COURSE SPECIFICATIONS

Faculty of Pharmacy

Fifth Year – First Term

2019-2020

CONTENTS:

COURSE SPECIFICATIONS

Community Pharmacy

Fifth year – first Term
2019-2020

Course specification of Community pharmacy

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: Pharmacy Practice Department

Academic year Level: Fifth year/First semester

Date of specification approval: September 2019

B- Basic information:

Title: Community pharmacy Code: PP511

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 1hr/week

Tutorials: ---

Total: 2.5 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to identify good communication strategies between pharmacist and patient, educate different classes of patients and respond to patient's requests in different situations. Students will be able to identify higher risk of a serious condition and consider when referring the patient to the doctor. The student will be able to manage common disorders of women health, childhood conditions, respiratory, nervous, gastrointestinal and dermatological systems as well.

2- Intended Learning Outcomes of Community pharmacy:

A- Knowledge and Understanding	
a1	Describe appropriate keys for good communication with patients
a2	Illustrate the etiology, epidemiology of different diseases related to women health, childhood conditions, respiratory, nervous, gastrointestinal and dermatological systems
a3	State drugs which can treat the aforementioned diseases, adverse reactions, contraindications and drug-drug interactions
B- Professional and Practical skills	
b1	Evaluate the pharmacist behavior in different communication scenarios
b2	Select proper medicines according to the disease and the patient state
C- Intellectual skills	
c1	Identify different barriers that hinder effective patient – pharmacist communication
c2	Solve different cases related to OTC drugs used for treatment of women health, childhood conditions as well as respiratory, nervous, gastrointestinal and dermatological disorders
D- General and Transferable skills	
d1	Interact effectively with patients, the public and health care professional orally and written
d2	Work effectively as a member of a team
d3	Use information technology to collect and present data

D- Contents:

Week No.	Lecture contents (2 hrs/week)	Practical session (1 hr/week)
1	Course orientation Strategies for Communicating Effectively with Patients	Patient education
2	Women health	Women health cases
3	Childhood conditions	Childhood conditions, case study
4	Respiratory system disorders	visit to faculty educational pharmacy & report writing
5	Respiratory system disorders	Respiratory system disorders (Case study)
6	Central nervous system disorders	Central nervous system disorders (Case study)
7	Midterm exam	
8	Gastroenterology	GIT disorders (Case study)
9	Gastroenterology	
10	Common Dermatologic Diseases and Conditions	Dermatological disorders (case study)
11	Ear conditions	Ear disorders (case study)
12	Eye conditions	Eye disorders (case study)
13	Role play/presentation	
14	- Revision	**Practical exam**
15	- final exam	

E- Teaching and Learning Methods:

- Lectures
- Practical session (case study, role play)
- Field visit: faculty educational pharmacy in addition to any community pharmacy to fill the required survey (survey pharmacists in community pharmacies about challenges they faced that hinder good communication)

F- Student Assessment methods:

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

2- Activity (Students will be asked to survey pharmacists in community pharmacies about challenges they faced that hinder good communication, then present their results as a presentation/play) to assess: d1, d2, d3

3-Practical exam (solving cases) to assess: b2, c2

4-Oral exam to assess: a1, a2, a3, b1, c1

Assessment schedule

Assessment (1): Midterm exam	Week 7
Assessment (2): Final Written exam	Week 15
Assessment (3): Role play/presentation	Week 13
Assessment (4): Practical exam	Week 14
Assessment (5): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Midterm exam	10	10%
Final Written exam	50	50%
Role play/presentation	5	5%
Practical exam (cases)	20	20%
Oral exam	15	15%

TOTAL	100	100%

G- Facilities required for teaching and learning:

- For lectures : Black (white) boards, data show, air conditioned classroom
- For practical: labratories
- Faculty educational pharmacy & Community pharmacy

H- List of References:

1- Course Notes: Student book of Hospital pharmacy and clinical pharmacy -2 approved by pharmacy practice department (2019)

2- Essential Books:

1. Harvey M. Rappaport et al. The Guidebook for Patient Counselling. Lancaster, Pennsylvania: Technomic Publishing Company, 1994.

2. Tindall, William N, Robert S. Beardsley, Carole L. Kimberlin. Communication Skills in Pharmacy Practice (fourth edition). Baltimore, Maryland and Philadelphia, Pennsylvania : Lippincott Williams & Wilkins, 2003.

3. Managing Conflict and Preventing Violence in the Pharmacy. Canadian Pharmacist Letter. Volume 2014, Course No.

4. ASHP Guidelines on Pharmacist-Conducted Patient Education and Counseling. Medication Therapy and Patient Care: Organization and Delivery of Services–Guidelines, 310 – 312 (2011).

3- Recommended Books

i- Paul Rutter. Community pharmacy: Symptoms, diagnosis and treatment. 3rd edition, Churchill Livingstone, Elsevier, 2013

ii- Non-prescription drugs, Li Wan, P., 2nd ed., Oxford Blackwell Scientific publications (1990).

iii- Pharmacy practice and law 5/ed. Richard R. Abood, David B,Brushwood, (2010).

iv. Communication skills in pharmacy practice 6th ed, 2017.

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Dr. Gehan Fathy Attia

Date: تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ سبتمبر 2019 / م

Matrix I of Community pharmacy course

Course Contents		ILOs of Hospital pharmacy and clinical pharmacy -2									
		Knowledge and understanding			Professional and practical skills		Intellectual skills		Transferable and general skills		
Lectures		**a1**	**a2**	**a3**	**b1**	**b2**	**c1**	**c2**	**d1**	**d2**	**d3**
1	Strategies for Communicating Effectively with Patients	x					x				
2	Women health		x	x				x			
3	Childhood conditions		x	x				x			
5	Respiratory system disorders		x	x				x			
6	Central nervous system disorders		x	x				x			
7	Gastroenterology		x	x				x			
8	Common Dermatologic Diseases and Conditions		x	x				x			
9	Ear conditions		x	x				x			
10	Eye conditions		x	x				x			
Practical sessions											
1	Patient education				x				x	x	x
2	Women health				x	x			x	x	x
3	Childhood condition				x	x			x	x	x
4	Respiratory disorders (case study)				x	x			x	x	x

5	CNS disorders (case study)				x	x			x	x	x
6	GIT disorders (Case study)				x	x			x	x	x
7	Dermatological disorders (case study)				x	x			x	x	x
8	Ear disorders (case study)				x	x			x	x	x
9	Eye disorders (case study)				x	x			x	x	x
10	Role play/presentation						x		x	x	x

Matrix II of Community pharmacy course

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Method of assessment		
						Lecture	case study/ role play	Field visit	Written exam	Practical exam & activity	Oral exam
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A8	a1	Strategies for Communicating Effectively with Patients	Student book Essential books	x	x		x		x
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approches	A29	a2	Women health Childhood conditions Respiratory system disorders Central nervous system disorders Gastroenterology Common Dermatologic Diseases and Conditions Ear conditions Eye conditions	Student book Essential books	x	x		x		x
			a3		Student book Essential books	x	x		x		x
3.9	Maintain public awareness on rational use of drugs and social health hazards of drug abuse and misuse	B16	b1	Patient education	Practical notes		x			x	

3.10	Advise patients and other health care professionals about safe and proper use of medicines	B17	b2	Women health Childhood conditions Respiratory system disorders Central nervous system disorders Gastroenterology Common Dermatologic Diseases and Conditions Ear conditions Eye conditions	Practical notes and student books	x	x			x	
4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions	C14	c2	Women health Childhood conditions Respiratory system disorders Central nervous system disorders Gastroenterology Common Dermatologic Diseases and Conditions Ear conditions Eye conditions	Practical notes and student books		x			x	
5.1	Communicate clearly by verbal and written means	D1	c1 d1	Patient education Women health Childhood conditions Respiratory disorders (case study) CNS disorders (case study) GIT disorders (Case study) Dermatological disorders (case study) Ear disorders (case study) Eye disorders (case study)	Practical notes and internet			x		x	
5.3	Work effectively in a team.	D3	d2		Practical notes and internet			x		x	

5.9	Implement writing and presentation skills	D10	d3		activity			x		x	

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Dr. Gehan Fathy Attia

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ سبتمبر 2019 / Date:

COURSE SPECIFICATIONS

Industrial Pharmacy 1

Fifth year – first Term
2019-2020

Course specification of Industrial Pharmacy-1

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 department

Academic year Level: Fifth year/First term

Date of specification approval: September 2019

B- Basic information:

Title: Industrial pharmacy-1 Code: PC 516

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 1hr/week

Tutorials: ---

Total: 2.5 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to:

- Explain the principles and mechanisms of equipment used for different pharmaceutical processes including filtration, evaporation, drying extraction, evaporation, crystallization and heat transfer.

