

# Fifth Year – First Term

2018-2019

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# 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 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.

Code: PP511

# 2- Intended Learning Outcomes of Community pharmacy:

| <b>A-</b> ] | Knowledge and Understanding  |
|-------------|--|
| a1          | Describe appropriate keys for good communication with patients   |
| a2          | Illustrate the etiology, epidemiology of different diseases related<br>to women health, childhood conditions, respiratory, nervous,<br>gastrointestinal and dermatological systems       |
| a3          | State drugs which can treat the aforementioned diseases, adverse reactions, contraindications and drug-drug interactions   |
| <b>B- I</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   |
| <b>C-</b> ] | Intellectual skills  |
| c1          | Identify different barriers that hinder effective patient – pharmacist communication   |
| c2          | Solve different cases related to OTC drugs used for treatment of<br>women health, childhood conditions as well as respiratory,<br>nervous, gastrointestinal and dermatological disorders |
| <b>D-</b>   | General and Transferable skills  |
| d1          | Interact effectively with patients, the public and health care   |
| uī          | 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 | Lecture contents (2 hrs/week)    | Practical session (1 hr/week)                             |
|------|----------------------------------|---|
| No.  |                                  |   |
| 1    | Course orientation               |   |
|      | Strategies for Communicating     | Patient education   |
|      | Effectively with Patients        |   |
| 2    | Women health                     | Women health cases  |
| 3    | Childhood conditions             | Childhood conditions, case study                          |
| 4    | Respiratory system disorders     | visit to faculty educational pharmacy<br>& report writing |
| 5    | Respiratory system disorders     | Respiratory system disorders<br>(Case study)              |
| 6    | Central nervous system disorders | Central nervous system disorders<br>(Case study)          |
| 7    | Midter                           | m exam  |
| 8    | Gastroenterology                 | GIT disorders (Case study)                                |
| 9    | Gastroenterology                 |   |
| 10   | Common Dermatologic Diseases and | Dermatological disorders                                  |
|      | Conditions                       | (case study)  |
| 11   | Ear conditions                   | Ear disorders   |
| 12   | Eve conditions                   | (case study)  |
| 14   | Eye conditions                   | Eye disorders<br>(case study)                             |
| 13   | Role play/p                      | 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
 iii Numerication and the State of the S

ii- Non-prescription drugs, Li Wan, P., 2<sup>nd</sup> 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

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

| Matrix I of Community pharmacy course    |  |    |  |                      |   |  |    |                     |    |                                 |           |  |  |  |
|--|--|----|--|----------------------|---|--|----|---------------------|----|---------------------------------|-----------|--|--|--|
|  |  |    | ILOs of Hospital pharmacy and clinical pharmacy -2 |                      |   |  |    |                     |    |                                 |           |  |  |  |
|  | <b>Course Contents</b>                                 |    |  | edge and<br>standing |   | Professional<br>and<br>practical<br>skills |    | Intellectual skills |    | Transferable and general skills |           |  |  |  |
|  | Lectures   | a1 | a2   | a3                   | b | l b2                                       | c1 | c2                  | d1 | d2                              | <b>d3</b> |  |  |  |
| 1  | Strategies for Communicating Effectively with Patients | X  |  |                      |   |  | x  |                     |    |                                 |           |  |  |  |
| 2  | Women health   |    | х  | x                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 3  | Childhood conditions                                   |    | х  | х                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 5  | Respiratory system disorders                           |    | х  | x                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 6  | Central nervous system disorders                       |    | Х  | x                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 7  | Gastroenterology                                       |    | Х  | x                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 8  | Common Dermatologic Diseases and Conditions            |    | Х  | x                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 9  | Ear conditions   |    | Х  | x                    |   |  |    | х                   |    |                                 |           |  |  |  |
| 10                                       | Eye conditions   |    | х  | x                    |   |  |    | x                   |    |                                 |           |  |  |  |
|  | Practical sessions                                     |    |  |                      |   |  |    |                     |    |                                 |           |  |  |  |
| 1  | Patient education                                      |    |  |                      | x |  |    |                     | х  | Х                               | X         |  |  |  |
| 2  | Women health   |    |  |                      | x | x  |    |                     | x  | х                               | x         |  |  |  |
| 3  | Childhood condition                                    |    |  |                      | x | x  |    |                     | x  | х                               | x         |  |  |  |
| 4     Respiratory disorders (case study) |  |    |  |                      | x | x  |    |                     | х  | х                               | X         |  |  |  |

| 5  | CNS disorders (case study)            |  |   |   |   |   | х | Х |
|----|---------------------------------------|--|---|---|---|---|---|---|
|    |                                       |  | Х | Х |   | Х |   |   |
| 6  | GIT disorders (Case study)            |  |   |   |   |   | х | х |
| 6  |                                       |  | х | х |   | х |   |   |
| 7  | Dermatological disorders (case study) |  |   |   |   |   | Х | Х |
| 1  |                                       |  | х | х |   | х |   |   |
| 8  | Ear disorders (case study)            |  | х | х |   | х | Х | х |
| 0  | Eye disorders (case study)            |  |   |   |   |   | Х | Х |
| 9  |                                       |  | х | х |   | х |   |   |
| 10 | Role play/presentation                |  |   |   |   |   | х | Х |
| 10 |                                       |  |   |   | х | х |   |   |

# Matrix II of Community pharmacy course

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

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

| 5.9       Implement writing and presentation skills       D10       d3       activity       x |  |
|---|--|
|---|--|

Course Coordinator: Dr. Gehan Fathy Attia Head of Department: Dr. Gehan Fathy Attia Date: / 2019 سبتمبر سبتمبر القسم بتاريخ سبتمبر

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# COURSE SPECIFICATIONS

**Industrial Pharmacy 1** 

Fifth year – first Term 2018-2019

# **Course specification of Industrial Pharmacy-1**

University: Zagazig

**Faculty: Pharmacy** 

Code: PC 516

### **A- Course specifications:**

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

Major or Minor element of programs:MajorDepartment offering the program:------Department offering the course:Pharmaceutics departmentAcademic year Level:Fifth year/First termDate of specification approval:September 2018

### **B- Basic information:**

Title: Industrial pharmacy-1

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- Kno        | wledge and Understanding   |
|---------------|--|
|               | Outline the principles and mechanisms of different pharmaceutical    |
| a1            | processes including: evaporation, drying, filtration, extraction,    |
|               | filtration, etc  |
| a2            | Enumerate the apparatus used in evaporation, drying, filtration,     |
| a2            | extraction, filtration, etc  |
| a3            | Illustrate the structure of different apparatus used in evaporation, |
| as            | drying, filtration, extraction, filtration, etc                      |
| a4            | Explain the technique of different apparatus used in evaporation,    |
| a4            | drying, filtration, extraction, filtration, etc                      |
| <b>B- Pro</b> | fessional and Practical skills                                       |
| b1            | Solve different problems related to heat transfer, evaporation and   |
| 01            | extraction   |
| b2            | Interpret the results of humidity charts.                            |
| b3            | Demonstrate different apparatus used in evaporation, drying,         |
| 05            | filtration, extraction, filtration, etc                              |
| C- Inte       | ellectual skills   |
| c1            | Differentiate between different techniques and apparatus used for    |
| C1            | different pharmaceutical processes                                   |
| c2            | Suggest appropriate apparatus for different pharmaceutical           |
| 02            | processes  |
| c3            | Identify advantages and disadvantages of apparatus used in           |
| 65            | evaporation, drying, filtration, extraction, centrifugation, etc     |
| D- Ger        | eral and Transferable skills   |
| d1            | Demonstrate critical thinking, decision making and problem           |
| ui            | solving abilities  |

| D- Co       | ntents:                          |  |
|-------------|----------------------------------|--|
| Week<br>No. | Lecture contents<br>(2 hrs/week) | Practical session<br>(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 (2018/2019).

