation of medicines including inactive and active ingredients as well as biotechnology and radio-labeled products.	A9	a2	Formulation of plant extracts into dosage form	Student book	x		x	x

2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a3	Methods of making and standardization of crud drugs	Student book	x		x	x	
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A12	a4	Screening and processing of plant material for potential pharmaceutical needs Manufacturing of Teas	Student book	x		x	x	
		A13	a5	Quality Control of Pharmaceutical Products of Medicinal	Student book	x		x	x	
2.6	Properties of different pharmaceutical dosage forms including novel drug delivery systems.	A16	a6	Formulation of plant extracts into dosage form	Student book	x		x	x	
2.13	Pharmacological properties of drugs including mechanisms of action, therapeutic uses, dosage, contra-indications, ADRs and drug interactions.	A30	a7	Pharmaceutical Products of Medicinal Herbs	Student book	x		x	x	

3.1	Use the proper pharmaceutical and medical terms and abbrevations and symbols in pharmacy practice.	B1	b1	Collection of Medicinal Herb Storage of Medicinal Herbs Crude drugs extract Formulation of plant extracts into dosage form Methods of making and standardization of crud drugs Screening and processing of plant material for potential pharmaceutical needs Manufacturing of Teas Quality Control of Pharmaceutical Products of Medicinal Pharmaceutical Products of Medicinal Herbs	Student book	x		x	x	
3.11	Conduct research studies and analyze the results	B17	b2	Pharmaceutical Products of Medicinal Herbs	Internet textbooks		x			
4.5	Select the appropriate methods of isolation, synthesis, purification, identification, and standardization of active substances from different origins.	C8	c1	Methods of making and standardization of crud drugs Quality Control of Pharmaceutical Products of Medicinal	**Student book**	x		x	x	
4.14	Analyze and evaluate evidence-based information needed in pharmacy practice.	C17	c2	Pharmaceutical Products of Medicinal Herbs	Internet textbooks		x			

5.2	Retrieve and evaluate information from different sources to improve professional competencies	D3	d1	Pharmaceutical Products of Medicinal Herbs	Internet textbooks		x			
5.3	Work effectively in a team	D4	d2	Pharmaceutical Products of Medicinal Herbs	Internet textbooks		x			
5.4	Use numeracy, calculation and statistical methods as well as information technology tools	D5	d3	Pharmaceutical Products of Medicinal Herbs	Internet textbooks		x			
5.1	Implement writing and thinking, problem-solving and decision-making abilities.	D10	d4	Pharmaceutical Products of Medicinal Herbs	Internet textbooks		x			

Course Coordinators: **Prof. Sameeh EL Dahmi**

Head of department: **Prof. Azza ElShafae**

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