2- Intended Learning Outcomes of Industrial pharmacy-1 (ILOs)

A- Knowledge and Understanding	
a1	Outline the principles and mechanisms of different pharmaceutical processes including: evaporation, drying, filtration, extraction, filtration, etc….
a2	Enumerate the apparatus used in evaporation, drying, filtration, extraction, filtration, etc….
a3	Illustrate the structure of different apparatus used in evaporation, drying, filtration, extraction, filtration, etc….
a4	Explain the technique of different apparatus used in evaporation, drying, filtration, extraction, filtration, etc….
B- Professional and Practical skills	
b1	Solve different problems related to heat transfer, evaporation and extraction
b2	Interpret the results of humidity charts.
b3	Demonstrate different apparatus used in evaporation, drying, filtration, extraction, filtration, etc….
C- Intellectual skills	
c1	Differentiate between different techniques and apparatus used for different pharmaceutical processes
c2	Suggest appropriate apparatus for different pharmaceutical processes
c3	Identify advantages and disadvantages of apparatus used in evaporation, drying, filtration, extraction, centrifugation, etc….
D- General and Transferable skills	
d1	Demonstrate critical thinking, decision making and problem solving abilities

D- Contents:		
Week No.	**Lecture contents (2 hrs/week)**	**Practical session (1 hr/week)**
1	- Evaporation	- Problems on evaporation
2	- Evaporation	- Evaporation apparatus drawings
3	- Drying	- Problems on drying
4	- Drying	- Drying apparatus drawings
5	- Heat transfer	- Humidity chart
6	- Refrigeration	- Problems on heat transfer
7	Midterm exam	
8	- Crystallization	- Heat transfer apparatus drawings
9	- Mixing	- Refrigeration and crystallization apparatus drawings
10	- Filtration	- Mixing & filtration apparatus drawings
11	- Air purification	- Air purification apparatus drawings
12	- Centrifugation	- Centrifugation apparatus drawings
13	- Extraction	**- Practical exam**
14	- Extraction	
15	**Final written exam**	

E- Teaching and Learning Methods:

- Lectures
- Practical session
- Demonstrative videos followed by group discussion.

F- Student Assessment methods:

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

2-Practical exam to assess: b1, b2, b3, c1, c2

3-Oral exam to assess: a1, a2, a3, a4, c1, c2, c3

4- Students activity during labs d1

Assessment schedule

Assessment (1): midterm exam	Week 7
Assessment (2): activity	Each lab
Assessment (3): final Written exam	Week 15
Assessment (4): Practical exam	Week 13
Assessment (5): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Midterm exam	10	10%
Activity	5	5%
Final Written exam	50	50%
Practical exam	20	20%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities required for teaching and learning:

For lectures: Black (white) boards, data show

H- List of References:

1- Course Notes: Student book of Industrial Pharmacy-1 approved by Pharmaceutics Department (2019/2020).

2- Essential Books:

i- Bentley's text book of Pharmaceutics by Rawlins, E. A., 8th ed (1984).

ii- Ansels Pharmaceutical Dosage forms and drug delivery systems 8/ed, Allen , L .V (2005).

3- Recommended Books

i- Pharmaceutics: the Science of Dosage Form Design by Aulton M.E., (1993).

ii- The theory and Practice of Industrial Pharmacy by Leon Lachman, Lieberman, H.A., Kanig, J. L., and Febiger, Philidelphia, USA (1976).

iii- Good manufacturing practice for pharmaceuticals, Nally, Joseph.D, Informa Healthcare, (2007).

4- Periodicals and websites:

Journal of pharmaceutical sciences

www.Pubmed.com

www.Sciencedirect.com

Course Coordinators: Prof. Dr. Mahmoud Abd El-Ghany Mahdy

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

Date: تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ / 9 / 2019 م

Matrix I of Industrial Pharmacy-1 course

Course Contents		ILOs of industrial pharmacy 1 course										
		Knowledge and understanding				Professional and practical skills			Intellectual skills			Transferable and general skills
Lectures		a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	d1
1	Evaporation (Introduction & Mechanisms)	x	x	x	x				x	x	x	
2	Evaporation (Equipment)	x	x	x	x				x	x	x	
3	Drying (Introduction & Mechanisms)	x	x	x	x				x	x	x	
4	Drying (Equipment)	x	x	x	x				x	x	x	
5	Heat transfer (Introduction & Mechanisms)	x	x	x	x				x	x	x	
6	Refrigeration (Introduction & Equipment)	x	x	x	x				x	x	x	
7	Crystallization (Introduction and mechanisms)	x	x	x	x				x	x	x	
8	Crystallization (Equipment)	x	x	x	x				x	x	x	
9	Mixing (Introduction & Equipment)	x	x	x	x				x	x	x	
10	Filteration (Introduction & Equipment)	x	x	x	x				x	x	x	
11	Air purification (Introduction & Equipment)	x	x	x	x				x	x	x	
12	Centrifugation (Introduction, Mechanisms & Equipment)	x	x	x	x				x	x	x	
13	Extraction (Introduction & Mechanisms)	x	x	x	x				x	x	x	
14	Extraction (Equipment)	x	x	x	x				x	x	x	
15	**Final written exam**	x	x	x	x				x	x	x	

Practical session												
1	- Problems on evaporation					x						x
2	- Evaporation apparatus drawings							x	x	x		
3	- Problems on drying					x						x
4	- Drying apparatus drawings							x	x	x		
5	- Humidity chart						x					x
6	- Problems on heat transfer					x						x
7	**- Quiz on heat transfer**					x						x
8	- Heat transfer apparatus drawings							x	x	x		X
9	- Refrigeration and crystallization apparatus drawings							x	x	x		X
10	- Mixing & filtration apparatus drawings							x	x	x		X
11	- Air purification apparatus drawings							x	x	x		X
12	- Centrifugation apparatus drawings							x	x	x		X
13	**- Practical exam**					x	x	x	x	x		

Matrix II of Industrial Pharmacy-1 course

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.	A2	a1	Introduction & mechanisms of the processes of evaporation, drying, extraction, refrigeration, heat transfer, crystallization, centrifugation and filtration	Student book Essential books	x			x		x
2.7	Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry	A18	a2	Equipment of evaporation, drying, extraction, refrigeration, heat transfer, crystallization, centrifugation and filtration	Student book Essential books	x			x		x
			a3		Student book Essential books	x			x		x
			a4		Student book Essential books	x			x		x

	Ex NARs	B21	b1	Problems on different processes as evaporation, drying, extraction, heat transfer	Practical notes And student book		x			x	
		B22	b2	Humidity chart	Practical notes And student book		x			x	
3.8	Apply techniques used in operating pharmaceutical equipment and instruments	B15	b3	Equipment of evaporation, drying, extraction, refrigeration, heat transfer, crystallization, centrifugation and filtration	Practical notes And student book		x			x	
4.2	Comprehend and apply GLP, GPMP, GSP and GCP guidelines in pharmacy practice.	C4	c1	Equipment of evaporation, drying, extraction, refrigeration, heat transfer, crystallization, centrifugation and filtration	Practical notes And student book	x	x		x	x	x
			c2			x	x		x	x	x
			c3			x			x		x
5.10	Implement writing and thinking,	D11	d1	Problems on different processes as	Practical notes And student		x			x	

	problem-solving and decision-making abilities.			evaporation, drying, extraction, heat transfer, Activity	book						

Course Coordinators: **Prof. Dr. Mahmoud Abd El-Ghany Mahdy**

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

Date: **2019 / 9 /** **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ**

COURSE SPECIFICATIONS

Applied Pharmacognosy

Fifth year – first Term
2019-2020

Course Specification of Applied Pharmacognosy

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

Academic year/Level: Fifth year /First term

Date of specification approval: 30-9-2019

B- Basic information:

Title: Applied Pharmacognosy Code: PG 517

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2 hrs/week

Tutorials: ---

Total: 3 hrs/week

C- Professional information:

1-Overall Aims of the Course is to describe the following:

- Drug discovery from natural sources.
- Quality control of herbal preparation.
- Spectroscopic determination of pure compounds.
- Chromatographic application to perform qualitative and quantitative analysis of natural products.
- At the end of the course, the student able to apply the most suitable technique of quality control according to the nature of the preparation and constituents.