#### **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

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Course Coordinators: Prof. Dr. Mahmoud Abd El-Ghany Mahdy Head of Department: Prof. Dr. Nagia Ahmed El-Megrab Date: مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ / 9 / 2018 م

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

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

|     | NARS   | program | Course              | Course  | Sources –                             |   | ing and lo<br>methods | U                | Method of assessment |                |              |
|-----|--|---------|---------------------|---|---------------------------------------|---|-----------------------|------------------|----------------------|----------------|--------------|
|     | <b>I</b> IIII  | ILOS    | ILOS                | content   |                                       |   | Practical session     | Self<br>learning | Written<br>exam      | Practical exam | Oral<br>exam |
| 2.1 | Principles of<br>basic,<br>pharmaceutical,<br>medical, social,<br>behavioral,<br>management,<br>health and<br>environmental<br>sciences as<br>well as<br>pharmacy<br>practice. | A2      | al                  | Introduction<br>&<br>mechanisms<br>of the<br>processes of<br>evaporation,<br>drying,<br>extraction,<br>refrigeration,<br>heat transfer,<br>crystallization,<br>centrifugation<br>and filtration | Student<br>book<br>Essential<br>books | Х |                       |                  | X                    |                | Х            |
|     | Principles of<br>various<br>instruments<br>and techniques  |         | a2                  | Equipment of evaporation,   | Student<br>book<br>Essential<br>books | х |                       |                  | х                    |                | х            |
| 2.7 | including<br>sampling,<br>manufacturing,<br>packaging,   | A18     | a3 dryi<br>refriger | drying,<br>extraction,<br>refrigeration,  | Student<br>book<br>Essential<br>books | х |                       |                  | х                    |                | х            |
|     | labeling,<br>storing and<br>distribution<br>processes in<br>pharmaceutical<br>industry   |         | a4                  | heat transfer,<br>crystallization,<br>centrifugation<br>and filtration  | Student<br>book<br>Essential<br>books | X |                       |                  | X                    |                | х            |

# Matrix II of Industrial Pharmacy-1 course

|      | Ex NARs  | B21 | b1 | Problems on<br>different<br>processes as<br>evaporation,<br>drying,<br>extraction,<br>heat transfer  | Practical<br>notes And<br>student<br>book |   | X |   | X |   |
|------|--|-----|----|--|---|---|---|---|---|---|
|      |  | B22 | b2 | Humidity<br>chart  | Practical<br>notes And<br>student<br>book |   | x |   | x |   |
| 3.8  | Apply<br>techniques used<br>in operating<br>pharmaceutical<br>equipment and<br>instruments | B15 | b3 | Equipment of<br>evaporation,<br>drying,<br>extraction,<br>refrigeration,<br>heat transfer,<br>crystallization,<br>centrifugation<br>and filtration | Practical<br>notes And<br>student<br>book |   | X |   | x |   |
|      | Comprehend<br>and apply GLP,   |     | c1 | Equipment of evaporation,  |   | X | x | X | Х | х |
| 4.2  | GPMP, GSP<br>and GCP<br>guidelines in  | с4  | c2 | drying,<br>extraction,<br>refrigeration,<br>heat transfer,<br>crystallization,<br>centrifugation<br>and filtration                                 | Practical<br>notes And<br>student<br>book | х | x | х | Х | х |
|      | pharmacy<br>practice.  |     | c3 |  |   | х |   | Х |   | х |
| 5.10 | Implement<br>writing and<br>thinking,  | D11 | d1 | Problems on<br>different<br>processes as   | Practical<br>notes And<br>student         |   | x |   | Х |   |

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

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

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

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ / 9 / Date: 2018

# COURSE SPECIFICATIONS

Applied Pharmacognosy

Fifth year – first Term 2018-2019

# **Course Specification of Applied Pharmacognosy I**

| University:          | Zagazig           |             | Faculty:     | Pharmacy    |  |  |  |
|----------------------|-------------------|-------------|--------------|-------------|--|--|--|
| A- Course sp         | ecifications:     |             |              |             |  |  |  |
| Program(s) on v      | which the course  | is given:   | Bachelor     | of Pharmacy |  |  |  |
| Major or Minor       | element of progr  | rams:       | Major        |             |  |  |  |
| Academic year/       | Level: Fifth year | /First term | l            |             |  |  |  |
| Date of specific     | cation approval:  | 9/2018      |              |             |  |  |  |
| <b>B- Basic info</b> | rmation:          |             |              |             |  |  |  |
| Title: Applied H     | Pharmacognosy I   |             | Code: PG 517 |             |  |  |  |
| Credit Hours: -      |                   |             |              |             |  |  |  |
| Lectures: 2 hrs/     | week              |             |              |             |  |  |  |
| Practical: 2 hrs/    | week              |             |              |             |  |  |  |
| Tutorials: -         |                   |             |              |             |  |  |  |
| Total: 3 hrs/wee     | ek                |             |              |             |  |  |  |

### **C- Professional information:**

#### **1-Overall Aims of the Course is to:**

Illustrate the fundamental knowledge about production and evaluation, spectroscopic analysis and chromatographic techniques application on natural products.

# 2-Intended Learning Outcomes of Applied Pharmacognosy

| <b>A-</b>   | 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>B-</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, spectrophotometeryetc   |
| b3          | Illustrate active substances using different spectroscopic and chromatographic method  |
| <b>C-</b>   | Intellectual skills  |
| <b>c</b> 1  | 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.  |
| <b>D-</b>   | General and Transferable skills  |
| d1          | Retrieve information from different 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 | Lecture (2hrs/week)  | Practical session (2hrs/week)   |  |  |  |  |
|------|--|---|--|--|--|--|
| No.  |  |   |  |  |  |  |
| 1-2  | -Production of natural drugs   | <ul> <li>-Introduction of quality control of crude drugs<br/>(physical characters, analytical evaluation,<br/>biological screening etc</li> <li>-Checking the purity of herbal drugs using<br/>microscopical examination.</li> <li>Activity 1: Model for drug profile.</li> </ul> |  |  |  |  |
| 3    | -Evaluation of natural products<br>-Detection of adulteration<br>-Sampling of drugs                | -Checking the purity of herbal drugs using microscopical examination.   |  |  |  |  |
| 4    | -Standardization of natural drugs  | - Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference.   |  |  |  |  |
| 5    | -Physical data of isolates<br>-Preliminary chemical tests  | - Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference  |  |  |  |  |
| 6    | -Isolation of crude drugs<br>- Analytical standards  | -Analytical standards (moisture content, volatile oil content, ash, etc   |  |  |  |  |
| 7    | Midterm exam   |   |  |  |  |  |
| 8    | Spectroscopic evaluation of -<br>natural products<br>Micro elemental analysis-<br>-UV Spectroscopy | -Spectrophotometeric estimation of pure natural<br>compounds.<br>-UV Spectroscopic problems   |  |  |  |  |
| 9    | - IR Spectroscopy<br>- Mass Spectroscopy   | -IR Spectroscopic problems<br>-Mass Spectroscopy problems   |  |  |  |  |
| 10   | - <sup>1</sup> HNMR Spectroscopy   | <ul> <li><sup>-1</sup>HMNR Spectroscopic problems</li> <li><sup>13</sup>CMNR and two dimensional NMR<br/>Spectroscopic problems</li> <li>Activity 2: general spectroscopy problems<br/>including identification of small molecules</li> </ul>                                     |  |  |  |  |
| 11   | - <sup>13</sup> CNMR Spectroscopy  | - Application of chromatography (GC and HPLC), central lab. visit.  |  |  |  |  |
| 12   | -Chromatography<br>-Applications of GC   | Final Practical exam  |  |  |  |  |
| 13   | - Applications of HPLC and some<br>other chromatographic techniques in<br>drug evaluation          | Final Practical exam  |  |  |  |  |
| 14   | Revision   |   |  |  |  |  |
| 15   | Final written exam.  |   |  |  |  |  |

<u>Activity 1:</u> 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.

<u>Activity 2:</u> 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): Activity           | Week 1, 2, 10 |
|------------------------------------|---------------|
| Assessment (2): Practical exam     | Week 12, 13   |
| Assessment (3): Final written exam | Week 15       |
| Assessment (4): Oral exams         | Week 15       |
| Assessment (5): Midterm exam       | Week 7        |

#### 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 I, approved by Pharmacognosy Department.

#### **2- Essential books:**

- K. Robards, P. E. Jackson, P. A. Haddad. Principles and Practice of Modern Chromatographic Methods. Published by Elsevier Academic Press. London, 2012.