2-Intended Learning Outcomes of Applied Pharmacognosy

A- Knowledge and Understanding	
a1	Outline the principles of production, drug discovery, evaluation of natural products (crude drugs and isolates) by organoleptic characters, macroscopical, microscopical, chromatographic, ...etc.… etc
a2	Recognize the basics of spectroscopic evaluation of natural products including UV, IR, NMR and Mass spectroscopy.
a3	Describe and write different analytical techniques for identification of pure isolates including UV, IR, NMR and Mass spectroscopy.
a4	Outline different chromatographic techniques for analysis and evaluation especially GC and HPLC
a5	Outline GLP guidelines and validation procedures in crude drugs and pure isolates evaluation
B- Professional and Practical skills	
b1	Examine purity of crude drugs and detection of adulterants
b2	Examine the active constituents by using different tools e.g. melting point, optical activity, spectrophotometery…etc
b3	Illustrate active substances using different spectroscopic and chromatographic method
C- Intellectual skills	
c1	Adopt GLP guidelines in quality control of natural products using different evaluation and spectroscopic methods.
c2	Analyse crude drugs qualitatively and quantitatively using chromatographic techniques and chemical screening.
c3	Recognize appropriate methods for standardization of active substances using analytical, structural and physical standards.
D- General and Transferable skills	
d1	Retrieve information from different natural product sources.
d2	Operate effectively as a member of a team**.**
d3	Write reports and present it.
d4	Demonstrate decision making and problem solving skills

D- Contents:

Week No.	Lecture (2hrs/week)	Practical session (2hrs/week)
1	-Production of natural drugs	-Introduction of quality control of crude drugs (physical characters, analytical evaluation, biological screening .. etc **Activity 1**: Model for drug profile.
2-3	-Drug discovery from different natural sources.	-Checking the purity of herbal drugs using microscopical examination.
4	-Evaluation of natural products -Detection of adulteration -Sampling of drugs	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference. **Activity 2**: Quality control of commercially available pharmaceutical products.
5	-Standardization of natural drugs	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference
6	-Physical data of isolates -Isolation of crude drugs - Analytical standards	Group discussion for the required activity.
7	**Midterm exam**	
8	-Spectroscopic evaluation of natural products -Micro elemental analysis -UV Spectroscopy	-UV Spectroscopic problems
9	-IR Spectroscopy - -Mass Spectroscopy	-IR Spectroscopic problems -Mass Spectroscopy problems
10	-^{1}HNMR Spectroscopy	-^{1}HMNR Spectroscopic problems -^{13}CMNR Spectroscopic problems **Activity 3:** general spectroscopy problems including identification of small molecules
11	- ^{13}CNMR Spectroscopy	Application of chromatography (GC and HPLC), central lab. visit.
12	-Chromatography -Applications of GC	**Final Practical exam**
13	- Applications of HPLC and some other chromatographic techniques in drug evaluation -Validation	**Final Practical exam**
14	Revision	
15	**Final written exam.**	

Activity 1: Each student submits a model for drug profile containing the plant organ, active constituents, assay and pharmacological uses with drawing its diagnostic key elements on time.

Activity 2: Group of 4 students select one of commercially available pharmaceutical products e.g herbal tea bag, syrup, soft gelatine capsule or hard gelatin capsule…etc. Each group should apply the quality control parameters for standardization of the chosen pharmaceutical products according to the schedule lab.

Activity 3: Each student should handle different spectra (UV, IR, Mass, NMR) and interperetate its data for structures elucidation of the given compound from natural sources (flavonoids, organic acids…etc).

E- Teaching and Learning Methods:

- Interactive lectures
- Practical sessions
- Self-learning (group discussion)
- Net research.
- Central lab. visit.

F- Student Assessment Methods:

1- Written exam (midterm, final) to assess: a1-5, c1-3.
2- Activity to assess: d1-4.
3- Practical exam to assess: b1-3, d1-4.
4- Oral exam to assess: a1-5, c1-3, d4.

Assessment schedule:

Assessment (1): Midterm exam	Week 7
Assessment (2): Activity	Week 1, 4, 6, 10
Assessment (3): Practical exam	Week 12, 13
Assessment (4): Final written exam	Week 15
Assessment (5): Oral exams	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Midterm exam	10	10%
Activity	5	5%
Practical exam	20	20%
Final written exam	50	50%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities Required for Teaching and Learning:

- Lectures: Black (white) board, Data show.

- Laboratory equipment: Chemicals, glassware, microscopes, precoated TLC, digital balances, water bathes, oven.

H- List of References:

1- Course Notes: Student book of Applied Pharmacognosy, approved by Pharmacognosy Department (2019).

2- Essential books:

- P. K. Mukherjee. Quality Control and Evaluation of Herbal Drugs. Published by Elsevier Science. India, 2019.
- Simone Badal and Rupika Delgoda. Pharmacognosy: Fundementals, Applications and Sterategy. Academic Press is an imprint of Elsevier 2017.
- Dalia I. Hamdan, Mona F. Mahmoud, Michael Wink and Assem M. El-Shazly, Environmental Toxicology and Pharmacology, 37 (2014): 907 915.
- K. Robards, P. E. Jackson, P. A. Haddad. Principles and Practice of Modern Chromatographic Methods. Published by Elsevier Academic Press. London, 2012.
- E. J. Neil. NMR Spectroscopy Explained: Simplified Theory, Applications and Examples for Organic Chemistry and Structural Biology. Wiley Interscience, Canada, 2007.

3- Recommended books:

- H. Engelhardt. Practice of High Performance Liquid Chromatography: Applications, Equipment and quantitative analysis. Published by Springer - Verlag, 2012.
- Peter Houghton and Pulok Mukherjee. Evaluation of Herbal Medicinal Products. Pharmaceutical Press, 2011.
-A. El-Shazly, T. Sarg, A. Ateya, A. Abdel Aziz, L. Witte and M. Wink. Quinolizidine alkaloids from *Argyrolobium uniflorum*. Pharmazie, 51 (1996), 10.
- Structure Determination of Organic Compounds (Tables of Spectral Data), Martin Badertscher, Fourth, Revised and Enlarged Edition, Springer-Verlag Berlin Heidelberg (2009).

4- Periodicals and websites:

- Wikipedia, the free encyclopedia and other related botanical and natural medicinal plants web sites.
- Ethnopharmacology, Journal of Natural Products, Phytochemistry, Planta medica
  http: //www.elsevier.com/phytochem

http: //www.elsevier.com/phytomed

http: //www.wiley.co.uk.

http: //www.sciencedirect.com

Course Coordinator: Prof. Dr. Assem Mohamed Mohamed El-Shazly

Head of Department: Prof. Dr. Amal Amin El-Gendy

Date: 30-9-2019 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I of Applied Pharmacognosy course

Course Contents		ILOs of Applied Pharmacognosy 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**	**c3**	**d1**	**d2**	**d3**	**d4**
1	-Production of natural drugs	x				**x**										
2-3	-Drug discovery from different natural sources.	**x**				**x**										
4	-Evaluation of natural products -Detection of adulteration -Sampling of drugs	**x**				**x**				**x**						
5	-Standardization of natural drugs	**x**				**x**				**x**						
6	-Physical data of isolates -Isolation of crude drugs - Analytical standards	x				x				x	**x**	**x**				
7	**Midterm exam**															
8	-Spectroscopic evaluation of natural products -Micro elemental analysis -UV Spectroscopy		x	x						x						
9	-IR Spectroscopy -Mass Spectroscopy		x	x						x						
10	-^{1}HNMR Spectroscopy		x	x						x						
11	-^{13}CNMR Spectroscopy		**x**	x						x						
12	-Chromatography -Applications of GC				x						**x**					
13	- Applications of HPLC and some other chromatographic techniques in drug evaluation -Validation				x						**x**					

Practical sessions																
14	-Introduction of quality control of crude drugs (physical characters, analytical evaluation, biological screening .. etc **Activity 1**: Model for drug profile.						x						x		**x**	**x**
15-16	-Checking the purity of herbal drugs using microscopical examination.						**x**							x	x	x
17	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference. **Activity 2**: Quality control of commercially available pharmaceutical products.						**x**						x	x	x	x
18	- Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference						**x**							**x**	**x**	x
19	Group discussion for the required activity.														x	x
20	**Midterm exam**															
21	-UV Spectroscopic problems							**x**	**x**						x	x
22	-IR Spectroscopic problems -Mass Spectroscopy problems							**x**	**x**						x	x
23	-^{1}HMNR Spectroscopic problems -^{13}CMNR Spectroscopic problems **Activity 3**: general spectroscopy problems including identification of small molecules							**x**	**x**						x	x
24	Application of chromatography (GC and HPLC), central lab. visit.								**x**							
25	Activity												x	x	x	x

Matrix II of Applied Pharmacognosy

National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods			Methods of assessment			
						Lecture	Practical session	Self learning	Written exam	Practical exam	Mid term exam	Oral exam
2.3	Principles of different analytical techniques using GLP guidelines and validation procedures.	A11	a1	-Production of natural drugs -Drug discovery from different natural sources. -Evaluation of natural products -Detection of adulteration -Sampling of drugs -Standardization of natural drugs -Physical data of isolates -Preliminary chemical tests -Isolation of crude drugs - Analytical standards	Student book	x			x		x	x
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds.	A12	a5									

2.3	Principles of different analytical techniques using GLP guidelines and validation procedures	A11	a2 a3	-Spectroscopic evaluation of natural products -Micro elemental analysis -UV Spectroscopy - IR Spectroscopy - Mass Spectroscopy -^{1}HNMR Spectroscopy - ^{13}CNMR Spectroscopy								
2.4	Principles of isolation, synthesis, purification, identification, and standardization methods of pharmaceutical compounds	A12	a4	-Chromatography -Applications of GC - Applications of HPLC and some other chromatographic techniques in drug evaluation -Validation								

3.4	Perform synthesis, purification, identification and standardization of active substances from different	B7	b1	-Introduction of quality control of crude drugs (physical characters, analytical evaluation, biological screening .. etc -Checking the purity of herbal drugs using microscopical examination - Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference.	Practical notes		x	x		x		

	origins		b2 b3	-UV Spectroscopic problems -IR Spectroscopic problems -Mass Spectroscopy problems -^{1}HMNR Spectroscopic problems ^{13}CMNR Spectroscopic problems								
			b3	- Application of chromatography (GC and HPLC),								

4.3	Adopt qualitative and quantitative methodology for QC and assay of raw materials and other substances.	C6	c1	-Evaluation of natural products -Detection of adulteration -Sampling of drugs -Standardization of natural drugs -Physical data of isolates -Preliminary chemical tests Isolation of crude drugs - Analytical standards -Spectroscopic evaluation of natural products -Micro elemental analysis -UV Spectroscopy -IR Spectroscopy -Mass Spectroscopy -^{1}HNMR	Student book	x			x		x	x

				Spectroscopy - ^{13}CNMR Spectroscopy								

4.3	Select the appropriate methods for QC and assay of various pharmaceuti cal preparations ..	C7	c2	-Physical data of isolates -Preliminary chemical tests -Chromatography -Applications of GC - Applications of HPLC and some other chromatographic techniques in drug evaluation -Validation								
			c3	-Physical data of isolates -Preliminary chemical tests -Isolation of crude drugs - Analytical standards								
5.2	Retrieve and evaluate information from different sources to	D2	d1	Activity 1: Model for drug profile. Activity 2: Quality control of commercially	Practical		x	x		x		

	improve professional competencies			available pharmaceutical products. Activity 3: general spectroscopy problems including identification of small molecules	notes Internet							
5.3	Work effectively in a team	D3	d2									
5.9	Implement writing and presentation skills.	D10	d3									
5.10	Demonstrate critical thinking, problem-solving and decision-making abilities	D11	d4									

Course Coordinator: Prof. Dr. Assem Mohamed Mohamed El-Shazly

Head of Department: Prof. Dr. Amal Amin El-Gendy

Date: 30-9-2019 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

COURSE SPECIFICATIONS

Clinical Pharmacology

Fifth year – first Term
2019-2020

Course specification of Clinical Pharmacology

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 and toxicology department

Academic year Level: **Fifth year/First semester**

Date of specification approval: October 2019

B- Basic information:

Title: Pharmacology and toxicology department **Code: PT518**

Credit Hours: ---

Lectures: 3hrs/week

Practical: 2hrs/week

Tutorials: ---

Total: 4 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to:

- Demonstrate a thorough knowledge etiology and epidemiology and clinical features of many organ disorders.
- Demonstrate an ability to construct appropriate management strategies (both diagnostic and therapeutic) for patients with common conditions, and to recognize and outline an initial course of management for patients with serious conditions requiring critical care.
- Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.
- Develop critical thinking, problem solving and decision making skills.

2- Intended Learning Outcomes of Clinical Pharmacology (ILOs)

A- Knowledge and Understanding	
a1	Explain the bases of clinical pharmacology and evidence based medicine.
a2	Illustrate etiology, epidemiology and clinical features of many organ disorders.
a3	Outline the laboratory Diagnosis of different disease.
a4	Specify therapeutic regimens of different disease.
B- Professional and Practical skills	
b1	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.
b2	Assess the different signs and symptoms of a certain disease state
b3	Select the suitable drug in various disease conditions based on knowledge of disease, drug-drug interaction and adverse drug reactions.
C- Intellectual skills	
c1	Integrate knowledge of pharmacology and therapeutics to use drugs in various disease states.
c2	Choose the appropriate drug for the appropriate case.
D-General and Transferable skills	
d1	Work coherently and successfully as a part of a team in assignments
d2	Implement presentation skills
d3	Develop critical thinking, problem solving and decision making skills.

D- Contents:

Week No.	Lecture contents (3 hrs/lec.)	Practical session (2hrs/lab)
1	Liver disorders (1)	• Case Studies of liver disease • Treatment guidelines for diabetes (activity)
2	Liver disorders (2)	• Case Studies of liver disease • Treatment guidelines for gynecological disorders (activity)
3	Liver disorders (3)	• Case Studies of liver disease
4	Critical care(1)	• Case Studies of liver disease
5	Critical care (2)	• Case Studies in Critical care • Treatment guidelines for cardiovascular disorders (activity)
6	Critical care (3)	• Case Studies in Critical care • Treatment guidelines for respiratory disorders (activity)
7	Midterm exam	
8	Acute kidney injury Chronic kidney disease	• Case Studies in Critical care
9	Renal replacement therapy	• Case study of acute kidney disease • Treatment guidelines for hypovolemic shock (activity)
10	Complications of CKD (1)	• Case study of acute kidney disease • Treatment guidelines for lactic acidosis (activity)
11	Complications of CKD (2)	• Case study of chronic kidney disease
12	Drug induced nephropathy (1)	• Case study of chronic kidney disease
13	Drug induced nephropathy (2)	• **Practical exam**
14	Revision	
15	**Final exam**	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Think/pair/share (information collection from different sources)
- Case study

F- Student Assessment methods:

1- Written exams to assess: a1, a2, a3, a4, b1, c1,c2
2- Practical exams to assess: b1,b2, b3, c1,c2, d1, d2
3- Oral exam to assess: a1, a2, a3, a4, b1, c1,c2, d3

Assessment schedule

Assessment(1): Midterm exam	**Week 7**
Assessment(2): Activity	**Week 1,2,5,6,9,10**
Assessment(3) :Practical exam	**Week 13**
Assessment(4) :Oral exam	**Week 15**
Assessment(5) :Final Written exam	**Week 15**

Weighting of Assessment

Assessment method	Marks	Percentage
Midterm exam	15	10 %
Activity	10	7%
Practical exams	30	20%
Oral exam	20	13%
Written exam	75	50%
TOTAL	150	100%

G- Facilities required for teaching and learning:

• For lectures: Black (white) boards, data show, air conditioned classroom

• For practical: Well-equipped labs with data show facilities

H- List of References:

1- Course Notes:

- Student book of Clinical pharmacology approved by pharmacology and Toxicology department.
- Practical notes of Clinical pharmacology approved by pharmacology and toxicology department.

2- Essential Books:

i. Oxford Textbook of Clinical Pharmacology and Drug Therapy (third edition); Grahame-Smith D.G, Aronson, J.K; Oxford University Press (2002).

3- Recommended Books

i- Principle of Clinical Pharmacology; A. Atkinson et al., Academic press (2001).

ii- Pharmacotherapy, pathophysiological approach (sixth edition); DePero J., (2006).