- Validation of Analytical Methods. Agilent Technologies. Ludwig Huber,https://www.chem.agilent.com/Library/primers/Public/5990-5140EN.pdf (2010).

- 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.

-Organic Structure determination Using 2D NMR

Spectroscopy (a problem based approach), Jeff Rey H.

Simpson (2008).

#### 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.sciencedirect.com

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

Head of Department: Prof. Dr.

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ Date: 9/2018

|     | Matrix I of Applie   | d Pl      | iari | mac | ogno                                   | sy I | cour      | se                        |           |   |    |    |           |           |           |           |  |  |
|-----|--|-----------|------|-----|--|------|-----------|---------------------------|-----------|---|----|----|-----------|-----------|-----------|-----------|--|--|
|     |  |           |      |     | ILOs of Applied Pharmacognosy 1 course |      |           |                           |           |   |    |    |           |           |           |           |  |  |
|     | <b>Course Contents</b>   |           |      |     | lge and<br>Inding                      |      | and       | fessio<br>pract<br>skills | ical      | Intellectual skills $General an transferable skills$<br>c1 c2 c3 d1 d2 d3<br>c1 c2 c3 d1 d2 d3<br>x x x x i i i i i i i i i i i i i i i i |    |    |           |           |           |           |  |  |
|     | Lectures   | <b>a1</b> | a2   | a3  | a4                                     | a5   | <b>b1</b> | <b>b2</b>                 | <b>b3</b> | <b>c1</b>   | c2 | c3 | <b>d1</b> | <b>d2</b> | <b>d3</b> | <b>d4</b> |  |  |
| 1-2 | -Production of natural drugs   | x         |      |     |  | X    |           |                           |           |   |    |    |           |           | <br>      |           |  |  |
| 3   | -Evaluation of natural products<br>-Detection of adulteration<br>-Sampling of drugs            | X         |      |     |  | X    |           |                           |           | X   |    |    |           |           |           |           |  |  |
| 4   | -Standardization of natural drugs  | x         |      |     |  | X    |           |                           |           | X   |    |    |           |           |           |           |  |  |
| 5   | -Physical data of isolates<br>-Preliminary chemical tests                                      | X         |      |     |  | X    |           |                           |           | Х   | X  | X  |           |           |           |           |  |  |
| 6   | -Isolation of crude drugs<br>- Analytical standards  | X         |      |     |  | X    |           |                           |           | X   |    | X  |           |           |           |           |  |  |
| 7   | -Spectroscopic evaluation of natural products<br>-Micro elemental analysis<br>-UV Spectroscopy |           | X    | X   |  |      |           |                           |           | X   |    |    |           |           |           |           |  |  |
| 8   | -UV Spectroscopy (continue)  |           | x    | х   |  |      |           |                           |           | х   |    |    |           |           |           |           |  |  |
| 9   | -IR Spectroscopy -Mass Spectroscopy  |           | х    | х   |  |      |           |                           |           | Х   |    |    |           |           |           |           |  |  |
| 10  | - <sup>1</sup> HNMR Spectroscopy   |           | х    | x   |  |      |           |                           |           | x   |    |    |           |           |           |           |  |  |
| 11  | - <sup>13</sup> CNMR Spectroscopy  |           | x    | х   |  |      |           |                           |           | х   |    |    |           |           |           |           |  |  |
| 12  | -Chromatography -Applications of GC  |           |      |     | Х                                      |      |           |                           |           |   | х  |    |           |           |           |           |  |  |

| 13        | - Applications of HPLC and some other chromatographic techniques in drug evaluation  |  |   |   |   |   |   |   |   |   |   |
|-----------|--|--|---|---|---|---|---|---|---|---|---|
|           | Practical sessions   |  | X |   |   |   | X |   |   |   |   |
| 14-<br>15 | <ul> <li>-Introduction of quality control of crude drugs (physical characters, analytical evaluation, biological screening etc</li> <li>-Checking the purity of herbal drugs using microscopical examination</li> <li>*Activity: Assignment for diagnostic active constituents of crude drugs</li> </ul> |  |   | x |   |   |   | x | x | x | x |
| 16        | -Checking the purity of herbal drugs using microscopical examination.  |  |   | X |   |   |   |   | x | х | x |
| 17        | - Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference.  |  |   | X |   |   |   |   | X | x | x |
| 18        | - Checking the purity of crude herbal drugs (extracts) using TLC profiling against reference   |  |   | x |   |   |   |   | x | x | x |
| 19        | -Analytical standards (moisture content, volatile oil content, ash, etc  |  |   |   | x |   |   |   |   | x |   |
| 20        | -Spectrophotometeric estimation of pure natural compounds.   |  |   |   | X | x |   |   |   | х | х |
| 21        | -UV Spectroscopic problems   |  |   |   | x | x |   |   |   | х | x |
| 22        | -IR Spectroscopic problems<br>-Mass Spectroscopy problems  |  |   |   | x | x |   |   |   | x | x |
| 23        | <ul> <li><sup>-1</sup>HMNR Spectroscopic problems</li> <li><sup>13</sup>CMNR and two dimensional NMR Spectroscopic problems</li> <li>*Activity: general spectroscopy problems including identification of small molecules</li> </ul>   |  |   |   | x | x |   |   |   | X | x |
| 24        | - Application of chromatography (GC and HPLC), central lab. visit.   |  |   |   |   | x |   |   |   |   |   |
| 25        | Activity   |  |   |   |   |   |   | х | х | х | х |

| National Academic<br>Reference Standards<br>(NARS) |   | 0          |          | Course Course contents<br>ILOs   | Sources         | Teac    | hing and lea<br>methods | arning           | Methods of assessment |                   |              |  |
|--|---|------------|----------|--|-----------------|---------|-------------------------|------------------|-----------------------|-------------------|--------------|--|
|  |   |            |          |  |                 | Lecture | Practical session       | Self<br>learning | Written<br>exam       | Practical<br>exam | Oral<br>exam |  |
| 2.3  | Principles of<br>different<br>analytical<br>techniques<br>using GLP<br>guidelines and<br>validation<br>procedures.<br>Principles of<br>isolation,<br>synthesis,<br>purification,<br>identification,<br>and<br>standardization<br>methods of<br>pharmaceutical | A11<br>A12 | a1<br>a5 | <ul> <li>-Production of natural drugs</li> <li>-Evaluation of natural products</li> <li>-Detection of adulteration</li> <li>-Sampling of drugs</li> <li>-Standardization of natural drugs</li> <li>-Physical data of isolates</li> <li>-Preliminary chemical tests</li> <li>-Isolation of crude drugs</li> </ul> | Student<br>book | x       |                         |                  | X                     |                   | x            |  |

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

| 3.4 | Perform<br>synthesis,<br>purification,<br>identification<br>and<br>standardization<br>of active<br>substances<br>from different<br>origins | В7 | <ul> <li>-Introduction of<br/>quality control of<br/>crude drugs (physical<br/>characters, analytical<br/>evaluation, biological<br/>screening etc</li> <li>-Checking the purity<br/>of herbal drugs using<br/>microscopical<br/>examination</li> <li>*Activity:<br/>Assignment for<br/>diagnostic active<br/>constituents of crude<br/>drugs</li> <li>-Checking the purity<br/>of herbal drugs using<br/>microscopical<br/>examination.</li> <li>Checking the purity<br/>of herbal drugs using<br/>microscopical<br/>examination.</li> <li>Checking the purity<br/>of crude herbal drugs<br/>(extracts) using TLC<br/>profiling against<br/>reference.</li> <li>Checking the purity<br/>of crude herbal drugs<br/>(extracts) using TLC</li> </ul> | Practical notes |  | x x |  | Х |  |
|-----|--|----|--|-----------------|--|-----|--|---|--|
|-----|--|----|--|-----------------|--|-----|--|---|--|

|  |  | profiling against reference |  |  |  |  |
|--|--|-----------------------------|--|--|--|--|
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
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|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |
|  |  |                             |  |  |  |  |