4- Periodicals and websites:

British Journal of Clinical Pharmacology

The American Society Clinical Pharmacology Therapeutics (ASCPT) http://www.ascpt.org/,

Medscape; https://www.medscape.com/pharmacists

Course Coordinator: Prof. Dr. Mona Fouad

Head of Department: Prof. Dr. Mona Fouad

Date: **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ**

October 2019

Matrix I of Clinical Pharmacology course

Course Contents		ILOs of the course											
		Knowledge and understanding				Practical skills			Intellectual skills		General and transferable and skills		
Lectures		a1	a2	a3	a4	b1	b2	b3	c1	c2	d1	d2	d3
1	Liver disorders (1)	√	√	√	√	√			√	√			
2	Liver disorders (2)		√	√	√	√			√	√			
3	Liver disorders (3)		√	√	√	√			√	√			
4	Critical care(1)		√	√	√	√			√	√			
5	Critical care (2)		√	√	√	√			√	√			
6	Critical care (3)		√	√	√	√			√	√			
7	Acute kidney injury		√	√	√	√			√	√			
8	Chronic kidney disease		√	√	√	√			√	√			
9	Renal replacement therapy		√	√	√	√			√	√			
10	Complications of CKD (1)		√	√	√	√			√	√			
11	Complications of CKD (2)		√	√	√	√			√	√			
12	Drug induced nephropathy (1)		√	√	√	√			√	√			
13	Drug induced nephropathy (2)		√	√	√	√			√	√			

14	Revision		√	√	√	√			√	√			
15	**Final exam**		√	√	√	√			√	√			
Practical sessions		**a1**	**a2**	**a3**	**a4**	**b1**	**b2**	**b3**	**c1**	**c2**	**d1**	**d2**	**d3**
1	• Case Studies of liver disease Treatment guidelines for diabetes (activity)					√	√	√	√	√	√	√	√
2	• Case Studies of liver disease Treatment guidelines for gynecological disorders (activity)					√	√	√	√	√	√	√	√
3	Case Studies of liver disease					√	√	√	√	√	√	√	√
4	Case Studies of liver disease					√	√	√	√	√	√	√	√
5	• Case Studies in Critical care Treatment guidelines for cardiovascular disorders (activity)					√	√	√	√	√	√	√	√
6	• Case Studies in Critical care Treatment guidelines for respiratory disorders (activity)					√	√	√	√	√	√	√	√
7	Case Studies in Critical care					√	√	√	√	√	√	√	√
8	Case Studies in Critical care					√	√	√	√	√	√	√	√
9	• Case study of acute kidney disease Treatment guidelines for hypovolemic shock (activity)					√	√	√	√	√	√	√	√
10	• Case study of acute kidney disease					√	√	√	√	√	√	√	√

	Treatment guidelines for lactic acidosis (activity)												
11	Case study of chronic kidney disease					√	√	√	√	√	√	√	√
12	Case study of chronic kidney disease					√	√	√	√	√	√	√	√
13	**Practical exam**					√	√	√	√	√	√	√	√

Matrix II of Clinical Pharmacology course												
National Academic Reference Standards (NARS)		Program ILOs	Course ILOs	Course contents	Sources	Teaching and learning methods				Weighting of assessment		
						Lecture	Practical sessions	Think-pair-share	Case study	Written exam	Pratical exam	Oral exam
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	**A27**	a2	All lectures	Student book Essential books Recommended books Internet	√		√		√		√
		A28	a3	All lectures	Student book Essential books Recommended books Internet	√		√		√		√
		A29	a4	All lectures	Student book Essential books Recommended books Internet	√		√		√		√
2.14	Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	**A31**	a1	All lectures	Student book Essential books Recommended books Internet	√		√		√		√
3.1	Use the proper pharmaceutical and medical terms, abbreviations and symbols in pharmacy practice.	**B1**	b1	All lectures	Student book Essential books Recommended books Internet	√				√	√	√
				All practical	Practical notes		√					

				sessions								
3.5 Ex NARs	Select medicines based on understanding etiology and path physiology of diseases. Evaluate the selected medicines according to patients' response and laboratory results.	**B8** **B9**	b2	All practical sessions	Practical notes Recommended books Internet		√	√	√			
			b3	All practical sessions	Practical notes Recommended books Internet		√	√	√			
4.9	Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.	**C14**	c1	All lectures	Student book Essential books Recommended books Internet	√		√	√	√		√
				All practical sessions	Practical notes Recommended books Internet		√	√	√		√	
			c2	All lectures	Student book Essential books Recommended books Internet	√		√	√	√		√
				All practical sessions	Practical notes Recommended books Internet		√	√	√		√	
5.3	Work effectively in a team.	**D3**	d1	All practical sessions	Recommended books Internet			√	√		√	

5.9	Implement writing and presentation skills.	**D10**	d2	All practical sessions	Recommended books Internet			√	√		√	
5.10	Implement writing and thinking, problem- solving and decision- making abilities.	**D11**	d3	All practical sessions	Recommended books Internet			√	√			√

Course Coordinator: Prof. Dr. Mona Fouad

Head of Department: Prof. Dr. Mona Fouad

Date: **تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ**

October 2019

COURSE SPECIFICATIONS

Pharmacotherapy

Fifth year – first Term
2019-2020

Course specification of Pharmacotherapy

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 and Toxicology

Academic year Level: **Fifth year – 1st term**

Date of specification approval: October 2019

B- Basic information:

Title: Pharmacotherapy **Code : PT 519**

Credit Hours: ---

Lectures: 2 hrs/week

Practical: 2hr/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 explain the basis of pharmacotherapy including etiology, clinical features, diagnosis and treatment of different disease as oncology supportive care, geriatrics, pediatric and CNS disorders.

2- Intended Learning Outcomes (ILOs)

A- Knowledge and Understanding	
a1	Illustrate etiology, epidemiology and clinical features of disorders as oncology supportive care, geriatrics, pediatric and CNS disorders.
a2	Outline the lab. diagnosis of disorders as oncology supportive care, geriatrics, pediatric and CNS disorders.
a3	Specify therapeutic regimens of disorders as oncology supportive care, geriatrics, pediatric and CNS disorders.
a4	Underline the bases of Pharmacotherapy, clinical pharmacology and evidence based medicine.
B- Professional and Practical skills	
b1	Select the drug of choice for different diseases according to the etiology and pathophysiology.
b2	Advise patients for rational and irrational use of drugs.
C- Intellectual skills	
c1	Suggest the suitable drugs for various diseases based on pharmacological basis.
c2	Specify drug interactions
c3	Analyze and interpret the given data for diagnosis of different disease.
D-General and Transferable skills	
d1	Communicate effectively with patients and health care professional.
d2	Work as a team member.
d3	Develop computer and internet communication skills.
d4	Practice self-learning.
d5	Write and present reports.

D- Contents:

Week No.	Lecture contents (2 hrs/lec.)	Practical session (2hrs/lab)
1	Oncology supportive care (CINV)	Case studies on CINV
2	Oncology supportive care (Pain management)	Case studies on pain management in cancer patients
3	Oncology supportive care (Febrile neutropenia, thrombocytopenia)	Case studies on febrile neutropenia and thrombocytopenia in cancer patient
4	Oncology supportive care (anemia and fatigue, oncologic emergencies)	Case studies on anemia and fatigue and oncologic emergencies
5	Oncology supportive care (chemoprotectants and extravasation), Geriatrics (introduction)	Case studies on chemoprotectants and extravasation, Geriatrics (introduction)
6	Geriatrics (dementia, UI, BPH)	Case studies on dementia, UI and BPH.
7	**Midterm exam**	
8	Geriatrics (osteoarthritis)	Case studies on osteoarthritis
9	Geriatrics (rheumatoid arthritis)	Case studies on rheumatoid arthritis
10	Pediatrics (ADHD)	Case studies on ADHD
11	Neurological disorders (Multiple sclerosis)	Case studies on Multiple sclerosis
12	Neurological disorders (Multiple sclerosis)	Case studies on Multiple sclerosis and schizophrenia
13	Psychiatric disorders (schizophrenia)	**Practical exam**
14	Revision	
15	Final exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Think/pair/share

- Case study, Open discussion, self-learning

F- Student Assessment methods:

1- Written exams (midterm and final) to assess: a1 to a4 and c1 to c3.

2- Activity (group assignment) to assess d1 to d5.

3- Practical exam to assess: b1 and b2.

4- Oral exam to assess: a1 to a4, c1 to c3, d1 and d5.

Assessment schedule

Assessment (1): Mid-term exam	**Week 7**
Assessment (2): Activity	**Week 1 to 12**
Assessment (3): Practical exam	**Week 13**
Assessment (4): Final written exam	**Week 15**
Assessment (5): Oral exam	**Week 15**

Weighting of Assessment

Assessment method	Marks	Percentage
Mid-term exam	10	10%
Activity	5	5%
Practical exam	20	20%
Final written exam	50	50%
Oral exam	15	15%
TOTAL	100	100%

G- Facilities required for teaching and learning:

a. For lectures : Black (white) board, data show, air conditioned classroom

b. For practical: Well-equipped labs

H- List of References:

1. **Course Notes:** Student book of pharmacotherapy approved by the Pharmacology and Toxicology department (2019) and practical notes of pharmacotherapy approved by the Pharmacology and Toxicology department (2019).
2. **Essential Books:**
   a. American collage of clinical pharmacy updates in therapeutics pharmacotherapy preparatory review and recertification course (2017)
3. **Recommended Books:** Pharmacotherapy, pathophysiological approach (tenth edition); DePero J., (2016).
4. **Periodicals and websites:** Medscape clinical guidelines updates

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Course Coordinator: Prof. Dr. Mona Fouad

Head of Department: Prof. Dr. Mona Fouad

Date: م 2019/ / تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix I																
Course Contents		**ILOs of pharmacotherapy course**														
		Knowledge and understanding				**Professional and practical skills**		**Intellectual skills**			**Transferable and general skills**					
Lectures		**a1**	**a2**	**a3**	**a4**	**b1**	**b2**	**c1**	**c2**	**c3**	**d1**	**d2**	**d3**	**d4**	**d5**
1	Oncology supportive care (CINV)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
2	Oncology supportive care (Pain management)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
3	Oncology supportive care (Febrile neutropenia, thrombocytopenia)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
4	Oncology supportive care (anemia and fatigue, oncologic emergencies)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
5	Oncology supportive care (chemoprotectants and extravasation), Geriatrics (introduction)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
6	Geriatrics (dementia, UI, BPH)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
7	**Midterm exam**	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
8	Geriatrics (osteoarthritis)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					

9	Geriatrics (rheumatoid arthritis)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
10	Pediatrics (ADHD)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
11	Neurological disorders (Multiple sclerosis)	**x**	**x**	**x**	**x**			**x**	**x**	**X**					
12	Neurological disorders (Multiple sclerosis)	**x**	**x**	**x**	**X**			**x**	**x**	**X**					
13	Psychiatric disorders (schizophrenia)	**x**	**x**	**x**	**x**			**x**	**x**	**x**					
Practical session															
1	Case studies on CINV Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
2	Case studies on pain management in cancer patients Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
3	Case studies on febrile neutropenia and thrombocytopenia in cancer patient Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
4	Case studies on anemia and fatigue and oncologic emergencies Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
5	Case studies on chemoprotectants and extravasation, Geriatrics (introduction) Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
6	Case studies on dementia, UI and BPH.					**x**	**x**				**x**	**x**	**x**	**x**	**x**

	Activity														
7	Case studies on osteoarthritis Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
8	Case studies on rheumatoid arthritis Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
9	Case studies on ADHD Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
10	Case studies on Multiple sclerosis Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**
11	Case studies on Multiple sclerosis and schizophrenia Activity					**x**	**x**				**x**	**x**	**x**	**x**	**x**

Matrix II

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 and lab activity	Oral exam
2.12	Etiology, epidemiology, laboratory diagnosis and clinical features of different diseases and their pharmacotherapeutic approaches.	A27 A28 A29	a1 to a3	Disorders of oncology supportive care, geriatrics, pediatrics and CNS disorders	Student book and essential books	X		x		x
2.14	Principles of clinical pharmacology, pharmacovigilance and the rational use of drugs.	A31	a4	Disorders of oncology supportive care, geriatrics, pediatrics and CNS disorders	Student book and essential books	X		x		x

3.5 **Ex NARs**	**Select medicines based on understanding etiology and path physiology of diseases.** **Evaluate the selected medicines according to patients' response and laboratory results.**	**B8** **B9**	**b1**	**Case studies on oncology supportive care, geriatrics, pediatrics and CNS disorders**	**Practical note**		**x**		**x**	
3.10	**Advise patients and other health care professionals about safe and proper use of medicines**	**B18**	**b2**	**Case studies on oncology supportive care, geriatrics, pediatrics and CNS disorders**	**Practical note**		**x**		**x**	
4.9	**Utilize the pharmacological basis of therapeutics in the proper selection and use of drugs in various disease conditions.**	**C14**	**c1, c3**	**Disorders of oncology supportive care, geriatrics, pediatrics and CNS disorders**	**Student book, Essential books**	**X**		**x**		**x**
4,11	**Assess drug interactions, ADRs and pharmacovigilance**	**C16**	**c2**	**Disorders of oncology supportive care, geriatrics, pediatrics and CNS disorders**	**Student book, Essential books**	**X**		**x**		**x**

5.1	Communicate clearly by verbal means.	D1	d1	Lab activity	Different sources					
5.3	Work effectively in a team.	D3	d2							
5.2	Retrieve and evaluate information from different sources to improve professional competencies	D2	d3						x	
5.5	Practice independent learning needed for continuous professional development.	D6	d4							
5.9	Implement writing and presentation skills	D10	d5						x	

Course Coordinator: Prof. Dr. Mona Fouad

Head of Department: Prof. Dr. Mona Fouad Date:

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ / /2019م

COURSE SPECIFICATIONS

Public Health

Fifth year – first Term
2019-2020

Course specification of Public Health

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: Microbiology and Immunology

Academic year Level: fifth year students

Date of specification approval: September 2019

B- Basic information:

Title: Public health Code: **MI515**

Lectures: 1 hrs/week

Practical: 1 hrs/week

Total: 1.5 hrs/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to: Illustrate the basic concepts of public health including general topics in Epidemiology and control of infectious diseases (definitions, prevention and control of infectious diseases), Environmental health (air pollution, water pollution, food sanitation, proper residential environment, refuse and sewage disposal, occupational diseases and industrial health), Nutrition, Malnutrition, Overpopulation, Family planning and bioterrorism

2- Intended Learning Outcomes of Public health (ILOs)

A- Knowledge and Understanding	
a1	**Recognize** the basic concepts of public health including epidemiology and List the different types of epidemiology studies and give an example of a study design used for each type
a2	Describe methods of environmental sanitation and control (such as water and food supplies, waste disposal, food handling, and housing).
a3	Illustrate the major topics associated with bioterrorism and nosocomial infections
a4	Illustrate strategies of healthy nutrition, family planning, and also other strategies related to maternal and child health care programs
B- Professional and Practical skills	
b1	**Interpret** data of microbiological analysis of water, food and milk
b2	**Solve** different cases related to (nutrition problem ,nutritional need of individuals, nosocomial infections, family planning and bioterrorism).
b3	**Calculate relative risk, and/or odds ratio.**
b4	**Examine** data from case-control or cohort studies and bioterrorism
C- Intellectual skills	
c1	Identify different causes of diseases and environmental risk situation
c2	Suggest different strategies for disease prevention
c3	Analyze epidemiologic data about disease in a population, changes in human morbidity and mortality over time based on calculation of prevalence rate, incidence rate, relative risk, and/or odds ratio
D-General and Transferable skills	
d1	Communicate effectively both in oral and written manners
d2	Acquire online search skills through writing reports and researches
d3	Develop critical thinking and problem solving skills .