| I |    |                            |  |
|---|----|----------------------------|--|
|   | b2 | -Analytical standards      |  |
|   |    | (moisture content,         |  |
|   |    | volatile oil content,      |  |
|   |    | ash, etc                   |  |
|   |    | -spectrophotometeric       |  |
|   |    | estimation of pure         |  |
|   |    | natural compounds.         |  |
|   |    | -UV Spectroscopic          |  |
|   |    | problems                   |  |
|   |    | -IR Spectroscopic          |  |
|   |    | problems                   |  |
|   |    | problems                   |  |
|   |    | -Mass                      |  |
|   | b2 | Spectroscopy               |  |
|   | 02 | problems                   |  |
|   |    | - <sup>1</sup> HMNR        |  |
|   |    | Spectroscopic              |  |
|   | b3 | problems                   |  |
|   | 05 | <sup>13</sup> CMNR and two |  |
|   |    | dimensional NMR            |  |
|   |    |                            |  |
|   |    | Spectroscopic              |  |
|   |    | problems                   |  |
|   |    |                            |  |
|   |    | *Activity: general         |  |
|   |    | spectroscopy               |  |
|   |    | problems including         |  |
|   |    | identification of          |  |
|   |    | small molecules            |  |
|   | b3 | - Application of           |  |

|  | chromatography (GC and HPLC), central |  |  |  |  |
|--|---------------------------------------|--|--|--|--|
|  | lab. visit.                           |  |  |  |  |

| 4.3 | Adopt<br>qualitative and<br>quantitative<br>methodology<br>for QC and | C6 | c1 | <ul> <li>-Evaluation of<br/>natural products</li> <li>-Detection of<br/>adulteration</li> <li>-Sampling of drugs</li> <li>-Standardization of<br/>natural drugs</li> <li>-Physical data of<br/>isolates</li> <li>-Preliminary<br/>chemical tests<br/>Isolation of crude<br/>drugs</li> <li>- Analytical<br/>standards</li> <li>-Spectroscopic<br/>evaluation of natural<br/>products</li> </ul> | Student<br>book | Х |  | X | X |
|-----|---|----|----|---|-----------------|---|--|---|---|
| 4.3 | qualitative and<br>quantitative<br>methodology                        | C6 | c1 | standards<br>-Spectroscopic<br>evaluation of natural<br>products<br>-Micro elemental<br>analysis  |                 |   |  |   |   |
|     |   |    |    | -UV Spectroscopy<br>UV Spectroscopy<br>(continue)   |                 |   |  |   |   |

|  | -IR Spectroscopy<br>-Mass Spectroscopy<br>- <sup>1</sup> HNMR<br>Spectroscopy<br>- <sup>13</sup> CNMR<br>Spectroscopy |  |  |  |  |
|--|---|--|--|--|--|
|  |   |  |  |  |  |

| 4.3 |  | C7 | c2<br>c3 | <ul> <li>-Physical data of<br/>isolates</li> <li>-Preliminary<br/>chemical tests <ul> <li>-Chromatography</li> <li>-Applications of GC</li> <li>- Applications of<br/>HPLC and some<br/>other</li> <li>chromatographic<br/>techniques in drug<br/>evaluation</li> </ul> </li> <li>-Physical data of<br/>isolates</li> <li>-Preliminary<br/>chemical tests</li> <li>-Isolation of crude<br/>drugs</li> <li>- Analytical<br/>standards</li> </ul> |           |   |   |   |  |
|-----|--|----|----------|---|-----------|---|---|---|--|
| 5.2 | Retrieve and<br>evaluate<br>information<br>from different<br>sources to<br>improve | D2 | d1       | -Assignment for<br>diagnostic active<br>constituents of crude<br>drugs<br>- General<br>spectroscopy   | Practical | x | x | X |  |

|      | professional competencies   |     |    | problems including identification of | notes |  |  |  |
|------|---|-----|----|--------------------------------------|-------|--|--|--|
| 5.3  | Work<br>effectively in a<br>team  | D3  | d2 | small molecules                      |       |  |  |  |
| 5.9  | Implement<br>writing and<br>presentation<br>skills.   | D10 | d3 |                                      |       |  |  |  |
| 5.10 | Demonstrate<br>critical<br>thinking,<br>problem-<br>solving and<br>decision-<br>making<br>abilities | D11 | d4 |                                      |       |  |  |  |

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

#### Head of Department: Prof. Dr. Amal AlGendi

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ Date: 9/2018

# COURSE SPECIFICATIONS

**Clinical Pharmacology** 

Fifth year – first Term 2018-2019

## **Course specification of Clinical Pharmacology**

| University: Zagazig                     | Faculty: Pharmacy                      |
|---|--|
| A- Course specifications:               |  |
| Program (s) on which the course is give | ven: 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:         |  |
| <b>B- Basic information:</b>            |  |
| Title: Pharmacology and toxicology d    | lepartment 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- Kn   | owledge 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- Pro  | fessional 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- Inte | ellectual 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-Ger   | neral 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:**

|     | Lecture contents (3 hrs/lec.)                 | Practical session (2hrs/lab)  |
|-----|---|---|
| No. |   |   |
| 1   | Liver disorders (1)                           | <ul> <li>Case Studies of liver disease</li> <li>Treatment guidelines for diabetes<br/>(activity)</li> </ul>             |
| 2   | Liver disorders (2)                           | <ul> <li>Case Studies of liver disease</li> <li>Treatment guidelines for gynecological disorders (activity)</li> </ul>  |
| 3   | Liver disorders (3)                           | Case Studies of liver disease   |
| 4   | Critical care(1)                              | Case Studies of liver disease   |
| 5   | Critical care (2)                             | <ul> <li>Case Studies in Critical care</li> <li>Treatment guidelines for cardiovascular disorders (activity)</li> </ul> |
| 6   | Critical care (3)                             | <ul> <li>Case Studies in Critical care</li> <li>Treatment guidelines for respiratory disorders (activity)</li> </ul>    |
| 7   | Midterm exam                                  |   |
| 8   | Acute kidney injury<br>Chronic kidney disease | Case Studies in Critical care   |
| 9   | Renal replacement therapy                     | <ul> <li>Case study of acute kidney disease</li> <li>Treatment guidelines for hypovolemic shock (activity)</li> </ul>   |
| 10  | Complications of CKD (1)                      | <ul> <li>Case study of acute kidney disease</li> <li>Treatment guidelines for lactic acidosis (activity)</li> </ul>     |
| 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

### **<u>H- List of References:</u>**

- **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

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**Course Coordinator: Prof. Dr. Mona Fouad** 

Head of Department: Prof. Dr. Mona Fouad

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

|    |                              | Matrix | x I of C                    | Clinica      | l Pharr      | nacolo       | gy cou     | rse   |              |                |  |    |          |  |
|----|------------------------------|--------|-----------------------------|--------------|--------------|--------------|------------|-------|--------------|----------------|--|----|----------|--|
|    |                              |        | ILOs of the course          |              |              |              |            |       |              |                |  |    |          |  |
|    | <b>Course Contents</b>       | Know   | Knowledge and understanding |              |              |              | actical sk | tills |              | ectual<br>ills | General and transferable<br>and skills |    |          |  |
|    | Lectures                     | a1     | a2                          | a3           | a4           | <b>b1</b>    | <b>b2</b>  | b3    | <b>c1</b>    | c2             | <b>d1</b>                              | d2 | d3       |  |
| 1  | Liver disorders (1)          |        |                             | V            |              |              |            |       |              | $\checkmark$   |  |    |          |  |
| 2  | Liver disorders (2)          |        |                             | $\checkmark$ |              |              |            |       |              |                |  |    |          |  |
| 3  | Liver disorders (3)          |        |                             | $\checkmark$ |              |              |            |       |              | $\checkmark$   |  |    |          |  |
| 4  | Critical care(1)             |        |                             | $\checkmark$ |              |              |            |       |              | $\checkmark$   |  |    |          |  |
| 5  | Critical care (2)            |        |                             | $\checkmark$ |              |              |            |       |              | $\checkmark$   |  |    |          |  |
| 6  | Critical care (3)            |        |                             | $\checkmark$ |              |              |            |       |              |                |  |    |          |  |
| 7  | Acute kidney injury          |        |                             | $\checkmark$ |              |              |            |       |              |                |  |    |          |  |
| 8  | Chronic kidney disease       |        |                             | $\checkmark$ |              |              |            |       |              | $\checkmark$   |  |    |          |  |
| 9  | Renal replacement therapy    |        |                             | $\checkmark$ |              |              |            |       |              |                |  |    |          |  |
| 10 | Complications of CKD (1)     |        |                             | $\checkmark$ | $\checkmark$ |              |            |       |              | $\checkmark$   |  |    | <u> </u> |  |
| 11 | Complications of CKD (2)     |        | $\checkmark$                | $\checkmark$ | $\checkmark$ |              |            |       |              | $\checkmark$   |  |    |          |  |
| 12 | Drug induced nephropathy (1) |        |                             | $\checkmark$ | $\checkmark$ |              |            |       |              | $\checkmark$   |  |    | <u> </u> |  |
| 13 | Drug induced nephropathy (2) |        | $\checkmark$                |              | $\checkmark$ | $\checkmark$ |            |       | $\checkmark$ | $\checkmark$   |  |    |          |  |

| 14  | Revision   |  |    |    |    |              |              |              |              |              |              |              |              |
|-----|--|--|----|----|----|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 15  | Final exam   |  |    |    |    |              |              |              | $\checkmark$ |              |              |              |              |
| Pra | Practical sessions   |  | a2 | a3 | a4 | <b>b1</b>    | b2           | <b>b3</b>    | <b>c1</b>    | c2           | <b>d1</b>    | d2           | <b>d3</b>    |
| 1   | • Case Studies of liver disease<br>Treatment guidelines for diabetes (activity)                    |  |    |    |    | $\checkmark$ |
| 2   | • Case Studies of liver disease<br>Treatment guidelines for gynecological disorders<br>(activity)  |  |    |    |    |              | $\checkmark$ |              | $\checkmark$ | $\checkmark$ |              |              | $\checkmark$ |
| 3   | Case Studies of liver disease  |  |    |    |    | $\checkmark$ |
| 4   | Case Studies of liver disease  |  |    |    |    | $\checkmark$ |              |
| 5   | • Case Studies in Critical care<br>Treatment guidelines for cardiovascular disorders<br>(activity) |  |    |    |    | $\checkmark$ | $\checkmark$ |              | $\checkmark$ |              | $\checkmark$ | $\checkmark$ |              |
| 6   | • Case Studies in Critical care<br>Treatment guidelines for respiratory disorders<br>(activity)    |  |    |    |    |              | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |              |              | $\checkmark$ |
| 7   | Case Studies in Critical care  |  |    |    |    | $\checkmark$ |
| 8   | Case Studies in Critical care  |  |    |    |    | $\checkmark$ | $\checkmark$ | $\checkmark$ | $\checkmark$ |              | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| 9   | • Case study of acute kidney disease<br>Treatment guidelines for hypovolemic shock<br>(activity)   |  |    |    |    | $\checkmark$ | $\checkmark$ |              | $\checkmark$ |              | $\checkmark$ | $\checkmark$ | $\checkmark$ |
| 10  | Case study of acute kidney disease   |  |    |    |    | $\checkmark$ |

|    | Treatment guidelines for lactic acidosis (activity) |  |  |              |              |              |              |              |              |              |              |
|----|---|--|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 11 | Case study of chronic kidney disease                |  |  | $\checkmark$ |
| 12 | Case study of chronic kidney disease                |  |  | $\checkmark$ |              |
| 13 | Practical exam                                      |  |  | $\checkmark$ |              |
|    |   |  |  |              |              |              |              |              |              |              |              |

|      |  |                 |                | Matrix II          | of Clinical Ph  | narmaco      | logy cou           | rse                      |               |                         |                  |              |  |
|------|--|-----------------|----------------|--------------------|---|--------------|--------------------|--------------------------|---------------|-------------------------|------------------|--------------|--|
| Nat  | tional Academic  |                 |                |                    |   | Teach        | ing and lea        | rning met                | hods          | Weighting of assessment |                  |              |  |
|      | erence Standards<br>(NARS)   | Program<br>ILOs | Course<br>ILOs | Course<br>contents | Sources   | Lecture      | Practical sessions | Think-<br>pair-<br>share | Case<br>study | Written<br>exam         | Pratical<br>exam | Oral<br>exam |  |
| 2.12 | Etiology,<br>epidemiology,   | A27             | a2             | All lectures       | Student book<br>Essential books<br>Recommended<br>books<br>Internet |              |                    | $\checkmark$             |               | $\checkmark$            |                  | $\checkmark$ |  |
|      | laboratory diagnosis<br>and clinical features<br>of different diseases<br>and their<br>pharmacotherapeutic | A28             | a3             | All lectures       | Student book<br>Essential books<br>Recommended<br>books<br>Internet |              |                    | $\checkmark$             |               | $\checkmark$            |                  | $\checkmark$ |  |
|      | approaches.  | A29             | a4             | All lectures       | Student book<br>Essential books<br>Recommended<br>books<br>Internet |              |                    | $\checkmark$             |               | $\checkmark$            |                  | $\checkmark$ |  |
| 2.14 | Principles of clinical<br>pharmacology,<br>pharmacovigilance<br>and the rational use<br>of drugs.          | A31             | a1             | All lectures       | Student book<br>Essential books<br>Recommended<br>books<br>Internet | $\checkmark$ |                    | 7                        |               | $\checkmark$            |                  | $\checkmark$ |  |
| 3.1  | Use the proper<br>pharmaceutical and<br>medical terms,<br>abbreviations and<br>symbols in pharmacy         | B1              | b1             | All lectures       | Student book<br>Essential books<br>Recommended<br>books<br>Internet | $\checkmark$ |                    |                          |               | $\checkmark$            | V                | V            |  |
|      | practice.  |                 |                | All practical      | Practical notes   |              | $\checkmark$       |                          |               |                         |                  |              |  |

|     |  |     |    | sessions               |   |   |              |              |              |              |              |              |
|-----|--|-----|----|------------------------|---|---|--------------|--------------|--------------|--------------|--------------|--------------|
| 3.5 | Select medicines<br>based on<br>understanding<br>etiology and path                               | B8  | b2 | All practical sessions | Practical notes<br>Recommended<br>books<br>Internet                 |   | $\checkmark$ | $\checkmark$ | $\checkmark$ |              |              |              |
|     | physiology of diseases.  | Б9  | b3 | All practical sessions | Practical notes<br>Recommended<br>books<br>Internet                 |   | $\checkmark$ | √            | $\checkmark$ |              |              |              |
| 4.9 | Utilize the<br>pharmacological<br>basis of therapeutics<br>in the proper<br>selection and use of |     | c1 | All lectures           | Student book<br>Essential books<br>Recommended<br>books<br>Internet | V |              | $\checkmark$ | $\checkmark$ | V            |              | N            |
|     | drugs in various disease conditions.   | C14 | 01 | All practical sessions | Practical notes<br>Recommended<br>books<br>Internet                 |   |              | $\checkmark$ | $\checkmark$ |              | $\checkmark$ |              |
|     |  |     | c2 | All lectures           | Student book<br>Essential books<br>Recommended<br>books<br>Internet |   |              | $\checkmark$ | $\checkmark$ | $\checkmark$ |              | $\checkmark$ |
|     |  |     |    | All practical sessions | Practical notes<br>Recommended<br>books<br>Internet                 |   | $\checkmark$ | $\checkmark$ | $\checkmark$ |              |              |              |
| 5.3 | Work effectively in a team.  | D3  | d1 | All practical sessions | Recommended<br>books<br>Internet                                    |   |              | $\checkmark$ | $\checkmark$ |              | $\checkmark$ |              |
| 5.9 | Implement writing<br>and presentation<br>skills.   | D10 | d2 | All practical sessions | Recommended<br>books<br>Internet                                    |   |              | $\checkmark$ | $\checkmark$ |              | $\checkmark$ |              |

| 5.10 | Implement writing<br>and thinking,<br>problem- solving and<br>decision- making<br>abilities. | D11 | d3 | All practical sessions | Recommended<br>books<br>Internet |  |  | $\checkmark$ | $\checkmark$ |  |  | $\checkmark$ |  |
|------|--|-----|----|------------------------|----------------------------------|--|--|--------------|--------------|--|--|--------------|--|
|------|--|-----|----|------------------------|----------------------------------|--|--|--------------|--------------|--|--|--------------|--|

# COURSE SPECIFICATIONS

# Pharmacotherapy

Fifth year – first Term 2018-2019

## **Course specification of Pharmacotherapy**

\_\_\_\_\_ Zagazig **University:** 

**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 – 1<sup>st</sup> term October 2019 Date of specification approval:

## **B-Basic information:**

| Title:      | Pharmacotherapy | Code : | PT 519 |
|-------------|-----------------|--------|--------|
| Credit Hour | rs:             |        |        |
| 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)

| <b>A-</b>   | 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>B-</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.  |
| <b>C-</b>   | 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<br>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<br>(Febrile neutropenia,<br>thrombocytopenia)                            | Casestudiesonfebrileneutropeniaandthrombocytopeniaincancerpatient      |
| 4           | Oncology supportive care<br>(anemia and fatigue, oncologic<br>emergencies)                        | Case studies on anemia and<br>fatigue and oncologic<br>emergencies     |
| 5           | Oncology supportive care<br>(chemoprotectants and<br>extravasation), Geriatrics<br>(introduction) | Casestudiesonchemoprotectantsandextravasation,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          | Neurologicaldisorders(Multiple sclerosis)   | Case studies on Multiple sclerosis                                     |
| 12          | Neurologicaldisorders(Multiple sclerosis)   | Case studies on Multiple sclerosis and schizophrenia                   |
| 13          | Psychiatric disorders<br>(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

### **<u>H- List of References:</u>**

- 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

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|                 |  |                                |                                |    |    | Matrix                                     | Ι  |                        |    |    |                                    |    |    |    |    |
|-----------------|--|--------------------------------|--------------------------------|----|----|--|----|------------------------|----|----|------------------------------------|----|----|----|----|
|                 |  | ILOs of pharmacotherapy course |                                |    |    |  |    |                        |    |    |                                    |    |    |    |    |
| Course Contents |  |                                | Knowledge and<br>understanding |    |    | Professional<br>and<br>practical<br>skills |    | Intellectual<br>skills |    |    | Transferable and general<br>skills |    |    |    |    |
| Lecture         | S  | a1                             | a2                             | a3 | a4 | b1   | b2 | c1                     | c2 | c3 | d1                                 | d2 | d3 | d4 | d5 |
| 1               | Oncology supportive<br>care (CINV)   | x                              | x                              | x  | x  |  |    | X                      | X  | X  |                                    |    |    |    |    |
| 2               | Oncology supportive<br>care (Pain<br>management)   | x                              | x                              | x  | x  |  |    | X                      | X  | X  |                                    |    |    |    |    |
| 3               | Oncology supportive<br>care (Febrile<br>neutropenia,<br>thrombocytopenia)                            | x                              | x                              | x  | X  |  |    | X                      | X  | X  |                                    |    |    |    |    |
| 4               | Oncology supportive<br>care (anemia and<br>fatigue, oncologic<br>emergencies)                        | x                              | x                              | x  | x  |  |    | x                      | x  | X  |                                    |    |    |    |    |
| 5               | Oncology supportive<br>care (chemoprotectants<br>and extravasation),<br>Geriatrics<br>(introduction) | x                              | x                              | x  | x  |  |    | X                      | x  | X  |                                    |    |    |    |    |
| 6               | Geriatrics (dementia,<br>UI, BPH)  | x                              | x                              | x  | x  |  |    | X                      | x  | X  |                                    |    |    |    |    |
| 7               | Midterm exam   | X                              | X                              | X  | x  |  |    | x                      | X  | X  |                                    |    |    |    |    |
| 8               | Geriatrics<br>(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<br>(Multiple sclerosis)   | x | x | x | x   |          |        | X | X | X |   |   |   |   |   |
| 12 | Neurological disorders<br>(Multiple sclerosis)   | x | x | x | X   |          |        | X | X | X |   |   |   |   |   |
| 13 | Psychiatric disorders (schizophrenia)  | X | X | x | X   |          |        | X | X | x |   |   |   |   |   |
|    |  |   |   |   | Pra | ctical s | ession |   |   |   |   |   |   |   |   |
| 1  | Case studies on CINV<br>Activity   |   |   |   |     | X        | X      |   |   |   | X | X | X | x | x |
| 2  | Case studies on pain<br>management in cancer<br>patients<br>Activity                               |   |   |   |     | X        | X      |   |   |   | X | X | X | x | x |
| 3  | Case studies on febrile<br>neutropenia and<br>thrombocytopenia in<br>cancer patient<br>Activity    |   |   |   |     | x        | X      |   |   |   | X | X | X | x | x |
| 4  | Case studies on anemia<br>and fatigue and<br>oncologic emergencies<br>Activity                     |   |   |   |     | X        | X      |   |   |   | X | X | X | x | x |
| 5  | Case studies on<br>chemoprotectants and<br>extravasation, Geriatrics<br>(introduction)<br>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<br>osteoarthritis<br>Activity             | X | X |  | X | X | X | X | x |
| 8  | Case studies on<br>rheumatoid arthritis<br>Activity       | X | x |  | X | X | X | x | x |
| 9  | Case studies on ADHD<br>Activity                          | X | х |  | X | X | X | X | X |
| 10 | Case studies on Multiple<br>sclerosis<br>Activity         | x | X |  | x | X | X | x | x |
| 11 | Case studies on MultiplesclerosisandschizophreniaActivity | X | X |  | X | X | X | X | X |

|      |   |                   |                | Matrix II  |   |                                  |                      |                      |  |              |
|------|---|-------------------|----------------|--|---|----------------------------------|----------------------|----------------------|--|--------------|
|      |   |                   |                |  |   | Teaching and<br>learning methods |                      | Method of assessment |  |              |
| Na   | tional Academic Reference<br>Standards NARS   | Program<br>ILOs   | Course<br>ILOs | Course contents  | Sources                                   | Lecture                          | Practical<br>session | Written<br>exam      | Practical<br>exam and<br>lab<br>activity | Oral<br>exam |
| 2.12 | Etiology, epidemiology,<br>laboratory diagnosis and<br>clinical features of different<br>diseases and their<br>pharmacotherapeutic<br>approaches. | A27<br>A28<br>A29 | a1 to<br>a3    | geriatrics,<br>pediatrics and<br>CNS disorders   | Student<br>book and<br>essential<br>books | x                                |                      | x                    |  | X            |
| 2.14 | Principles of clinical<br>pharmacology,<br>pharmacovigilance and the<br>rational use of drugs.  | A31               | a4             | Disorders of<br>oncology<br>supportive care,<br>geriatrics,<br>pediatrics and<br>CNS disorders | Student<br>book and<br>essential<br>books | X                                |                      | x                    |  | x            |

| 3.5  | Select medicines based<br>on understanding etiology<br>and path physiology of<br>diseases.   | B8  | b1     | Case studies on<br>oncology<br>supportive care,<br>geriatrics,<br>pediatrics and<br>CNS disorders | Practical<br>note                      |   | x |   | x |   |
|------|--|-----|--------|---|--|---|---|---|---|---|
| 3.10 | Advise patients and<br>other health care<br>professionals about safe<br>and proper use of<br>medicines                                   | B18 | b2     | Case studies on<br>oncology<br>supportive care,<br>geriatrics,<br>pediatrics and<br>CNS disorders | Practical<br>note                      |   | x |   | x |   |
| 4.9  | Utilize the<br>pharmacological basis of<br>therapeutics in the proper<br>selection and use of drugs<br>in<br>various disease conditions. | C14 | c1, c3 | Disorders of<br>oncology<br>supportive care,<br>geriatrics,<br>pediatrics and<br>CNS disorders    | Student                                | x |   | x |   | x |
| 4,11 | Assess drug interactions,<br>ADRs and<br>pharmacovigilance   | C16 | c2     | Disorders of<br>oncology<br>supportive care,<br>geriatrics,<br>pediatrics and<br>CNS disorders    | Student<br>book,<br>Essential<br>books | x |   | x |   | x |
| 5.1  | Communicate clearly by verbal means.   | D1  | d1     |   |  |   |   |   |   |   |

| 5 | .3 | Work effectively in a team.   | D3  | d2 | Lab activity |           |  |   |  |
|---|----|---|-----|----|--------------|-----------|--|---|--|
| 5 | .2 | Retrieveandevaluateinformationfromdifferentsourcestoimproveprofessionalcompetencies | D2  | d3 |              | Different |  | x |  |
| 5 | .5 | Practiceindependentlearningneededforcontinuousprofessionaldevelopment.              | D6  | d4 |              | sources   |  |   |  |
| 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 2018-2019

## **Course specification of Public Health**

University: Zagazig

**Faculty:** Pharmacy

Code: **MI515** 

## **A- Course specifications:**

Program (s) on which the course is given: Bachelor of PharmacyMajor or Minor element of programs:MajorDepartment offering the program:------Department offering the course:Microbiology and ImmunologyAcademic year Level:fifth year studentsDate of specification approval:September 2018

### **B- Basic information:**

Title: Public health

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)

| Δ.]         | Knowledge and Understanding  |
|-------------|--|
|             | <b>Recognize</b> the basic concepts of public health including epidemiology  |
| <b>a</b> 1  | and List the different types of epidemiology studies and give an example   |
|             | of a study design used for each type   |
| a2          | <b>Describe</b> 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   |
| - 4         | Illustrate strategies of healthy nutrition, family planning, and also other  |
| a4          | strategies related to maternal and child health care programs  |
| <b>B-</b> I | Professional and Practical skills  |
| <b>b</b> 1  | Interpret data of microbiological analysis of water, food and milk   |
| b2          | <b>Solve</b> 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  |
| <b>C-</b> ] | Intellectual skills  |
| <b>c1</b>   | 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<br>human morbidity and mortality over time based on calculation of<br>prevalence rate, incidence rate, relative risk, and/or odds ratio |
| <b>D-</b> ( | 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 | Lecture contents (1 hrs/week)  | Practical session (1hrs/week)       |
|------|--|-------------------------------------|
| No.  |  |                                     |
| 1    | Introduction to public health and  | Lab rules                           |
| •    | epidemiology   |                                     |
|      |  |                                     |
| 2    | Environmental health:<br>Air pollution   | Bacteriological examination of      |
|      | introduction to Water supply &   | water (demonstration through        |
|      | sanitation   | data show )                         |
| 3    | Environmental health:  | Bacteriological examination of      |
|      | <ul> <li>Disease transmitted by water</li> <li>Controlling waterborne disease</li> </ul> | water (demonstration through        |
|      | <ul> <li>Purification of water</li> </ul>  | data show )                         |
|      | • Standard of safe water supply  |                                     |
| 4    | <ul> <li>Student Activity (report)</li> <li>Food sanitation</li> </ul>                   | Bacteriological examination of      |
|      | <ul> <li>Milk sanitation &amp; Milk- borne disease</li> </ul>                            | Milk (demonstration through         |
|      | • Food poisoning (Food-borne illness)  |                                     |
|      | • General measures for safe food   | data show )                         |
| 5    | Refuse, sewage and Wastes disposal   | <b>Food</b> poisoning (case study ) |
|      | <ul><li>Hazards of improper Wastes disposal</li><li>Sewage treatment</li></ul>           |                                     |
|      | Occupational diseases and industrial health  |                                     |
| 6    | Nutrition, malnutrition and nutritional  | Nutrition (case study )             |
| 7    | deficiency diseases<br>Midterm exam  | Midterm exam                        |
| 8    | • Terms used for various forms of  |                                     |
| 0    | outbreaks  | Study design (calculate             |
|      | • Classification of infectious diseases  | prevalence, incidence rate)         |
| 0    | • Epidemiological Model  | Necessarial infections (see         |
| 9    | Specific measurements:<br>I. Morbidity rates   | Nosocomial infections (case         |
|      | II. Mortality rates  | study)                              |
|      | Problem solving  |                                     |
| 10   | Study Designs in Epidemiology  | Family planning (case study)        |
|      | Epidemiological study methods:<br>- Descriptive & Analytical studies:                    |                                     |
|      | 1. Cohort studies  |                                     |

|    | 2. Case-control studies                       |                             |
|----|---|-----------------------------|
| 11 | <ul> <li>Nosocomial infections</li> </ul>     | Bioterrorism (case study)   |
|    | • Bioterrorism                                | Bioterrorisin (case study ) |
| 12 | $\circ$ Immunization and vaccination programs | Final Practical Exam        |
| 13 | • Family planning & Overpopulation            |                             |
|    | $\circ$ child and mother care programs        |                             |
|    | <ul> <li>Activity (report)</li> </ul>         |                             |
| 14 | • Revision                                    |                             |
| 15 | • Written exam                                |                             |
| 13 | o whiteh 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 | 30    | 60%        |
| questions)                                  |       |            |
| 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

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

|    |  |    | Mat         | rix1          | of p    | ubli                     | c hea     | alth       |    |              |        |    |                |                |    |
|----|--|----|-------------|---------------|---------|--------------------------|-----------|------------|----|--------------|--------|----|----------------|----------------|----|
|    |  |    |             |               |         |                          |           | ILO        | s  |              |        |    |                |                |    |
| Co | ourse content  |    | Knowl       |               |         | Professional & Practical |           |            |    | Intellectual |        |    | Transferable & |                |    |
| CU |  | -1 | Under<br>a2 | standin<br>a3 | g<br>a4 | L 1                      | ski<br>b2 | ills<br>b3 | b4 | c1           | skills | c3 | ger<br>d1      | neral sl<br>d2 |    |
|    |  | a1 | a2          | as            | a4      | b1                       | 02        | 05         | 04 | CI           | C2     | C5 | aı             | u2             | d3 |
|    | Introduction to public   |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| -  | health & epidemiology  | X  |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| 1  | Practical: lab rules<br>Environmental health:                  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    |  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | Air pollution<br>introduction to Water                         |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    |  |    | х           |               |         | x                        |           |            |    | x            |        |    |                |                |    |
|    | supply<br>Brastical: Bastarialaziaal                           |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| •  | <b><u>Practical</u></b> : Bacteriological examination of water |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| 2  | Disease transmitted by   |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | water & controlling of   |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | waterborne diseases  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | Purification of water  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | Standard of safe water   |    | x           |               |         | x                        |           |            |    | x            |        |    |                | x              |    |
|    | supply   |    | А           |               |         | л                        |           |            |    | Α            |        |    |                | А              |    |
|    | Activity (report)  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | <b><u>Practical</u></b> : Bacteriological                      |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| 3  | examination of water   |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| 5  | <ul> <li>Food sanitation</li> </ul>                            |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | • Milk sanitation &  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | Milk- borne disease  |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
|    | <ul> <li>Food poisoning</li> </ul>                             |    | Х           |               |         | X                        |           |            |    | X            |        |    |                |                |    |
|    | • measures for safe food                                       |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |
| 4  | <b><u>Practical</u></b> : Bacteriological                      |    |             |               |         |                          |           |            |    |              |        |    |                |                |    |

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

|    | - Descriptive & Analytical studies  |   |   |   |   |      |   |   |   |   |   |   |   |
|----|---|---|---|---|---|------|---|---|---|---|---|---|---|
|    | Practical: family planning  |   |   |   |   | <br> |   |   |   |   |   |   |   |
| 11 | <ul> <li>Nosocomial infections</li> <li>Bioterrorism</li> <li>Practical: Bioterrorism</li> </ul>                                    |   |   | x |   | x    | x |   | X |   |   |   |   |
| 12 | <ul> <li>Immunization and<br/>vaccination programs</li> </ul>   |   |   |   | x |      |   |   |   |   |   |   | x |
| 13 | <ul> <li>Family planning &amp;<br/>Overpopulation</li> <li>child and mother care<br/>programs</li> <li>Activity (report)</li> </ul> |   |   |   | X |      |   |   |   |   | X | X | x |
| 14 | • Revision  | x | x | х | x |      |   | x | x | x |   |   |   |

|  | Program   | Course | Course   | Sources                               | Teach   | ing and le<br>methods | 5                |                 | of assessm        |              |
|--|---|--------|--|---------------------------------------|---------|-----------------------|------------------|-----------------|-------------------|--------------|
| NARS   | ILOs  | ILOs   | contents   |                                       | lecture | practical session     | Self<br>learning | written<br>exam | practical<br>exam | oral<br>exam |
| 2.1. Principles of<br>basic,<br>pharmaceutical,<br>medical, social,<br>behavioral,<br>management,<br>health and<br>environmental<br>sciences as well<br>as pharmacy<br>practice. | [A7] List the<br>principles of<br>health and<br>environmental<br>sciences (Public<br>health; Egyptian<br>health system and<br>its policies;<br>biostatistics;<br>healthy lifestyle;<br>toxicology and<br>forensic medicine;<br>first aid and<br>emergency<br>medicine). | a2     | Environmental<br>health:<br>Air pollution,<br>Water supply &<br>controlling of<br>waterborne diseases<br>Standard of safe<br>water supply<br>Food sanitation<br>Milk sanitation &<br>Milk- borne disease<br>Food poisoning<br>measures for safe<br>food<br>Refuse, sewage &<br>Wastes disposal<br>Hazards of<br>improper Wastes<br>disposal<br>Occupational<br>diseases and<br>industrial health | Student<br>book<br>Essential<br>books | X       |                       |                  | X               |                   | x            |
| 2.10. Principles<br>of public<br>health issues<br>including<br>sources and   | A21. Outline the<br>fundamentals of<br>public health and<br>raising awareness<br>for safe use and<br>safe disposal of   | a1, a3 | Introduction to<br>public health &<br>epidemiology<br>Terms used for<br>various forms of<br>outbreaks  | Student<br>book<br>Essential<br>books | x       |                       |                  | x               |                   | x            |

# Matrix II of Public health (2018-2019)

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

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

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

| decision-         |  |  |  |  |  |
|-------------------|--|--|--|--|--|
| making abilities. |  |  |  |  |  |

# COURSE SPECIFICATIONS

Good manufacturing practice (GMP)

Fifth Year- Elective Courses 2018-2019

### **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 : November 2018

# **B- Basic information:**

- Title : Good Manufacturing Practice (GMP)
- Credit Hours : --- Code : PC528
- Lectures : 1hr/ week
- Practical : 2 hr / week
- Tutorials : -----
- Total : 2 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<br>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  | Identificationofcontentsofbatchmanufacturing recordsRepresentationsand evaluationofbatchmanufacturing records                              |
| 7           | Midterm exam   |  |
| 8           | Steps of production process<br>Types, causes and prevention of<br>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<br>standard operating procedure on cleaning of<br>equipment and accessories and personal<br>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): Final Written exam | Week 15  |
| Assessment (3): Practical exam     | Week 12  |

### Weighting of assessment:

| Assessment task                    | Marks | Proportion of total |
|------------------------------------|-------|---------------------|
|                                    |       | assessment          |
| Assessment (1): Midterm exam       | 10    | 10%                 |
| Assessment (2): Final Written exam | 70    | 70%                 |
| Assessment (3): 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, 2<sup>nd</sup> 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).

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**Course Coordinators: Prof. Dr. Mahmoud Abdel GhanyMahdy** 

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

تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ Date: 2018-11-26

|   | Matrix I of GM  | P co       | ours                | se                     |                                       |           |       |                  |    |
|---|---|------------|---------------------|------------------------|---------------------------------------|-----------|-------|------------------|----|
|   |   |            |                     |                        |                                       | ILOs      | of GN | <b>AP course</b> |    |
| Course Contents       Knowledge and understanding |   | prac<br>sk | nd<br>tical<br>ills | Intellectual<br>skills | Transferable<br>and general<br>skills |           |       |                  |    |
|   | • · ·   | a1         | a2                  | <b>a3</b>              | a4                                    | <b>b1</b> | b2    | <b>c1</b>        | 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                      |                                       |           |       |                  | х  |
| 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          |                     |                        |                                       |           | х     | х                |    |
| 7   | Types, causes and prevention of products contamination          |            | х                   |                        | х                                     | х         |       |                  |    |
| 8   | Documentation   | х          |                     |                        |                                       |           |       |                  |    |
| 9   | Steps of production process and following processing operations | x          | X                   | X                      |                                       |           |       | Х                |    |
| 10  | Proper control of packaging                                     | x          | х                   | х                      |                                       |           | Х     | Х                |    |

| 11 | Qualification and validation of production process  |   |   | х |   |   |   |   |   |
|----|---|---|---|---|---|---|---|---|---|
| 12 | Personal training and hygiene   | х | х |   |   |   |   |   |   |
| 13 | Complaints, Recalls and Product quality review  |   |   | х | х |   |   |   |   |
|    | 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   |   |   |   |   |   |   |   | х |
| 7  | Videos about different cleaning of equipment and accessories sheets   |   | X | x |   |   |   |   |   |
| 8  | Display sheets of standard operating procedure on personal hygiene  |   |   |   |   |   | X | X |   |
| 9  | Discussion about contents of sheets of standard operating<br>procedure on cleaning of equipment and accessories and<br>personal hygiene |   | x |   |   |   |   | x | x |

# Matrix II for GMP

|     | NARS  | Program | Course |  | Sources  | Teaching and learning<br>methods |                   |                  | Method of<br>assessment |                |
|-----|---|---------|--------|--|----------|----------------------------------|-------------------|------------------|-------------------------|----------------|
|     |   | ILOS    | ILOS   | content  |          | Lecture                          | Practical session | Self<br>learning | Written<br>exam         | Practical exam |
| 2.1 | Principles of basic, pharmaceutical, medical, social,<br>behavioral, management, health and environmental sciences<br>as well as pharmacy practice. | A2      | a1.    | Pharmaceutical<br>History History of<br>GMP Good<br>Manufacturing<br>Practice Production<br>Documentation<br>Personnel hygiene<br>Personnel Training<br>qualification and<br>validation<br>Complaints, Recalls<br>and Product quality<br>review<br>Therapeutic Goods<br>Regulators | notebook | x                                |                   | X                | Х                       |                |
|     |   |         | a2     | Production<br>Quality assurance<br>Documentation   | notebook | х                                | x                 |                  | Х                       | x              |

|      |   |        |           | Personnel hygiene<br>, qualification and<br>validation<br>Therapeutic Goods<br>Regulators   |                       |   |   |   |   |   |
|------|---|--------|-----------|---|-----------------------|---|---|---|---|---|
| 2.7  | Principles of various instruments and techniques including<br>sampling, manufacturing, packaging, labeling, storing and<br>distribution processes in pharmaceutical industry. | A18    | a3<br>a4. | Pharmaceutical<br>History<br>Production<br>Documentation<br>Personnel hygiene<br>Personnel Training<br>Complaints, Recalls<br>and Product quality<br>review | notebook              | X |   |   | X |   |
| 3.12 | Employ proper documentation and drug filing systems.  | B20    | b1        | required<br>documentation<br>during<br>manufacturing<br>process   | practical<br>notebook |   | X |   |   | х |
| 3.3  | Compound, dispense, label, store and distribute medicines effectively and safely.   | B4     | b2        | personal training   | practical<br>notebook |   | X | X |   | x |
| 3.8  | Apply techniques used in operating pharmaceutical equipment and Instruments.  | B15    | 02        | and hygeine   | practical<br>notebook |   | X | X |   | x |
| 4.2  | 4.2Comprehend and apply GLP,GPMP, GSP and GCP   | C3, C4 | c2        | Personal hygiene  | practical             |   |   | Х | Х | Х |

|      | guidelines in pharmacy practice   |     |    | and required<br>documentation<br>during<br>manufacturing<br>process                     | notebook&<br>notebook              |   |  |   |   |
|------|---|-----|----|---|------------------------------------|---|--|---|---|
| 5.10 | 5.10 Demonstrate critical thinking, problem-solving and decision-making abilities | D11 | d1 | Personal hygiene<br>and required<br>documentation<br>during<br>manufacturing<br>process | practical<br>notebook&<br>notebook | X |  | x | х |

| d2.     Good Manufacturing Practice |
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Course Coordinators:Prof. Dr. Mahmoud Abdel Ghany MahdyHead of Department:Prof. Dr. Nagia Ahmed El-Amin El-MegrabDate:2018-11-26تم مناقشة و اعتماد توصيف المقرر من مجلس القسم بتاريخ