D- Contents:

Week No.	Lecture contents (1 hrs/week)	Practical session (1hrs/week)
1	Introduction to public health and epidemiology	Lab rules
2	Environmental health: **Air** pollution introduction to **Water** supply & sanitation	Bacteriological examination of **water** (demonstration through data show)
3	Environmental health: ○ Disease transmitted by water ○ Controlling waterborne disease ○ Purification of water ○ Standard of safe water supply ○ **Student Activity (report)**	Bacteriological examination of **water** (demonstration through data show)
4	○ Food sanitation ○ Milk sanitation & Milk- borne disease ○ Food poisoning (Food-borne illness) ○ General measures for safe food	Bacteriological examination of **Milk** (demonstration through data show)
5	Refuse, sewage and Wastes disposal • Hazards of improper Wastes disposal • Sewage treatment Occupational diseases and industrial health	**Food** poisoning (case study)
6	Nutrition, malnutrition and nutritional deficiency diseases	**Nutrition** (case study)
7	**Midterm exam**	**Midterm exam**
8	○ Terms used for various forms of outbreaks ○ Classification of infectious diseases ○ Epidemiological Model	Study design (calculate prevalence , incidence rate)
9	Specific measurements: I. Morbidity rates II. Mortality rates • Problem solving	Nosocomial infections (case study)
10	Study Designs in Epidemiology Epidemiological study methods: - Descriptive & Analytical studies: 1. Cohort studies	Family planning (case study)

	2. Case-control studies	
11	○ Nosocomial infections ○ Bioterrorism	Bioterrorism (case study)
12	○ Immunization and vaccination programs	**Final Practical Exam**
13	○ Family planning & Overpopulation ○ child and mother care programs ○ Activity (report)	
14	○ Revision	
15	○ Written exam	

E- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Case study
- Report writing

F- Student Assessment methods:

1- Written exams to assess: a1, a2, a3, a4, c1, c2, c3

2- written report to assess: b1, d2

3- Practical exams to assess: b1, b2, b3, b4, d3

4- Oral exam to assess: a1, a2, a3, a4, c1, c2, c3, d1,d3

Assessment schedule

Assessment (1): Final written exam	Week 15
Assessment (2): Practical exams	Week 12
Assessment (3): Oral exams	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Final written exam (including self learning questions)	30	60%
Practical practice & exam	10	20%
Oral exam	10	20%

TOTAL	50	100%

G- Facilities required for teaching and learning:

- For lectures : Black (white) boards, data show, classroom
- For practical: labs equipped with data-show

H- List of References:

1- Course Notes: Student book of:- public health approved by :-

Microbiology and Immunology department

2- Essential Books:

1) Pharmacy in Public Health: Basics and Beyond. *By Jean Carter and Marion Slack*, 2010.
2) **Foodborne disease outbreaks: Guidelines for investigation and control**. **Publisher**: World Health Organization, 2008.
3) **Global Burden of Disease and Risk Factors** by **Alan D. Lopez, Colin D. Mathers, Majid Ezzati - World Bank Publications , 2006.**

3- **Recommended Periodicals and websites:**

- http://medicaleducationonline.org/
- http://www.who.int/
- http://www.who. int/countries/egy/en/

Course Coordinator: Assistant Prof. Amira El-Ganiny

Head of Department: Prof / Nehal Elsayed yousef

Date 2019/9/ 30 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ

Matrix1 of public health

Course content		ILOs													
		Knowledge and Understanding				Professional & Practical skills				Intellectual skills			Transferable & general skills		
		a1	a2	a3	a4	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
1	Introduction to public health & epidemiology **Practical**: lab rules	x													
2	Environmental health: Air pollution introduction to Water supply **Practical**: Bacteriological examination of water		x			x				x					
3	Disease transmitted by water & controlling of waterborne diseases Purification of water Standard of safe water supply **Activity (report)** **Practical**: Bacteriological examination of water		x			x				x				x	
4	○ Food sanitation ○ Milk sanitation & Milk- borne disease ○ Food poisoning ○ measures for safe food **Practical:** Bacteriological		x			x				x					

	examination of milk														
5	Refuse, sewage and Wastes disposal Hazards of improper Wastes disposal Sewage treatment Occupational diseases and industrial health **Practical :Food** poisoning		**x**			**x**				**x**					
6	Nutrition, malnutrition and nutritional deficiency diseases **Practical**: nutrition				**x**		**x**				**x**				
8	Terms used for various forms of outbreaks o Classification of infectious diseases o Epidemiological Model **Practical** : Study design	**x**						**x**	**x**			**x**			
9	Specific measurements: I. Morbidity rates II. Mortality rates Problem solving **Practical**: nosocomial infections	**x**					**x**					**x**			**x**
10	Study Designs in Epidemiology Epidemiological study	**x**					**x**					**x**			

	- Descriptive & Analytical studies **Practical**: family planning														
11	○ Nosocomial infections ○ Bioterrorism **Practical**: Bioterrorism			**x**			**x**		**x**		**x**				
12	○ Immunization and vaccination programs				**x**										**x**
13	○ Family planning & Overpopulation ○ child and mother care programs ○ **Activity (report)**				**x**								**x**	**x**	**x**
14	○ Revision	**x**	**x**	**x**	**x**					**x**	**x**	**x**			

Matrix II of Public health (2018-2019)

NARS	Program ILOs	Course ILOs	Course contents	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.	**[A7]** List the principles of health and environmental sciences (Public health; Egyptian health system and its policies; biostatistics; healthy lifestyle; toxicology and forensic medicine; first aid and emergency medicine).	a2	Environmental health: Air pollution, Water supply & controlling of waterborne diseases Standard of safe water supply Food sanitation Milk sanitation & Milk- borne disease Food poisoning measures for safe food Refuse, sewage & Wastes disposal Hazards of improper Wastes disposal Occupational diseases and industrial health	Student book Essential books	x			x		x
2.10. Principles of public health issues including sources and	A21. Outline the fundamentals of public health and raising awareness for safe use and safe disposal of	a1, a3	Introduction to public health & epidemiology Terms used for various forms of outbreaks	Student book Essential books	x			x		x

control of microbial contamination as well as sanitation, disinfection, sterilization methods and microbiological QC of pharmaceutical products.	medicine		Classification of infectious diseases Epidemiological Model: I. Morbidity rates II. Mortality rates Problem solving Study Designs in Epidemiology - Descriptive & Analytical studies Nosocomial infections & Bioterrorism							
2.11. Principles of body function in health and disease states as well as basis of genomic and different biochemical pathways regarding their correlation with different diseases	A24.Illustrate the body functions in health and disease states	a4	Nutrition, malnutrition and nutritional deficiency diseases Immunization and vaccination programs Family planning & Overpopulation child and mother care programs	Student book Essential book	x			x		x
Ex NARs	[B16] Provide good advice about balanced diet to promote the efficiency of	b1,b2,b4	**Practical sessions** Nutrition Food poisoning Water analysis	Practical book, Internet search		x			x	

	medication and give hand in poisoning cases.		Milk analysis Study design Nosocomial infections & bioterrorism							
Ex NARs	[B21] Perform different pharmaceutical calculations	b3	Specific measurements: I. Morbidity rates II. Mortality rates	Practical book,		x			x	
4.8 Select and assess appropriate methods of infection control to prevent infections and promote public health.	[C13] Suggest the appropriate methods to prevent infections and promote health care.	c1, c2	Environmental health: Air pollution & controlling of waterborne diseases Standard of safe water supply Food sanitation Milk sanitation Food poisoning & measures for safe food Hazards of improper Wastes disposal Occupational diseases and industrial health Introduction to public health & epidemiology Terms used for various forms of outbreaks Classification of infectious diseases	Student book Essential book	X			X		X

			Nosocomial infections & bioterrorism							
4.13 Analyze and interpret experimental results as well as published literature.	[C18] Evaluate and interpret experimental results and published literature	c3	Study Designs in Epidemiology Epidemiological study - Descriptive & Analytical studies	Student book Essential book	X			X		X
5.1 Communicate clearly by verbal and means.	[D1] Communicate effectively with patients and other health care professionals, including both written and oral communication	d1	**Reports**: water sanitation and safe water supply Family planning methods	Internet search			x	x		x
5.4 Use numeracy, calculation and statistical methods as well as information technology tools.	[D5] Practice computer skills including word, spreadsheet, database use and internet communications.	d2	**Reports**: water sanitation and safe water supply Family planning methods	Internet search			x	x		x
5.10 Implement writing and thinking, problem-solving and	D11. Develop critical thinking, problem solving and decision making skills	d3	Different types of case studies	Practical book & Internet search		x		x	x	

decision-making abilities.										

COURSE SPECIFICATIONS

Good manufacturing practice (GMP)

Fifth Year- Elective Courses
2019-2020

Course specification of Good Manufacturing Practice (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 course : Pharmaceutics
- Academic year level :Fifth year (Elective course: Good Manufacturing Practice (GMP))
- Date of specification approval : October 2019

B- Basic information:

- Title : Good Manufacturing Practice (GMP)
- Credit Hours : --- Code : PC528
- Lectures : 2 hr/ week
- Practical : 2 hr / week
- Tutorials : ---------
- Total : 3 hr/week

C- Professional information:

1-Overall aim of the course

On completion of the course, the student will be able to:

- Describe the guidelines of manufacturing of dosage forms
- Determine the good practices that should be followed during sampling, packaging, storing and labeling of different dosage forms

2-Intended Learning Outcomes

ILOs

A- Knowledge and Understanding:

a1: Outline the history of GMP development within years

a2: Enumerate the minimum requirements for GMP

a3: Outline the guidelines for proper sampling, packaging, labeling and storage of pharmaceutical products

a4: Recognize the importance of qualification and validation of products during manufacturing process

B- Professional and Practical skills:

b1: Identify the required documentation during manufacturing process

b2: Demonstrate the good practices regarding cleaning of equipment and accessories and personal hygiene

C- Intellectual skills:

c1: Judge the good and bad manufacturing processes

D-General and Transferable skills:

d1: Develop critical thinking skills

D- Contents

Week No.	Lecture contents	Practical session
1	Introduction of pharmaceutical industry and GMP	--
2	History of GMP development within years	Introduction of various definitions and abbreviations concerning GMP
3	Therapeutic good regulators	Demonstration of receiving raw, printed and packaging materials
4	Safety and quality regulations of therapeutic good regulators	Description of batch documents and batch documentation checklist
5	Guidelines of GMP towards premises and production areas	Control of air flow in production areas with diagrams
6	Airlocks and air cleanliness levels	Identification of contents of batch manufacturing records Representations and evaluation of batch manufacturing records
7	Midterm exam	
8	Steps of production process Types, causes and prevention of products contamination	Videos about different cleaning of equipment and accessories sheets
9	Documentation	Display sheets of standard operating procedure on personal hygiene
10	Processing operations during production process	Discussion about contents of sheets of standard operating procedure on cleaning of equipment and accessories and personal hygiene
11	Proper control of packaging	Final revision about practical course contents
12	Qualification and validation of production process	Practical exam
13	Personal training and hygiene	--
14	Complaints, Recalls and Product quality review	--
15	Final written exam	--

E-Teaching and learning methods:

- Lectures
- Practical
- Demonstrative videos

F- Assessment schedule:

Assessment task	Week due
Assessment (1): Midterm exam	Week 7
Assessment (2): Student Activity	Each lab
Assessment (3): oral exam	Week 15
Assessment (4): Final Written exam	Week 15
Assessment (5): Practical exam	Week 12

Weighting of assessment:

Assessment task	Marks	Proportion of total assessment
Assessment (1): Midterm exam	10	10%
Assessment (2): Student Activity	5	5%
Assessment (3): oral exam	15	15%
Assessment (4): Final Written exam	50	50%
Assessment (5): Practical exam	20	20%
Total	100	100%

G-Students assessment:

Written exams to assess: a1, a2, a3, a4, b1, b2, c1, and d1

Practical exams & activity to assess: a1, a2, a3, a4, b1, b2, c1, and d1

Oral exam to assess: a1, a2, a3, a4, b1, b2, c1, and d1

H- Facilities required for teaching and learning:

1- For lectures: boards, and data show

2- For labs: data show

H- List of References:

1. The Inspection and Standards Division of the Medicines and Healthcare products Regulatory Agency, Rules and Guidance forPharmaceutical Manufacturers and Distributors (the "OrangeGuide"), Pharmaceutical Press, 2007.
2. Gero Beckmann; WilfriedBellack; Helmut Bender; and others, GMPMANUAL; Good Manufacturing Practice & Implementation, Maas &Peither AG – GMP Publishing, 2007.
3. World Health Organization, Quality Assurance of Pharmaceuticals; A compendium of guidelines and related materials; Volume 2, 2nd updated edition; Good manufacturing practices and inspection, WHO Press, 2006.
4. WHO Expert Committee on Specifications for Pharmaceutical Preparations, WHO Technical Report Series 937, WHO Press, 2006.
5. Gillian Chaloner-Larsson; Roger Anderson; Anik Egan; Manoel Antonio da Fonseca Costa Filho; Jorge F. Gomez Herrera, A WHO guide to good manufacturing practice (GMP) requirements; Part 1: Standard operating procedures and master formulae, World Health Organization; Global Programme for Vaccines and Immunization, 1997.
6. Gillian Chaloner-Larsson; Roger Anderson; Anik Egan; Manoel Antonio da Fonseca Costa Filho; Jorge F. Gomez Herrera, A WHO guide to good manufacturing practice (GMP) requirements; Part
2: Validation, World Health Organization; Global Programme for Vaccines and Immunization, 1997.
7. Office of Women's Health, FDA Milestones in Women's Health: Looking Back as We Move into the New Millennium (FDA, Rockville, MD, 2000), www.fda.gov/womens/milesbro.html.
8. FDA History: FDA Commissioners and Their Predecessors, U.S. Food and Drug Administration, Rockville, MD, rev. 6 April 2000, www.fda.gov/opacom/morechoices/comm1.html.
9. "Jonas Salk, MD — Biography" (American Academy of Achievement, 2000), www.achievement.org/autodoc/halls/sci.
10. Code of Federal Regulations, Food and Drugs, "Current Good Manufacturing Practice in Manufacturing, Processing, Packing, or Holding of Drugs," revised April 2000, Title 21 Part 210–211 (U.S. Printing Office, Washington, DC).

www.Pubmed.com - www.Sciencedirect.com

Course Coordinators: Prof. Dr. Mahmoud Abdel GhanyMahdy

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

Date: October 2019 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم

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	d1
Lectures									
1	Introduction of pharmaceutical industry and GMP	x		x					
2	History of GMP development within years	x							
3	Therapeutic good regulators	x	x	x					x
4	Safety and quality regulations of therapeutic good regulators	x	x						
5	Guidelines of GMP towards premises and production areas	x							
6	Airlocks and air cleanliness levels	x					x	x	
7	Types, causes and prevention of products contamination		x		x	x			
8	Documentation	x							

9	Steps of production process and following processing operations	x	x	x				x	
10	Proper control of packaging	x	x	x			x	x	
11	Qualification and validation of production process			x					
12	Personal training and hygiene	x	x						
13	Complaints, Recalls and Product quality review			x	x				
	Practical sessions								
1	Introduction of various definitions and abbreviations concerning GMP	x							
2	Demonstration of receiving raw, printed and packaging materials			x					
3	Description of batch documents and batch documentation checklist		x			x			
4	Control of air flow in production areas with diagrams		x					x	
5	Identification of contents of batch manufacturing records		x					x	
6	Representations and evaluation of batch manufacturing records								x
7	Videos about different cleaning of equipment and accessories sheets		x	x					
8	Display sheets of standard operating procedure						x	x	

	on personal hygiene								
9	Discussion about contents of sheets of standard operating procedure on cleaning of equipment and accessories and personal hygiene		x					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
2.1	Principles of basic, pharmaceutical, medical, social, behavioral, management, health and environmental sciences as well as pharmacy practice.	A2	a1.	Pharmaceutical History History of GMP Good Manufacturing Practice Production Documentation Personnel hygiene Personnel Training qualification and validation Complaints, Recalls and Product quality review Therapeutic Goods Regulators	notebook	x		x	x	
			a2	Production Quality assurance Documentation	notebook	x	x		x	x

				Personnel hygiene , qualification and validation Therapeutic Goods Regulators						
2.7	Principles of various instruments and techniques including sampling, manufacturing, packaging, labeling, storing and distribution processes in pharmaceutical industry.	A18	a3 a4.	Pharmaceutical History Production Documentation Personnel hygiene Personnel Training Complaints, Recalls and Product quality review	notebook	x			x	
3.12	Employ proper documentation and drug filing systems.	B20	b1	required documentation during manufacturing process	practical notebook		x			x
3.3	Compound, dispense, label, store and distribute medicines effectively and safely.	B4	b2	personal training and hygeine	practical notebook		x	x		x
3.8	Apply techniques used in operating pharmaceutical equipment and Instruments.	B15			practical notebook		x	x		x
4.2	4.2Comprehend and apply	C3, C4	c2	Personal hygiene	practical			x	x	x

	GLP,GPMP, GSP and GCP guidelines in pharmacy practice			and required documentation during manufacturing process	notebook& notebook					
5.10	5.10 Demonstrate critical thinking, problem-solving and decision-making abilities	D11	d1	Personal hygiene and required documentation during manufacturing process	practical notebook& notebook	x			x	x

			d2.	Good Manufacturing Practice							

Course Coordinators: **Prof. Dr. Mahmoud Abdel Ghany Mahdy**

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

Date: **October 2019 تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ**