FACULTY OF PHARMACY – ZAGAZIG UNIVERSITY

Diploma in clinical pharmacy

Program Specification

(2019 - 2020)

A. Basic Information:

1. Program Title: Diploma in clinical pharmacy

2. Program Type: Single**,** Credit hours program (1 year, 30 CU)

3. Faculty / University: Faculty of Pharmacy, Zagazig University.

4. Department (s):

The program is under the supervision of vice dean for postgraduate affairs and scientific research.

5. Coordinators:

Prof. Hanan El Nahas (Vice dean for postgraduate affairs and scientific research)

Prof. Salah Ghareeb (Diploma coordinator)

6. Date of Program specification approval: Program specification was approved by Faculty Council No744, 10/2/2020

7. External Evaluator: Prof. Gamal El-Magharabi

(Faculty of Pharmacy – Tanta University)

8. Internal Evaluator: Prof. Sahar ElSweefy (Head of Biochemistry department – Zagazig University)

9. Academic Reference Standards: Program ILOs were compared with general guideline of Academic Reference Standards for postgraduate studies, 1st Edition, 2009 Issued by (NAQAA) National Authority for Quality Assurance and Accreditation as well as outcomes of General Pharmacy Practice (Diploma), Postgraduate Certificate delivered by University of Glasgow, Scotland, UK.

B. Professional Information:

I- Program Aims

The faculty of Pharmacy, Zagazig University, Diploma in Clinical Pharmacy program is a one-year (30 CU) program that delivered for pharmacy graduates. The program combines coursework and research to build and extend pharmacists' knowledge of clinical pharmacy, so they can optimize patient care, wellness and treatment within complex health environments. The program offers several courses in pharmacotherapy and patient care, in addition to a supervised, structured research project on a topic relevant to clinical pharmacy. Program outcomes include: career advancement as a hospital pharmacist, introduction of new practices in community pharmacy as well as advanced pharmaceutical care and quality use of medicines.

The program aims are summarized as follows:

1. Develop knowledge and skills in clinical pharmacy practice and medicines management.

2. Prepare pharmacists capable of providing high quality pharmaceutical care and being integral members of the health care team.

3. Nurture pharmacists with the advanced pharmaceutical care knowledge in areas related to clinical pharmacy practice including pharmacotherapy, pharmacokinetics, clinical biochemistry and hospital microbiology.

4. Develop communication, problem solving, decision making and research skills.

5. Develop self-learning attitude for continuous improvement of professional knowledge

II- Attributes of the Graduates

Upon completion of the program, the graduates will be able to:

1. Develop professional and personal skills that enhance collaboration with other healthcare professionals and promote safe and effective medication use.
2. Specify therapeutic goals based on identification of patients' needs.
3. Design an optimal individualized pharmacotherapy plan and a monitoring strategy.
4. Resolve different drug-therapy problems encountered in various healthcare settings.
5. Provide evidence-based drug information and education services to healthcare professionals and patients.
6. Respect Moral and ethical principles for professional practice in the area of specialty
7. Demonstrate effective communication, leadership, time management and team work skills
8. Become a life-long learner for continuous improvement of professional knowledge and skills.

III. Intended Learning Outcomes (ILO's):

A- Knowledge and Understanding

By the end of the program, graduates should demonstrate knowledge and understanding of the following outcomes:

A1 Enumerate the signs and symptoms of different infectious and non-infectious diseases.

A2 Outline the evidence-based approach to drug therapy decisions for treating different infectious and non- infectious diseases.

A3 Describe systematic approach to drug and therapy monitoring including different biochemical and microbiological laboratory tests as well as cardiovascular evaluation tests.

A4 Outline different issues affecting drug safety including different types of drug- drug/food interactions, adverse drug reactions and management procedures.

A5 Explain the concepts and principles of pharmacokinetic and pharmacodynamics affecting individual patient care.

A6 Outline the organization, structure and different services in hospital pharmacy, medicines management and consultation service to patients and other healthcare professionals

A7 Summarize infection control programs in different health care facilities

B- Professional and Practical Skills

At the end of the program students will be able to:

B1 Design appropriate treatment and monitoring plans according to patients needs to ensure achievement of the desired therapeutic outcomes

B2 Identify, prioritize, analyze, evaluate and resolve different pharmaceutical care issues affecting patient therapeutic outcomes including nutritional approaches as well as medications dispensing, safety, quality, efficacy, legality and economy.

B3 Interpret different laboratory results including biochemical, haematological and microbiological data and other patient clinical data

B4 Advise patients and other healthcare professionals about effective use of medicines, possible interactions with other drugs or food and health promotion as well as infection control strategies.

B5 Perform different pharmaceutical calculations including calculation of dose and dosage regimens based on specific patient condition as well as biostatistical analysis with interpretation of results.

B6. Prepare proper drug reports and documentation.

B7 Demonstrate understanding of the national code of ethics for pharmacists as well as patients' rights.

C- Intellectual Skills

At the end of the program, the students will be able to:

C1 Integrate knowledge of the pharmacology of drugs, pathophysiology of disease states and evidence-based treatment guidelines in the context of patient care

C2 Evaluate the effectiveness of therapeutic plans for treatment of different infectious and non- infectious diseases according to evidence-based treatment guidelines.

C3 Select the required biochemical, haematological, microbiological and other laboratory tests in order to monitor efficacy and toxicity of drug therapy

C4 Adopt risk management strategies including infection control programs as well as medication errors minimizing strategies

C5 Develop an appropriate research strategy starting from formulating a research question till communication of results.

C6 Comprehend the importance of good laboratory and clinical practice (GCP) guidelines in pharmacy practice.

C7 Apply good communication principles for counseling and education of patients and other healthcare professionals.

D- General and Transferable Skills

At the end of the programme students will be able to:

D1 Communicate effectively in an oral and a written way

D2 Practice computer skills including word and internet communications.

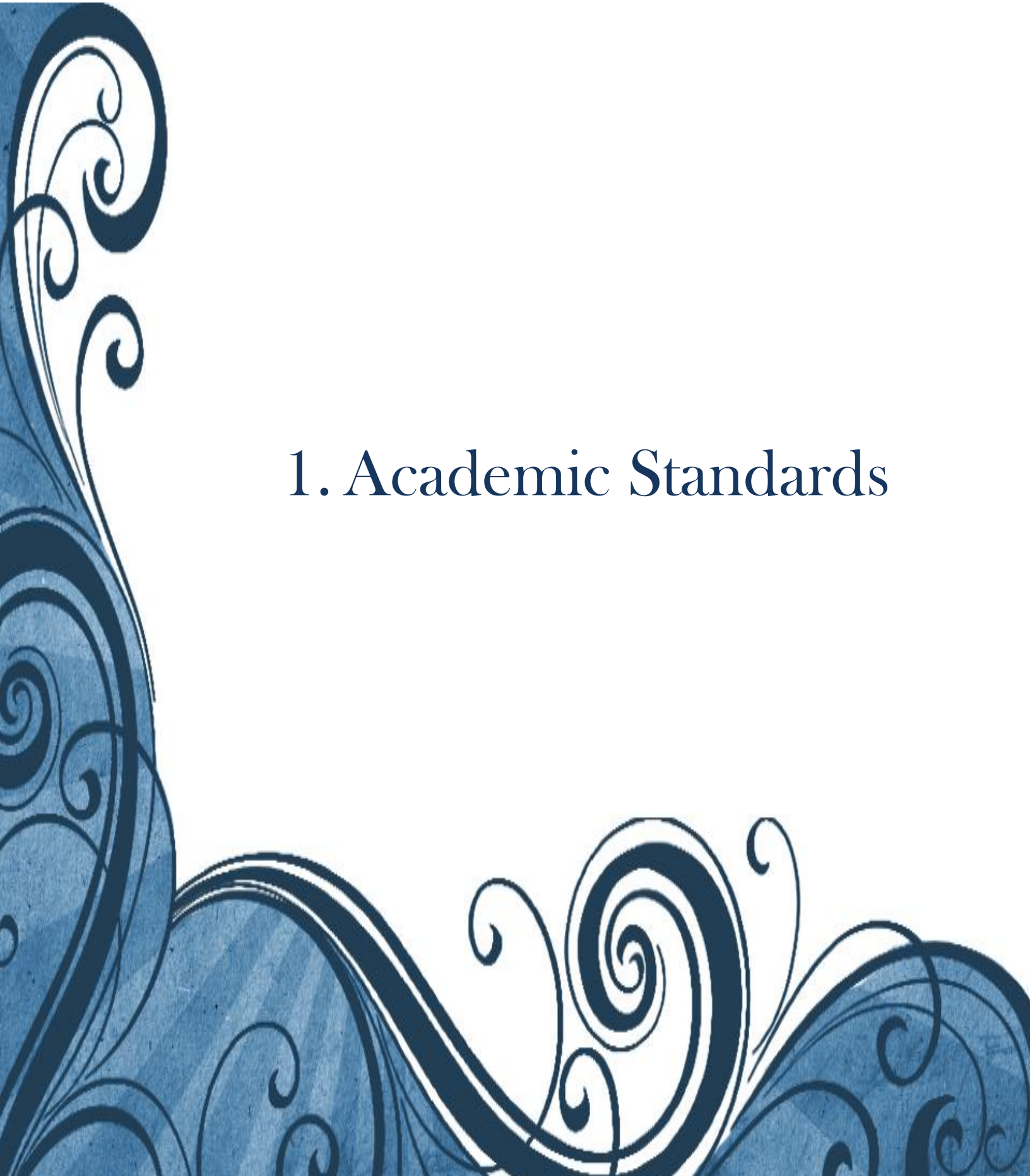
D3 Practice self-assessment of learning needs

D4 Retrieve information from different sources to improve professional abilities.

D5 Work effectively in a team

D6 Develop decision making, critical thinking, problem solving and time management skills

D7 Develop self-learning skills



1. Academic Standards

External References for standards

Faculty of Pharmacy is adapting general guideline of Academic Reference Standards for postgraduate studies, 1st Edition, 2009 Issued by (NAQAA) National Authority for Quality Assurance and Accreditation. as well as outcomes of General Pharmacy Practice (Diploma), Postgraduate Certificate delivered by University of Glasgow, Scotland, UK.

. **Matrix 1: Comparison between the Program graduate attributes and (ARS, 2009)**

ARS Graduates Attributes	Program Graduates Attributes
1. Apply acquired knowledge in professional practice	2. Specify therapeutic goals based on identification of patients' needs. 3. Design an optimal individualized pharmacotherapy plan and a monitoring strategy.
2. Identify professional problems and suggest solution strategies	4. Resolve different drug-therapy problems encountered in various healthcare settings.
3. Master professional skills and use the appropriate techniques in professional practice	1. Develop professional and personal skills that enhance collaboration with other healthcare professionals and promote safe and effective medication use.
4. Communicate with and lead different teams through systematic professional work	7. Demonstrate effective communication, leadership, time management and team work skills
5. Take evidenced-based decisions	5. Provide evidence-based drug information and education services to
6. Use available resources efficiently	

7. Recognize his role in community service and development.	healthcare professionals and patients.
8. Show commitment to integrity, credibility and professional ethics and accept accountability	6. Respect Moral and ethical principles for professional practice in the area of specialty
9. Recognize the importance of self-development and continuous education	8. Become a life-long learner for continuous improvement of professional knowledge and skills.

Matrix 1I: Comparison between the Program Intended Learning Outcomes ILOs and (ARS, 2009)

	ARS	Program ILOs
Knowledge and Understanding	2.1.1- Theories and fundamentals related to the field of learning as well as in related areas.	A1 Enumerate the signs and symptoms of different infectious and non- infectious diseases. A2 Outline the evidence-based approach to drug therapy decisions for treating different infectious and non- infectious diseases. A3 Describe systematic approach to drug and therapy monitoring including different biochemical and microbiological laboratory tests as well as cardiovascular evaluation tests. A5 Explain the concepts and principles of pharmacokinetic and pharmacodynamics affecting individual patient care.
	2.1.2 - Moral and legal principles for professional practice in the area of specialization.	A6 Outline the organization, structure and different services in hospital pharmacy, medicines management and consultation service to patients and other healthcare professionals
	2.1.3 - Principles and the basics of quality in professional practice in the area of specialization.	A4 Outline different issues affecting drug safety including different types of drug- drug/food interactions, adverse drug reactions and management procedures. A7 Summarize infection control programs in different health care facilities
	2.1.4 - Mutual influence between professional practice and its impact on the environment.	

Professional and Practical Skills	2.3.1- Master basic and modern professional skills in the area of specialization.	B1 Design appropriate treatment and monitoring plans according to patients needs to ensure achievement of the desired therapeutic outcomes B2 Identify, prioritize, analyze, evaluate and resolve different pharmaceutical care issues affecting patient therapeutic outcomes including nutritional approaches as well as medications dispensing, safety, quality, efficacy, legality and economy. B4 Advise patients and other healthcare professionals about effective use of medicines, possible interactions with other drugs or food and health promotion as well as infection control strategies. B5 Perform different pharmaceutical calculations including calculation of dose and dosage regimens based on specific patient condition as well as biostatistical analysis with interpretation of results. B7 Demonstrate understanding of the national code of ethics for pharmacists as well as patients' rights.
	2.3.2- Write and evaluate professional reports.	B3 Interpret different laboratory results including biochemical, haematological and microbiological data and other patient clinical data B6. Prepare proper drug reports and documentation.

Intellectual Skills	2.2.1- Analyze and evaluate information in the field of specialization and analogies to solve problems	C1 Integrate knowledge of the pharmacology of drugs, pathophysiology of disease states and evidence-based treatment guidelines in the context of patient care C2 Evaluate the effectiveness of therapeutic plans for treatment of different infectious and non-infectious diseases according to evidence-based treatment guidelines.
	2.2.2- Solve specified problems in the lack or missing of some information.	C4 Calculate dose and dosage regimens based on specific patient condition
	2.2.3 - Analyze research of specified topics.	C6 Develop an appropriate research strategy starting from formulating a research question till communication of results.
	2.2.4 - Evaluate risks in professional practices	C5 Adopt risk management strategies including infection control programs as well as medication errors minimizing strategies C6 Comprehend the importance of good laboratory and clinical practice (GCP) guidelines in pharmacy practice.
	2.2.5 - Professional decision-making in the contexts of diverse disciplines.	C3 Select the required biochemical, haematological, microbiological and other laboratory tests in order to monitor efficacy and toxicity of drug therapy
	Exceeding ARS 2009	C7 Apply good communication principles for counseling and education of patients and other healthcare professionals.

General and Transferable Skills	2.4.1- Communicate effectively.	D1 Communicate effectively in an oral and a written way
	2.4.2- Effectively use information technology in professional practices	D2 Practice computer skills including word and internet communications
	2.4.3- Self-assessment and define his personal learning needs.	D3 Practice self-assessment of learning needs
	2.4.4- Use variable sources to get information and knowledge.	D4 Retrieve information from different sources to improve professional abilities
	2.4.5 – Show teamwork and time management skills	D5 Work effectively in team
	2.4.6 –Lead others in different professional disciplines.	D6 Develop decision making, critical thinking, problem solving and time management skills
	2.4.7 - Continuous and self learning.	D7 Develop self learning skills

Matrix 1II: Comparison between the Program Graduates Attributes and (Graduates Attributes of General Pharmacy Practice (Diploma), Postgraduate Certificate delivered by University of Glasgow, Scotland, UK)

University of Glasgow (Diploma) Graduates Attributes	Program Graduates Attributes
□ apply appropriate knowledge, skills and attitudes in order to carry out effectively the role of the general pharmacist practitioner within your pharmacy practice base and wider healthcare teams	1. Develop professional and personal skills that enhance collaboration with other healthcare professionals and promote safe and effective medication use.
□ establish population health needs and apply specialist pharmaceutical knowledge to public health issues. □apply knowledge of pathophysiology, pharmacology and the clinical use of drugs and therapeutic guidelines to the treatment of common disease states	2. Specify therapeutic goals based on identification of patients' needs. 3. Design an optimal individualized pharmacotherapy plan and a monitoring strategy.
□ identify, prioritise and resolve complex pharmaceutical care issues	4. Resolve different drug-therapy problems encountered in various healthcare settings.

□ access, gather, interpret, critically evaluate and summarise medicines information	5. Provide evidence-based drug information and education services to healthcare professionals and patients. 8. Become a life-long learner for continuous improvement of professional knowledge and skills.
□ carry out effective consultations with patients respecting their diverse needs and with regard to confidentiality and consent	6. Respect Moral and ethical principles for professional practice in the area of specialty 7. Demonstrate effective communication, leadership, time management and team work skills

Matrix 1V: Comparison between the Program Intended Learning Outcomes ILOs and (ILOs of General Pharmacy Practice (Diploma), Postgraduate Certificate delivered by University of Glasgow, Scotland, UK)

Benchmark results demonstrate nearly 70% consistency with ILOs of General Pharmacy Practice (Diploma), Postgraduate Certificate delivered by University of Glasgow, Scotland, UK

	University of Glasgow (Diploma)	Program ILOs
Knowledge and Understanding	□ the organisation and structure of the NHS □ health policy and its impact on working practices □ medicines management and its application to individual patient care □ effective methods of working with patients, health and non-health professionals □ consultation methods and their applicability to patient care □ compliance, adherence and concordance`	A6 Outline the organization, structure and different services in hospital pharmacy, medicines management and consultation service to patients and other healthcare professionals

	□ health beliefs: theories and models □ advantages and limitations of different methods of communication in the context of medicines management □ the audit as a tool to improve the quality of patient care □ change management as a tool to improve service provision. □ ethical issues influencing prescribing decisions	**Not covered**
	□ an evidence-based approach to drug therapy decisions □ a systematic approach to the delivery of care to patients with complex needs □ applied therapeutics □ a systematic approach to complex queries about medicines use □ clinical governance in the context of medicines management	A1 Enumerate the signs and symptoms of different infectious and non- infectious diseases. A2 Outline the evidence-based approach to drug therapy decisions for treating different infectious and non- infectious diseases.

	□ application of pharmacokinetic and pharmacodynamic principles to individual patient care □ a systematic approach to drug and therapy monitoring in patients with complex conditions □ the effective use of complex clinical data sets	A3 Describe systematic approach to drug and therapy monitoring including different biochemical and microbiological laboratory tests as well as cardiovascular evaluation tests. A5 Explain the concepts and principles of pharmacokinetic and pharmacodynamics affecting individual patient care.
	□ pharmaceutical public health	A4 Outline different issues affecting drug safety including different types of drug- drug/food interactions, adverse drug reactions and management procedures**.** A7 Summarize infection control programs in different health care facilities.

Professional and Practical Skills	applying a knowledge of the pharmacology of drugs, pathophysiology of disease states and evidence-based treatment guidelines in the context of individual patients responding to symptoms and counter prescribing medication for patients with minor ailments	B1 Design appropriate treatment and monitoring plans according to patients needs to ensure achievement of the desired therapeutic outcomes

	□ applying the principles of medicines management and pharmaceutical care in practice □ interpreting prescriptions for medicines and evaluating for safety, quality, efficacy, legality and economy □ identifying, prioritising, analysing, evaluating and resolving pharmaceutical care issues (including social issues) related to real patients irrespective of complexity □ carrying out a review of patients' medication at a range of levels, document recommendations and influencing prescribers and patients appropriately to institute agreed changes □ conducting an analysis of a patient safety issue, evaluating options and drawing an appropriate conclusion □ conducting a clinical audit, evaluating the outcome and making recommendations for change.	B2 Identify, prioritize, analyze, evaluate and resolve different pharmaceutical care issues affecting patient therapeutic outcomes including nutritional approaches as well as medications dispensing, safety, quality, efficacy, legality and economy B3 Interpret different laboratory results including biochemical, haematological and microbiological data and other patient clinical data

	□ advising patients, carers and healthcare professionals about medicines usage and health promotion □ advising on the clinical significance of drug-drug, drug-patient and drug-disease interactions and devising a course of action to minimise risk to the patient	B4 Advise patients and other healthcare professionals about effective use of medicines, possible interactions with other drugs or food and health promotion as well as infection control strategies.
	□ performing complex pharmaceutical calculations in order to advise on safe drug administration □ interpretation of the significance of general, biological and medical statistics	B5 Perform different pharmaceutical calculations including calculation of dose and dosage regimens based on specific patient condition as well as biostatistical analysis with interpretation of results.
	Not covered	B6. Prepare proper drug reports and documentation.
	□ demonstrating respect for the patient irrespective of ethnic, cultural or religious background □ carrying out the role of the clinical pharmacist effectively within the multidisciplinary healthcare team	B7 Demonstrate understanding of the national code of ethics for pharmacists as well as patients' rights.

	□ investigating medicines information enquiries using an appropriate research strategy, and formulating and communicating responses to queries in a timely manner □ investigating medicines information enquiries using appropriate evidence and formulating a response appropriate to the needs of the enquirer □ developing the pharmaceutical service and applying change management techniques	**Not covered**
Intellectual Skills	□ contributing to the improvement of healthcare outcomes through reflective practice and innovation. □ recognising, valuing and use appropriate theories, concepts and principles from a range of disciplines □ assessing the outcome of personal contributions to patient care	C1 Integrate knowledge of the pharmacology of drugs, pathophysiology of disease states and evidence-based treatment guidelines in the context of patient care C2 Evaluate the effectiveness of therapeutic plans for treatment of different infectious and non-infectious diseases according to evidence-based treatment guidelines.

	□ selecting a range of biochemical, haematological, microbiological and near-patient tests in order to monitor efficacy and toxicity of drug therapy	C3 Select the required biochemical, haematological, microbiological and other laboratory tests in order to monitor efficacy and toxicity of drug therapy
	□ advising on risk management issues and ways to minimise error	C4 Adopt risk management strategies including infection control programs as well as medication errors minimizing strategies
	Not covered	C5 Develop an appropriate research strategy starting from formulating a research question till communication of results.
	□ evaluating and discussing legal and ethical influences related to the pharmaceutical care of individuals □ demonstrating the effective application of patient confidentiality and the principles of patient consent	C6 Comprehend the importance of good laboratory and clinical practice (GCP) guidelines in pharmacy practice
	□ working independently, efficiently and professionally within current NHS frameworks and the RPSGB code of ethics and professional conduct, managing any conflicting priorities □ accepting responsibility for your own actions and for the care of patients assigned to your	**Partially covered through C6**

	care	
	□ applying effective negotiating and influencing skills in order to achieve a definite outcome □ communicating clearly, precisely and appropriately with patients and all other healthcare professionals □ carrying out effective consultations with patients and carers to encourage compliance	C7 Apply good communication principles for counseling and education of patients and other healthcare professionals.
General and Transferable Skills	□ effective written and verbal communication with academic tutors, peers, practice tutors, patients, carers and the multi-disciplinary healthcare team □ interpersonal skills: the ability to interact with patients, the public and other health and social care professionals	D1 Communicate effectively in an oral and a written way
	□ high-level information technology skills	D2 Practice computer skills including word and internet communications
	□ demonstrating appropriate initiative whilst recognising personal and professional limitations	D3 Practice self-assessment of learning needs
	□ reviewing, evaluating critically and synthesising sources	D4 Retrieve information from different sources to improve professional abilities

	of information and research methodologies cited in published literature to support the care of individual patients □ retrieving and document information in a clear and structured way □ critical appraisal and summation of information from a variety of sources	
	□ the ability to work independently and as part of a team within professional codes of practice and conduct, with recognition of the moral and ethical issues related to medicines management issues □ a positive attitude and constructive approach to group discussions	D5 Work effectively in team
	□ undertaking a structured approach to problem solving, forming an appropriate judgement even in the absence of complete data □ the ability to make appropriate decisions based on available information, with insight into the risks and benefits	D6 Develop decision making, critical thinking, problem solving and time management skills

	that may result from working with incomplete data time management and organisational skills high-level problem-solving skills.	
	  the use of CPD as a tool for lifelong learning. accepting responsibility for your own lifelong learning and continuing professional development the ability to be a reflective practitioner and autonomous learner, with the ability to take responsibility for academic, professional and personal development	D7 Develop self learning skills

a- Programme duration: 1 year divided into two semesters each semester made up of 15 weeks.

b- Programme structure: (30 CU)

Learning activity	Lectures	Practical	Project	Total
No. of hours/week	21	7	2	30

c- Study plan:

First Semester			Second semester		
Course	CU		Course	CU	
	L	P		L	P
Clinical Laboratory Tests (D1001)	1	1	Nutrition & Anaemia (D1007)	1	1
Advanced Pharmacotherapy-1(D1003)	2	1	Drug interactions (D1002)	2	-
Advanced Pharmacotherapy-2(D1004)	2	1	Advanced Pharmacotherapy-3 (D1005)	2	1
Cardiovascular Evaluation (D1008)	1	1	Advanced Pharmacotherapy-4 (D1006)	2	1
Clinical Pharmacokinetics (D1009)	2	-	Elective 2 (D1011)	2	-
Elective 1(D1010)	2	-	Selected topics (D1012)	2	-
			Project	2	
Total	14		Total	14 + 2	
Total CU for the diploma	28 + 2 (project) = 30				

Selected topics: Metabolic syndrome and insulin resistance, kidney, chronic renal failure, dialysis and nasal obstruction and discharge

Elective courses: Hospital microbiology, Biostatistics, Hospital pharmacy, Sterile solutions, OTC

d. Research Project Requirements:

Brief description:

The program contains a mandatory 'Research Project' which constitutes 2CU and must be completed under the supervision of a faculty member. Overall aim of the research project is to search data and prepare a comprehensive review of literature about certain topic relevant to the clinical pharmacy practice. The teaching methods used include: self-learning, co-operative learning, brain storming and group discussion. A comprehensive dissertation and oral presentation on the project work are required from the student in order to pass the project.

The major intended learning outcomes of the research project:

1) Identify a research problem and use available sources (internet and databases) for gathering literature review.
2) Identify the steps of scientific research.
3) Perform a plan; analysis, design and evaluation of a given problem.
4) Demonstrate certain levels of communication skills.
5) Demonstrate ability to work in team during the project.
6) Demonstrate ability in writing, editing and ordering a dissertation.
7) Identify plagiarism during dissertation writing.

e. Program Curriculum:

Course Code	Course Title	Credit hours	Program ILOs Covered
Mandatory Courses:			
D1001	Clinical Laboratory Tests	2	A3, B3, C3, C6, D2, D6, D7
D1002	Drug interactions	2	A4, B2, B6, C4, C6, C7, D5, D6
D1003	Advanced Pharmacotherapy-1	3	A1, A2, A3, B1, B2, C1, C2, C7, D4, D5, D6

D1004	Advanced Pharmacotherapy-2	3	A1, A2, A3, B1, B2, C1, C2, C7, D4, D5, D6
D1005	Advanced Pharmacotherapy-3	3	A1, A2, A3, B1, B2, C1, C2, C7, D4, D6, D7
D1006	Advanced Pharmacotherapy-4	3	A1, A2, A3, B1, B2, C1, C2, C7, D4, D5, D6
D1007	Nutrition & Anaemia	2	A1, A2, A3, B2, B3, B4, C2, D1, D5, D6, D7
D1008	Cardiovascular Evaluation	2	A3, B3, C3, D1, D6
D1009	Clinical Pharmacokinetics	2	A5, B2, B5, C3, D4, D5, D6
Elective courses/Selected topic:			
	Hospital microbiology	2	A7, B3, B4, C5, C6, D1, D6, D7
	Biostatistics	2	B5, D5, D6
	Hospital pharmacy	2	A6, B7, C4, C6, C7, D1, D3, D7
	Sterile solutions	2	A6, B5, B7, C6, D2, D6
	OTC	2	A1, A2, B1, C2, C7, D1, D6
	Selected topics	2	A1, A2, C1, D5, D6
	Project	2	B6, C5, D1, D2, D3, D4, D5, D6, D7

3- Program admission requirements

The admission to the program requires a bachelor's degree in pharmacy from Egypt or an equivalent certificate from a foreign institute recognized by the

Ministry of Higher Education and accepts incoming students according to the rules of acceptance of expatriates. The candidates should have a grade of "good" at least in the bachelor's degree.

4- Regulation for progression and program completion

1- Students must attend lectures and practical lessons, their attendance must be not less than 75 % otherwise, and the Faculty council prevents him/her from entering the final written exam.

2- A minimum of 60% of the maximum grade (MG) is the passing grade for all courses.

3- The student should gain at least 30% of the final written exam.

5- Teaching & Assessment

A.Teaching:

Teaching methods used to achieve the predetermined program ILOs include:

- Lectures

- Laboratory sessions
- Case study
- Assignment
- Critical thinking

B. Assessment:

➢ Assessment methods

- Students' performance is assessed by both course work and examination at the end of each course.
- Methods of assessment include written, oral, and practical examination, research papers, course assignments, presentations and reports.
- Grades are measure of the performance of a student in an individual course.

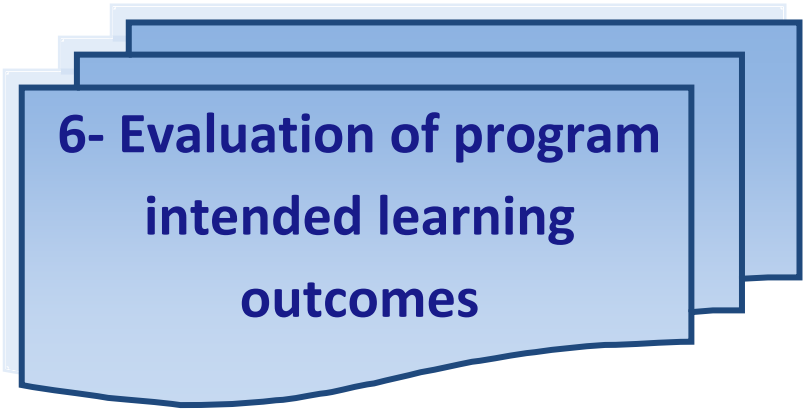
Method of assessment	Intended learning outcomes
Written examination	Knowledge and understanding Intellectual
Practical examination	Knowledge and understanding Intellectual Professional and practical
Oral examination	Knowledge and understanding Intellectual General and transferable
Others (posters, assignment, presentation, ..etc.	Intellectual General and transferable
Research project	Knowledge and understanding Intellectual General and transferable Professional and practical

➢ Marks Distribution

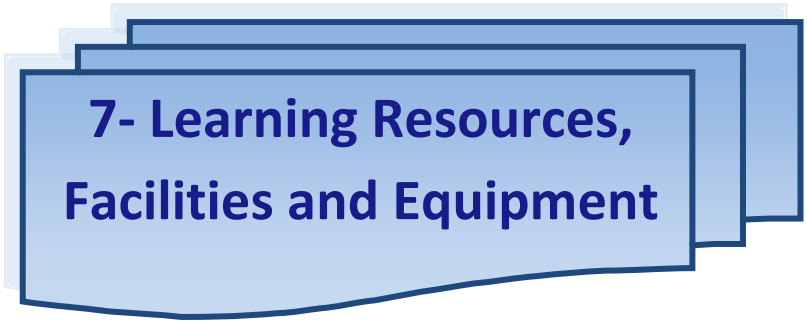
Course	CU		Final written exam	Practical exam	Activity	Oral exam	Total
	L	P					
Clinical Laboratory Tests (D1001)	2	1	50	30	-	20	100
Advanced Pharmacotherapy-1(D1003)	2	1	50	30	-	20	100
Advanced Pharmacotherapy-2(D1004)	2	1	50	30	-	20	100
Advanced Pharmacotherapy-3 (D1005)	2	1	50	30	-	20	100
Advanced Pharmacotherapy-4 (D1006)	2	1	50	30	-	20	100
Nutrition & Anaemia (D1007)	1	1	50	30	-	20	100
Cardiovascular Evaluation (D1008)	1	1	50	30	-	20	100
Clinical Pharmacokinetics (D1009)	2	-	60	-	20	20	100
Elective 1(D1010)	2	-	60	-	20	20	100
Elective 2 (D1011)	2	-	60	-	20	20	100
Drug interactions (D1002)	2	-	60	-	20	20	100
Selected topics (D1012)	2	-	60	-	20	20	100

➢ *Grading system*

Grade Scale	Grade point average value (GPA)	Numerical scale
A+	5	≥ 95%
A	4.5	90- < 95%
B+	4	85- < 90%
B	3.5	80- < 85%
C+	3	75- < 80%
C	2.5	70- < 75%
D+	2	65- < 70%
D	1.5	60- < 65%
E	1	< 60%



Evaluator	Tool
1- candidates	Questionnaires
2-Stakeholders	Questionnaires for staff members participating in teaching Questionnaires for Labor market organizations members
3-External reviewer	Prof. Gamal El-Magharabi (Faculty of Pharmacy – Tanta University)
4- Internal reviewer	Prof. Sahar ElSewefi Head of Biochemistry department
4-Others	Committee supervising clinical pharmacy diploma program
5- Statistics	Grades Rate of program completion/ graduation Rate of pass/failure
Sample size of questioners = 20% of population	



- The requirements of text book and other materials for teaching are identified by the instructor teaching the course.
- Textbooks are made available to students through the Faculty library and are listed in the course specification
- Course handouts are also available for the students
- Air conditioned, well seated teaching hall equipped with data show is available for the students

Clinical laboratory tests

Course specification of
Clinical laboratory tests

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: Biochemistry
- Date of specification approval: Sep 2019

1- Basic information:

Title: Clinical laboratory tests
Code: D1001
Lectures: 2hr/week Practical :1 hrs/week
Total: 3 credit hrs/week

2- Overall aim of the course:

On completion of the course, the students will be able to select, monitor appropriate assessments for different diseases (heart, kidney and liver, GIT, rheumatic diseases, acid base, electrolytes and endocrine disorders) and interpret laboratory data and how to deal with the patient according to the results. In addition to develop skills necessary for proper professional practice.

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Review different laboratory tests for assessment of heart, kidney, liver, GIT, rheumatic diseases.
a2	Determine the electrolytes, acid base disorders and how to manage them
a3	Identify different endocrine, metabolic disorders ,and molecular therapeutic aspects .
a 4	Explain the main outcomes of CBC and urine determination
Professional and practical skills	
b1	Assess electrolyte, acid base balance abnormalities and recommend an appropriate treatment plan
b2	Differentiate between various therapeutic agents used in treating endocrine and metabolic disorders..
b3	Interpret laboratory tests related to liver, heart, kidney, GIT functions in order to recommend appropriate medications
Intellectual skills	
c1	Apply good laboratory practice and its importance in clinical practice
c2	Interpret results from laboratory tests of different organs
c3	Interpret CBC and urine report
General and Transferable Skills	
d1	Use information technology skills in developing professional practices.
d2	Develop self learning skills
d3	Improve scientific brain storming capabilities of team members

4. Course Content:

Week No.	Lecture (1hr/week)	Practical session (2hr/week)
1	• Introduction to common laboratory tests	• Good laboratory practice. • Common laboratory techniques
2	• Acid base disorders.	• Acid base cases discussion • Cases and lab. reports
3	• Electrolytes and minerals	• Case study(sodium and potassium, calcium, phosphate)
4	• Electrolytes and minerals	• Electrolytes and minerals cases study
5	• The heart (laboratory tests and diagnostic procedures)	• Case study (AMI) • CKMB, MB, Tropinen
6	• Kidney function	• Case study – Kidney disease • Urine analysis report
7	• Interpretation of Laboratory tests for liver	• Case study – Liver disease • ALT, AST, GGT, Bilirubin
8	• **Self-learning activities**: • Hepatitis and drug induced nephrotoxicity	• **Presentation and discussion**
9	• GIT disorders	Case study (peptic ulcer, malabsorption)
10	• GIT disorders	Case study (pernicious anemia, cystic fibrosis, celiac disease)
11	• Endocrine disorders	• Case study – endocrine disorders
12	• Interpretation of clinical laboratory data	• Open discussion
13	• management of different diseases	Practical exam

14	• Revision	
15	Final written exam	

5- Teaching and Learning Methods:

- Interactive Lectures
- Practical sessions
- Case study
- Self learning (Activity, group discussion and presentations)

6- Student Assessment methods:

Written exams to assess: a1, a2, a3, a4, b2,c1, c2 and c3

Practical exam to assess: b1, b2 and b3

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

Activity to assess: a1, b2, c3, d1, d2, d3

Assessment schedule:

Assessment (1): Activity	Week 8
Assessment (2): Practical exam	Week 13
Assessment (3): Written exam	Week 15
Assessment (4): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
• Written exam	50	50 %
• Practical exam and activities	30	30 %

• Oral exam	20	20 %
TOTAL	**100**	**100%**

7- References and books:

A-Scientific papers:

Lalić T, Beleslin B, Savić S, Stojković M, Cirić J, Zarković M. Challenges in interpretation of thyroid hormone test results. Srp Arh Celok Lek. 2016 Mar-Apr;144(3-4):200-3.

B- Essential books:

Drew Provan and Andrew Krentz. Oxford Handbook of Clinical and Laboratory Investigation, 2012. Oxford university press, Inc., New York, USA.

C- Suggested books:

Graham Basten. Introduction to clinical biochemistry: Interpreting blood results, 2010. Ventus publishing APs. www.bookboon.com

D- Websites: pubmed, Science direct, Nejm, Weilyinterscience

Facilities required for teaching and learning:
For lectures: Black (white) boards, computer, data show.

- **Course Coordinators: Prof Dr/ Sahar El-Swefy**
- **Head of Department: Prof Dr/ Sahar El-Swefy**
- **Date: 2019/9/26 تم اعتماد توصيف المقرر بمجلس قسم الكيمياء الحيوية بتاريخ**

Matrix I of Clinical laboratory tests

	Course Contents	ILOs												
		Knowledge and Understanding				Professional and practical skills			Intellectual skills			General Transferable skills		
		a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	d 1	d2	d3
1	• Introduction to common laboratory tests	X												
2	• Acid base disorders	X	X			x								
3	• Electrolytes and minerals	X	X			x								
4	• The heart (laboratory tests and diagnostic procedures)	X						X		X				
5	• Kidney function	X						X		X	x	x	X	X
6	• Interpretation of Laboratory tests for liver	X						x		x	x	x	x	X
7	• GIT disorders	X						X	X	X				
8	• Endocrine disorders			x			X			X				
9	• Interpretation of clinical laboratory data and management of different disease				X			X		x	X			
	Practical part:													
1	• Good laboratory practice. • Common laboratory techniques					X			X	X				
2	• Acid base cases discussion • Cases and lab. reports					X			X	X				
3	• Case study(sodium and potassium, calcium,					X			X	X				

	phosphate)													
4	• Electrolytes and minerals cases study					X			X	X				
5	• Case study (AMI) • CKMB, MB, Tropinen							X	X	X				
6	• Case study – Kidney disease • Urine analysis report							X	X	X				
7	• Case study – Liver disease • ALT, AST, GGT, Bilirubin							X	X	X				
8	• Case study (peptic ulcer, malabsorption)							X	X	X				
9	• Case study (pernicious anemia, cystic fibrosis, celiac disease)							X	X	X	X			
10	• Case study – endocrine disorders						X		X	X				
11	• **Self learning activities**: • Hepatitis and drug induced nephrotoxicity											X	X	X

- **Course Coordinators: Prof Dr/ Sahar El-Swefy**
- **Head of Department: Prof Dr/ Sahar El-Swefy**
- **Date: 2019/9/26 تم اعتماد توصيف المقرر بمجلس قسم الكيمياء الحيوية بتاريخ**

Matrix II of Clinical laboratory tests course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical /case study	Self learning	Written exam	Practical exam	Oral exam
1	Introduction to common laboratory tests	Student book Essential books	x			x		x
	Good laboratory practice. Common laboratory techniques	Practical notes		x			x	
2	Acid base disorders	Student book Essential books	x			x		x
	Acid base cases discussion Cases and lab. reports	Practical student book		x			x	
3	Electrolytes and minerals	Student book Essential books	x			x		x
	Case study(sodium and potassium, calcium, phosphate)	Practical student book		x			x	
4	Electrolytes and minerals	Student book Essential books	x			x		x
	Electrolytes and minerals cases study	Practical student book		x			x	
5	The heart (laboratory tests and diagnostic procedures)	Student book Essential books	x			x		x
	Case study (AMI)	Practical		x			x	

	CKMB, MB, Tropinen	student book						
6	Kidney function	Student book Essential books	x			x		x
	Case study – Kidney disease Urine analysis report	Practical student book		x			x	
7	Interpretation of Laboratory tests for liver	Student book Essential books	x			x		x
	Case study – Liver disease ALT, AST, GGT, Bilirubin	Practical student book		x			x	
8	Self-learning activities: Hepatitis and drug induced nephrotoxicity	Student book Essential books Recommended books Internet	x		x	x		x
	Presentation and discussion				x		x	
9	GIT disorders	Student book Essential books	x			x		x
	Case study (peptic ulcer, malabsorption)	Practical student book		x			x	
10	GIT disorders	Student book Essential books	x			x		x
	Case study (pernicious anemia, cystic fibrosis, celiac disease)	Practical student book		x			x	
11	Endocrine disorders	Student book Essential books	x			x		x
	Case study – endocrine disorders	Practical student book		x			x	
12	Interpretation of clinical laboratory data	Student book Essential books	x			x		x
13	management of different diseases	Student book Essential books	x		x	x		x

Drug interaction

Course specification of
Drug interaction

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: Pharmacology & Toxicology Department
- Date of specification approval: Sep 2019

1- Basic information:

Title: Drug Interaction
Code: D1002
Lectures: 2 hr/week Practical:--- Tutorials: ---

Credit hours: 2 hrs/week

2- Overall aim of the course:

On completion of the course, the students will be able to describe incidence of drug interactions, seriousness of handling of drug interactions, Types of drug- drug interactions, drug-food interactions, drug-patient status interactions, mechanisms of drug interactions, pharmacokinetic interactions, pharmacodynamic interactions, interactions due to disturbances in body fluids, pharmacovigilance that focuses on adverse drug reactions, including lack of efficacy, medication errors, such as overdose, and misuse and abuse of a drug as well as drug exposure during pregnancy and breast feeding. Classification of ADRs, the pre-disposing factors, elements of success of spontaneous ADRs reporting system, stimulation factors of reporting of ADRs, type of cards reports pre-clinical studies, phases of clinical trials.

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Describe the basic mechanisms of drug interactions including: drug- drug interactions, drug-food interactions, drug-patient status interactions, pharmacokinetic interactions, pharmacodynamic interactions and interactions due to disturbances in body fluids
a2	Outline the clinical significance of drug interactions
a3	Enumerate the general methods for the management of drug interactions
Intellectual skills	
c1	Differentiate between adverse and beneficial interactions of drugs
c2	Predict different drug- drug interactions, drug-food interactions, drug-patient status interactions, etc..
c3	Suggest the appropriate methods for management of different drug interactions
General and Transferable Skills	
d1	Demonstrate critical thinking and decision making
d2	Work effectively as a member of a team

4. Course Content:

Week No.	Lecture (2hr/week)
1	Overview of drug interactions
2	Mechanisms of drug interactions
3	Management of drug interactions
4	-Drug-food and drug-herb interaction
5	- Drug interaction of antibiotics
6	- Drug interaction of CVS acting agents
7	- Drug interaction of respiratory system –acting agents **Surprise quiz (drug interactions case study)**
8	- Drug interaction of CNS acting agents
9	- Drug interaction of CVS acting agents
10	- Drug interaction of GI tract acting agents
11	- Drug interaction of agents used for kidney disorders
12	- Drug interaction of endocrine system- acting agents **Surprise quiz (drug interactions case study)**
13	- Drug interaction of agents used for obesity and anemia
14	- Case studies
15	final written exam

5- Teaching and Learning Methods:

- Lectures
- Self-learning
- Open discussion
- Case studies

6- Student Assessment methods:

1. Written exam to assess: a1, a2, a3, c1, c2, c3, d1
2. Oral exam to assess: a1, a2, a3, c1, c2, c3, d1
3. Activity & quiz: case study discussing different drug interactions and management strategies to assess: a1, a2, a3, c1, c2, d1, d2

Assessment schedule:

Assessment (1): Activity, quizzes	Weeks 7 and 12
Assessment (2): Written exam	Week 15
Assessment (3): Oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Activity & surprise quiz	20	20%
Written exam	60	60%
Oral exam	20	20%
TOTAL	100	100%

7- References and books:

A-Scientific papers:

- British J Pharmacol,
- European J Pharmacol,
- Pharmacology,
- Pharmacology and Toxicology

B- Essential books:

Richard A. Harvey, Michelle A. Clark, Lippincott's Illustrated Reviews Pharmacology 5th ed. Lippincott Williams & Wilkins, 2012

C- Suggested books:

i- H.P.Rang,M.M.Dale,J.M.Ritter& R.J. Flower ed. RANG & DALE Pharmacology 6th 2008 Churchill 2. Livingstone Elsevier London.

ii- Katzung, B.G., ed. Basic and Clinical Pharmacology. 9th ed. New York : McGraw Hill, 2006.

iii- Bennet P.N., and M.J. Brown, eds. Clinical Pharmacology. 10th ed. London : Churchil Livingstone, 2006.

iv- Hardman J.G., L.E. Limbrid, and A.G. Gilman, eds. Goodman & Gilman's the Pharmacological Basis of Therapeutics. 10th ed. New York : McGraw Hill, 2006.

v- Luellmann H., L. Hein, K. Mohr, and D. Bieger. Color Atlas of Pharmacology. 3rd ed. Stuttgart : Thieme, 2005.

vi- Brenner,G.M.and Steven,C.W.., Pharmacology,3rd ed.,2010

D- Websites:

Pubmed.com

www.medconsult.com/www.pharmanet.com

https://reference.medscape.com/drug-interactionchecker

Facilities required for teaching and learning:

Black (white) board, Data show.

- **Course Coordinators: Dr/ Samar Rizq**
- **Head of Department: Prof / Mona Fouad**
- **Date: سبتمبر 2019 تم اعتماد توصيف المقرر بمجلس قسم الأدوية و السموم بتاريخ**

Matrix I of Drug interaction course

Course contents		ILOs for drug interaction course							
		knowledge & understanding			intellectual skills			Transferable and general skills	
Lectures		a1	a2	a3	c1	c2	c3	d1	d2
1	Overview of drug interactions		x						
2	Mechanisms of drug interactions	x							
3	Management of drug interactions			x					
4	Drug-food interactions & drug-herb interaction	x	x	x		x		x	x
5	Drug interactions of anti-infective agents	x	x	x		x		x	x
6	Drug interactions of cardiovascular acting agents	x	x	x		x		x	x
7	Drug interactions of CVS acting agents	x	x	x		x		x	x
8	Drug interaction of respiratory system – acting agents	x	x	x		x		x	x
9	Drug interactions of CNS acting agents	x	x	x		x		x	x
10	Drug interaction of GI tract acting agents	x	x	x		x		x	x
11	Drug interaction of agents used for kidney disorders	x	x	x		x		x	x
12	Drug interactions of endocrine acting agents	x	x	x		x		x	x
13	Drug interaction of agents used for obesity and anemia	x	x	x		x		x	x
14	Case studies				x		x	x	x

- **Course Coordinators: Dr/ Samar Rizq**
- **Head of Department: Prof / Mona Fouad**
- **Date:سبتمبر201 9 تم اعتماد توصيف المقرر بمجلس قسم الأدوية و السموم بتاريخ**

Matrix II of Drug Interactions course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical	Self-learning & case study	Written exam	surprise quiz	Oral exam
1	Overview of drug interactions	Student book Essential books	x			x		x
2	Mechanisms of drug interactions	Student book Essential books	x			x		x
3	Management of drug interactions	Student book Essential books	x			x		x
4	Drug-food and drug-herb interaction	Student book Essential books	x			x		x
5	Drug interaction of antibiotics	Student book Essential books	x			x		x
6	Drug interaction of CVS acting agents	Student book Essential books	x			x		x
7	Drug interaction of respiratory system –acting agents **Surprise quiz (drug interactions case study)**	Student book Essential books	x		x	x	x	x
8	Drug interaction of CNS acting agents	Student book Essential books	x			x		x
9	Drug interaction of CVS acting agents	Student book Essential books	x			x		x
10	Drug interaction of GI tract acting agents	Student book Essential books	x			x		x
11	Drug interaction of agents used for kidney disorders	Student book Essential books	x			x		x

12	Drug interaction of endocrine system- acting agents **Surprise quiz (drug interactions case study)**	Student book Essential books	x		x	x	x	x
13	Drug interaction of agents used for obesity and anemia	Student book Essential books	x		x	x		x
14	Case study	internet			x			

Advanced Pharmacotherapy-1

Course specification of Advanced Pharmacotherapy-1

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: pharmacy practice
- Date of specification approval: Sep 2019

1- Basic information:

Title: Advanced Pharmacotherapy-1
Code: D1003
Lectures: 2 hrs/week practical:1
Credit hours: 3 hrs/week

2- Overall aim of the course:

On completion of the course, the students will be able to describe

gastrointestinal disorders including: hepatitis , nausea and vomiting , pancreatitis , inflammatory bowel diseases and peptic ulcer as well as central nervous system disorders including: epilepsy , Parkinson disease , Alzheimer's disease , schizophrenia and affective disorders .

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Describe principles of general psychiatry.
a2	Illustrate different GIT disorders.
a3	Outline systematic approach for medications selection and their pharmacology.
a 4	Summarize the principle of neurology.
Professional and practical skills	
b1	Select the most appropriate medications for general psychiatry, neurologic, and GIT disorders based on its activity, side effects & contraindications.
b2	Monitor the efficacy of medications.
b3	Examine the response of patient to the selected drugs.
b4	Differentiate between different classes of medications treating the same disease.
Intellectual skills	
c1	Apply methods for diagnosing general psychiatry, neurologic, and GIT disorders.
c2	Design a proper therapeutic plan for treatment of general psychiatry, neurologic, and GIT disorders.
c3	Identify the most suitable treatment regimen based upon specific patient condition
General and Transferable Skills	
d1	Collaborate effectively in team work
d2	Retrieve information from different resources.
d3	Develop critical thinking and problem solving skills

4. Course Content:

Week number	Lecture (2 hours/week)	Practical (1 hour/week)
1	General psychiatry	Case study
2	Depression	Case study
3	Bipolar disorder	Case study
4	Schizophrenia	Case study
5	Schizophrenia	Case study
6	Neurology, epilepsy	Case study
7	Epilepsy	Case study
8	Parkinson disease	Case study
9	Ischemic stroke Headaches and Multiple sclerosis	Case study
10	GIT disorders Nausea, vomiting, constipation, diarrhea	Case study
11	GIT disorders GERD	Case study
12	GIT disorders Peptic ulcer	Case study
13	Viral hepatitis Liver cirrhosis complications	Case study
14	Revision	Practical exam
15	Final written exam	

5- Teaching and Learning Methods:

- Lectures
- Self-learning
- Open discussion
- Case studies

6- Student Assessment methods:

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

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

Practical exam assess: b1, b2, b3, b4

Case study & self learning assess: d1, d2,d3, c1, c2, c3

Assessment schedule:

Assessment (1): Practical exam	Week 14
Assessment (2): Final exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Written exam	50	50 %
Practical exam and activities	30	30 %
Oral exam	20	20 %
TOTAL	**100**	**100%**

7- References and books:

A-Scientific papers:

B- Essential books:

- *Course notes:*
- Pharmacotherapy 10th edition, 2013.

C- Recommended Books:

- *Applied therapeutics. Ed kuda kimble fourth edition.*

D- Recommended websites :

- *www.pubmed.com.*
- *www.medscape.com.*
- *www.Guidelines.org.*

Course co-ordinator: Dr . Ahmed Amin
Head of Department: Assis. Prof. Gehan Balata

Matrix I of Advanced Pharmacotherapy-1

	Course Contents	ILOs													
		Knowledge and Understanding				Professional and practical skills				Intellectual skills			General Transferable skills		
		a1	a2	a3	a4	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
1	• General psychiatry	x				x	x	x	x	x	x	x	x	x	x
2	• Depression	x				x	x	x	x	x	x	x	x	x	x
3	• Bipolar disorder	x				x	x	x	x	x	x	x	x	x	x
4	• Schizophrenia	x				x	x	x	x	x	x	x	x	x	x
5	• Neurology epilepsy			x	x	x	x	x	x	x	x	x	x	x	x
6	• epilepsy			x	x	x	x	x	x	x	x	x	x	x	x
7	• Parkinson disease			x	x	x	x	x	x	x	x	x	x	x	x
8	Ischemic stroke • Headaches and Multiple sclerosis			x	x	x	x	x	x	x	x	x	x	x	x
9	GIT disorders • Nausea, vomiting, constipation, diarrhea		x	x		x	x	x	x	x	x	x	x	x	x
10	GIT disorders GERD		x	x		x	x	x	x	x	x	x	x	x	x

11	GIT disorders - Peptic ulcer		x	x		x	x	x	x	x	x	x	x	x	x
12	Viral hepatitis		x	x		x	x	x	x	x	x	x	x	x	x
13	Liver cirrhosis complications		x	x		x	x	x	x	x	x	x	x	x	x

Course co-ordinator: Dr . Ahmed Amin
Head of Department: Assis. Prof. Gehan Balata

Matrix II of Advanced Pharmacotherapy-1course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical /case study	Self learning	Written exam	Practical exam	Oral exam
1	General psychiatry	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
2	Depression	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
3	Bipolar disorder	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
4	Schizophrenia	Student book Essential books	x			x		x
	Case study	Practical student book		x	x		x	
5	Neurology, epilepsy	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
6	Neurology, epilepsy	Student book Essential books	x			x		x

	Case study	Practical notes		x	x		x	
7	Epilepsy	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
8	Parkinson disease	Student book Essential books	x		x	x		x
	Case study	Practical notes		x	x		x	
9	Ischemic stroke Headaches and Multiple sclerosis	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
10	GIT disorders Nausea, vomiting, constipation, diarrhea	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
11	GIT disorders GERD	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
12	GIT disorders Peptic ulcer	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
13	Viral hepatitis Liver cirrhosis complications	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	

Advanced Pharmacotherapy-2

Course specification of Advanced Pharmacotherapy-2

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: Pharmacy practice
- Date of specification approval: Sep 2019

1- Basic information:

Title: Advanced Pharmacotherapy-2
Code: D1004
Lectures: 2 hrs/week practical:1
Credit hours: 3 hrs/week

2- Overall aim of the course:

Upon successful completion of this course the student should be able to describe: Ophthalmology; eye infection , allergic eye disease , cataract, glaucoma and vision error. Oncology; classification of chemotherapeutics, principles and theories of the etiology of cancer, cancer prevention, breast cancer, lymphoma, prostate cancer .Bone disorders, gout , osteoarthritis , osteoporosis , rheumatoid arthritis , osreomalacia , TB of bone and joints.

3. Intended learningoutcomes (ILOs):

Knowledge and Understanding	
a1	Describe the principles of tumor growth, diagnosis and staging.
a2	Outline principle of chemotherapy
a3	Summarize principles of eye and several eye problems
a4	Illustrate systematic approach for selection of medications for different diseases
a5	List different bone disorders
Professional and practical skills	
b1	Apply methods for tumor detection
b2	Design a therapeutic plan for tumor treatment based on its stage
b3	Monitor response of patient to antitumor drugs
b4	Design a therapeutic plan for eye and bone disorders
Intellectual skills	
c1	Select the most appropriate antitumor agent based on its activity, side effects & contraindications
c2	Differentiate between different cancer types, their etiology, complications and prognosis
c3	Suggest the most suitable treatment regimen for eye and bone disorders.
General and Transferable Skills	
d1	Work effectively in a team
d2	Retrieve information from different resources.
d3	Develop critical thinking and problem solving skills

4. Course Content:

Week number	Lecture (2 h/week)	Practical (1 h/week)
1	**Part 1:** Eye disorders Acute allergic conjunctivitis	**case study**
2	**Eye disorders** Acute infective conjunctivitis	**case study**
3	**Eye disorders** Glaucoma Macular degeneration	**case study**
4	**Part 2:** oncology: Classification of chemotherapeutics and cancer prevention	**case study**
5	Breast cancer	**case study**
6	Bone cancer	**case study**
7	Lung cancer	**case study**
8	Lung cancer	**case study**
9	Lymphoma	**case study**
10	**Part 3:** Bone disorders	**case study**
11	Osteoporosis and osteopenia	**case study**
12	Gout	**case study**
13	Osteoarthritis	**case study**
14	Rheumatoid arthritis	**case study**
15	Final written exam	Practical exam

5- Teaching and Learning Methods:

- Lectures
- Self-learning
- Open discussion
- Case studies

6- Student Assessment methods:

Written exam assess: a1, a2, a3,a4, a5, c1, c2, c3

Oral exam assess: a1, a2, a3,a4, a5, c1, c2, c3

Case study & self learning assess: c1, c2, c3, d1, d2, d3

Practical exam assess: b1, b2, b3, b4

Assessment schedule:

Assessment (1): Practical exam	Week 15
Assessment (2): Final exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
• Written exam	50	50 %
• Practical exam and activities	30	30 %
• Oral exam	20	20 %
TOTAL	**100**	**100%**

7- References and books:

A-Scientific papers:

B- Essential books:

- *Course notes:*
- Pharmacotherapy 10th edition, 2013.
- A Pathophysiologic Approach (2005) Dipiro JT,McGrw-Hill. 6th edition

C- Recommended Books:

Applied therapeutics. Ed kuda kimble fourth edition.

D- Recommended websites :

- *www.pubmed.com.*
- *www.medscape.com.*
- *www.Guidelines.org.*

Course co-ordinator: Dr . Ahmed Amin

Head of Department: Assis. Prof. Gehan Balata

Matrix I of Advanced Pharmacotherapy-2

	Course Contents	ILOs														
		Knowledge and Understanding					Professional and practical skills				Intellectual skills			General Transferable skills		
		a1	a2	a3	a4	a5	b1	b2	b3	b4	c1	c2	c3	d1	d2	d3
1	• Eye disorders • Acute allergic conjunctivitis			x	x	x				x			x		x	x
2	• Eye disorders • Acute infective conjunctivitis			x	x	x				x			x		x	x
3	• Eye disorders • Glaucoma • Macular degeneration			x	x	x				x			x	x	x	x
4	•Part 2: oncology: • Classification of chemotherapeutics and cancer prevention		x				x	x	x		x			x	x	x
5	•Breast cancer		x				x	x	x			x		x	x	x
6	•Bone cancer		x				x	x	x			x		x	x	x

7	•Lung cancer		x				x	x	x			x		x	x	x
8	•Lymphoma		x				x	x	x			x		x	x	x
9	• **Part 3:** Bone disorders					x				x			x	x	x	x
10	Osteoporosis and osteopenia		x			x				x			x	x	x	x
11	Gout		x			x				x			x	x	x	x
12	Osteoarthritis		x			x				x			x	x	x	x
13	Rheumatoid arthritis		x			x				x			x	x	x	x
14	Case study										x	x	x	X	X	x

Course co-ordinator: Dr . Ahmed Amin

Head of Department: Assis. Prof. Gehan Balata

Matrix II of Advanced Pharmacotherapy-2course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical /case study	Self learning	Written exam	Practical exam	Oral exam
1	Part 1: Eye disorders Acute allergic conjunctivitis	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
2	Eye disorders Acute infective conjunctivitis	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
3	Eye disorders Glaucoma Macular degeneration	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
4	Part 2: oncology: Classification of chemotherapeutics and cancer prevention	Student book Essential books	x			x		x
	Case study	Practical student book		x	x		x	
5	Breast cancer	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	

6	Bone cancer	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
7	Lung cancer	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
8	Lymphoma	Student book Essential books	x		x	x		x
	Case study	Practical notes		x	x		x	
9	Part 3: Bone disorders	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
10	Osteoporosis and osteopenia	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
11	Gout	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
12	Osteoarthritis	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
13	Rheumatoid arthritis	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	

Advanced Pharmacotherapy-3

Course specification of Advanced Pharmacotherapy-3

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: pharmacy practice
- Date of specification approval: Sep 2019

1- Basic information:

Title: Advanced Pharmacotherapy-3
Code: D1005
Lectures: 2 hrs/week practical: 1
Credit hours: 3 hrs/week

2- Overall aim of the course:

Upon successful completion of this course the student should be able to:

- Recognize pharmacotherapy of some pulmonary and cardiovascular diseases Such as hypertension, heart failure , angina, asthma and COPD
- Outline the etiology and diagnosis of several pulmonary and cardiovascular diseases.
- Appraise different cases of pulmonary and cardiovascular diseases.

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Identify different pulmonary and cardiovascular disorders. including hypertension, asthma, angina, etc…
a2	Summarize etiology and pathophysiology of different pulmonary and cardiovascular diseases.
a3	Outline diagnosis and treatment of some pulmonary and cardiovascular diseases.
Professional and practical skills	
b1	Suggest the appropriate drug, dose, frequency, and duration for different pulmonary and cardiovascular diseases
b2	Design the best suitable treatment protocol for different pulmonary and cardiovascular disorders
b3	Monitor the efficacy of the applied pulmonary and cardiovascular pharmacotherapy
Intellectual skills	
c1	Analyze causes of different pulmonary and cardiovascular diseases
c2	Select the best method of diagnosis for pulmonary and cardiovascular diseases.
c3	Select the suitable protocol of therapy for pulmonary and cardiovascular diseases.
General and Transferable Skills	
d1	Implement continuous and lifelong self-learning
d2	Retrieve information from different information sources, including information retrieval through online computer searches
d3	Develop critical thinking and problem solving skills

4. Course Content:

Week number	Lecture (2h/week)	Practical (1 h/ week)
1	Introduction	Case study
2	Asthma	Case study
3	COPD	Case study
4	COPD	Case study
5	Hypertension	Case study
6	hypertensive crisis	Case study
7	Heart failure and acute decompensated heart failure	Case study
8	Heart failure and acute decompensated heart failure	Case study
9	Arrhythmia	Case study
10	Arrhythmia	Case study
11	Angina	Case study
12	Angina	Case study
13	Acute coronary syndrome	Practical exam
14	Acute coronary syndrome	
15	Written exam	

5- Teaching and Learning Methods:

- Lectures (√)
- Discussion (√)
- Brain storming (√)
- Case study (√)

6- Student Assessment methods:

Written exam assess: a1, a2, a3, c1, c2, c3

Oral exam assess: a1, a2, a3, c1, c2, c3

Activity assess: d1, d2, d3

Practical exam assess: b1, b2, b3

Assessment schedule:

Assessment (1): practical exam	Week 13
Assessment (2): Final exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Final-Term Examination	50	50 %
Oral Examination	20	20 %
Practical Examination	30	30 %
TOTAL	**100**	**100%**

7- References and books:

A-Scientific papers:

B- Essential books:

Course notes :
Pharmacotherapy principle and practice, McGraw-Hill Education 4th edition, 2013.
A Pathophysiologic Approach (2005) Dipiro JT,McGrw-Hill. 6th edition

C- Recommended Books:

- *Applied therapeutics. Ed koda kimble fourth edition, Lippincott Williams, tenth edition.*

- *Updates in Therapeutics®: Pharmacotherapy Preparatory Review and Recertification Course, 2017. (eds) Burke J, Cauffield J, El-Ibiary S, et al.. Lenexa, KS: American College of Clinical Pharmacy*

D- Recommended websites :

- *www.pubmed.com.*
- *www.medscape.com.*

- *www.Guidelines.org.*

Facilities required for teaching and learning:

For lectures: Class rooms, Computers. Internet, -data show

Course co-ordinator: Ahmad Amin

Head of Department: Assis. Prof. Gehan Balata

Matrix I of Advanced Pharmacotherapy-3

	Course Contents	ILOs											
		Knowledge and Understanding			Professional and practical skills			Intellectual skills			General Transferable skills		
		a1	a2	a3	b1	b2	b3	c1	c2	c3	d1	d2	d3
1	• Introduction	x											
2	• Asthma		x	x	x	x	x	x	x	x	x	x	x
3	• COPD		x	x	x	x	x	x	x	x	x	x	x
4	• Hypertension and hypertensive crisis	x	x	x	x	x	x	x	x	x	x	x	x
5	• Heart failure and acute decompensated heart failure		x	x	x	x	x	x	x	x	x	x	x
6	• Heart failure and acute decompensated heart failure		x	x	x	x	x	x	x	x	x	x	x
7	• Arrhythmia		x	x	x	x	x	x	x	x	x	x	x
8	• Angina		x	x	x	x	x	x	x	x	x	x	x
9	• Acute coronary syndrome		x	x	x	x	x	x	x	x	x	x	x
13	Case study							x	x	x	x	x	x

Course co-ordinator: Ahmad Amin

Head of Department: Assis. Prof. Gehan Balata

Matrix II of Advanced Pharmacotherapy-3 course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical /case study	Self learning	Written exam	Practical exam	Oral exam
1	Introduction	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
2	Asthma	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
3	COPD	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
4	Hypertension	Student book Essential books	x			x		x
	Case study	Practical student book		x	x		x	
5	hypertensive crisis	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	

6	Heart failure and acute decompensated heart failure	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
7	Arrhythmia	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
8	Angina	Student book Essential books	x		x	x		x
	Case study	Practical notes		x	x		x	
9	Acute coronary syndrome	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	

Advanced Pharmacotherapy-4

Course specification of Advanced Pharmacotherapy-4

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: Pharmacy practice
- Date of specification approval: Sep 2019

1- Basic information:

Title: Advanced Pharmacotherapy-4
Code: D1006
Lectures: 2 hrs/week practical:1 hr/week
Credit hours: 3 hrs/week

2- Overall aim of the course:

Upon successful completion of the course the student should be able to describe different types of infections, acute renal failure , chronic renal failure, nephrolithiasis , drug induced renal diseases , sinusitis and sore throat , otitis media and ear wax.

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Describe different types of infections
a2	List different infectious diseases
a3	Identify systematic approach of selection of medications and their pharmacology
a4	Illustrate the principles of renal disorders.
Professional and practical skills	
b1	Select the most appropriate medications for infectious diseases and renal disorders based on its activity, side effects & contraindications
b2	Design a therapeutic plan for treatment of infectious diseases and renal disorders.
b3	Monitor the efficacy of medications.
Intellectual skills	
c1	Evaluate the appropriate methods for diagnosing infectious diseases and renal disorders.
c2	Differentiate between different options of treatment of a specific disease
c3	Select the most suitable treatment regimen based on specific patient Condition.
General and Transferable Skills	
d1	work effectively as a member of a team
d2	Retrieve information from different resources.
d3	Develop critical thinking and problem solving skills

4. Course Content:

Week number	Lecture (2 hr/week)	Practical (1hr/week)
1	Introduction	Case study
2	Acute kidney injury	Case study
3	Chronic kidney diseases	Case study
4	Chronic kidney diseases	Case study
5	Introduction to infectious diseases	Case study
6	Respiratory tract infections	Case study
7	Respiratory tract infections	Case study
8	Respiratory tract infections	Case study
9	Urinary tract infections	Case study
10	Urinary tract infections	Case study
11	Drug induced renal diseases	Case study
12	Ear infection	Case study
13	Ear infection	Practical exam
14	Revision	
15	final written exam	

5- Teaching and Learning Methods:

- Lectures (√)
- Tutorial exam (√)
- Discussion (√)
- Brain storm (√)
- Case study (√)

6- Student Assessment methods:

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

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

Case study & practical exam: b1, b2, b3, d1, d2, d3

Assessment schedule:

Assessment (1): practical exam	Week 13
Assessment (2): Final exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Final-Term Examination	50	50 %
Oral Examination	20	20 %
Practical Examination	30	30 %
TOTAL	**100**	**100%**

7- References and books:

A-Scientific papers:

B- Essential books:

Course notes:

- Pharmacotherapy principle and practice, McGraw-Hill Education 4th edition, 2013.
- A Pathophysiologic Approach (2005) Dipiro JT,McGrw-Hill. 6th edition

C- Recommended Books:

- ***Applied therapeutics. Ed koda kimble fourth edition,*** Lippincott Williams, tenth edition.

- Updates in Therapeutics®: Pharmacotherapy Preparatory Review and Recertification Course, 2017. (eds) Burke J, Cauffield J, El-Ibiary S, et al.. Lenexa, KS: American College of Clinical Pharmacy

D- Recommended websites :

- *www.pubmed.com.*
- *www.medscape.com.*
- *www.Guidelines.org.*

Course co-ordinator: Dr . Ahmed Amin

Head of Department: Assis. Prof. Gehan Balata

Matrix I of Advanced Pharmacotherapy-4

	Course Contents	ILOs												
		Knowledge and Understanding				Professional and practical skills			Intellectual skills			General Transferable skills		
		a1	a2	a3	a4	b1	b2	b3	c1	c2	c3	d1	d2	d3
1	• Introduction	x							x	x	x			
2	• Acute kidney injury	x			x	x	x	x	x	x	x	x	x	x
3	• Chronic kidney diseases	x			x	x	x	x	x	x	x	x	x	x
4	• Introduction to infectious diseases	x	x			x	x	x	x	x	x	x	x	x
5	• Respiratory tract infections		x	x		x	x	x	x	x	x	x	x	x
6	• Urinary tract infections			x	x	x	x	x	x	x	x	x	x	x
7	• Drugs induced renal diseases			x	x	x	x	x	x	x	x	x	x	x
8	• Ear infections		x	x		x	x	x	x	x	x	x	x	x
9	• Case study	x	x	x	x	x	x	x	x	x	x	x	x	x

Course co-ordinator: Dr . Ahmed Amin

Head of Department: Assis. Prof. Gehan Balata

Matrix II of Advanced Pharmacotherapy-4 course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical /case study	Self learning	Written exam	Practical exam	Oral exam
1	Introduction	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
2	Acute kidney injury	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
3	Chronic kidney diseases	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
4	Introduction to infectious diseases	Student book Essential books	x			x		x
	Case study	Practical student book		x	x		x	
5	Respiratory tract infections	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
6	Urinary tract infections	Student book Essential books	x			x		x

	Case study	Practical notes		x	x		x	
7	Drug induced renal diseases	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	
8	Ear infections	Student book Essential books	x		x	x		x
	Case study	Practical notes		x	x		x	

Nutrition and Anemia

Course specification of Nutrition and Anemia

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: Biochemistry
- Date of specification approval: 2019/9/ 26

1- Basic information:

Title: Nutrition and Anemia
Code: D1007
Lectures : 1 hr/week Practical: 2 hr/week Tutorials: ---
Total: 2 credit hrs/week

2- Overall aim of the course:

On completion of the course, the students will be able to explain the importance of healthy nutrition and the pathophysiology and management of different types of anemia.

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Outline the principles of healthy nutrition and types of nutrients.
a2	Illustrate the body energetics and requirements of macronutrients and iron.
a3	Demonstrate the etiology and clinical features of different types of anemia and iron overload.
a 4	Discuss the principles of diet therapy and management of different types of anemia and iron overload.
Professional and Practical skills	
b1	Specify therapeutic and dietary interventions of anemia and iron overload.
b2	Perform laboratory tests for diagnosis of different diseases.
b3	Advise patients about balanced diet to promote the quality of life and the efficiency of medication.
Intellectual skills	
c1	Suggest life style modifications to prevent anemia and iron overload
c2	Select the appropriate drugs and dietary regimens for anemia and iron overload
General and Transferable Skills	
d1	Develop communications skills with public, patients and other health care professionals.
d2	Work effectively as a member of a team.
d3	Practice independent learning needed for continuous professional development.
d4	Write and present reports.
d5	Implement critical thinking and decision making skills.

4. Course Content:

Week No.	Lecture (1hr/week)	Practical session (2hr/week)
1	• Principles of healthy Nutrition	• Healthy nutrition
2	• Components of energy expenditure	• Basal metabolic rate and energy expenditure
3	• Macronutrients (carbohydrates, lipids and proteins)	• Food pyramids • Case study
4	• Micronutrients: Vitamins	• Case study
5	• Micronutrients : Minerals	• Case study
6	• Activity-1	• Activity-1
7	• Anemia and its different types	• Activity-1
8	• Iron deficiency anemia (definition, causes, symptoms and diagnosis).	• Assessment of iron deficiency anemia • Case study-1
9	• Dietary sources of iron	• Serum Iron • Ferritin and transferritin
10	• Hematochromatosis symptoms and management of iron overload	• Assessment of hematochromatosis • Case study - 2
11	• Megaloblastic anemia causes and dietary management	• Assessment of Megaloblastic anemia • Case study - 2
12	• Activity-2	• Activity-2
13	• Revision	• Practical exam
14	• Open discussion	•
15	• Final written exam	•

5- Teaching and Learning Methods:

- Lectures
- Practical sessions
- Self learning (Activity, group discussion and presentations)

6- Student Assessment methods:

Written exams to assess: a1, a2, a3, a4, b1, b2, b3, c1 and c2

Practical exam to assess: a1, a2, a3, a4, b1, b2 and b3

Oral exam to assess: a1, a2, a3, a4, b1, b2 and b3

Activity to assess: d1, d2, d3, d4 and d5

Assessment schedule:

Assessment (1): Activity	Week 6 , 7, 12
Assessment (2): Practical exam	Week 13
Assessment (3): Written exam	Week 15
Assessment (4): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
• Written exam	50	50 %
• Practical exam	30	30 %
• Oral exam	20	20 %
TOTAL	**100**	**100%**

7- References and books:

A-Scientific papers:

Impact of a clinical pharmacy anemia management service on adherence to monitoring guidelines, clinical outcomes, and medication utilization. Jenny M. Debenito, Sarah J. Billups, Thu S. Tran, and Lea C. Price. J Manag Care Pharm. 2014; 20(7):715-720.

B- Essential books:

D.J. Weatherall and Chris Hatton. Anaemia: pathophysiology, classification, and clinical features. In: **Oxford Textbook of Medicine.** Edited by David A. Warrell, Timothy M. Cox, and John D. Firth. 2013. Oxford University press (last updated September 2016), Oxford, UK.

C- Suggested books:

Rudy Silva Silva. Anemia: Iron Deficiency Diet: Large Print: Quick and Easy Diet Cures For Anemia, 2014. Barnes & Noble Booksellers, Inc.122 Fifth Avenue, New York, NY 10011.

Ralph Catalase. Living Well With Hemochromatosis: A Handbook on Diet, Iron Overload Treatments and Protective Supplements. Top shape Publishing LLC, 2013. Reno, Nevada 89502-2121, USA.

James C. Barton, Corwin Q. Edwards, Pradyumna D. Phatak, Robert S. Britton and Bruce R. Bacon. Handbook of Iron Overload Disorders. Cambridge University Press, 2010.Cambridge, UK.

D- Websites: pubmed, Science direct, Nejm, Weilyinterscience

Facilities required for teaching and learning:

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

- **Course Coordinators: Prof Dr. Sousou I Ali**
- **Head of Department: Prof Dr/ Sahar Elsewify**

تم اعتماد توصيف المقرر بمجلس قسم الكيمياء الحيوية بتاريخ 26 /9/ 2019

Matrix I of Nutrition and Anemia

	Course Contents	ILOs													
		Knowledge and Understanding				Professional and practical skills			Intellectual skills		General Transferable skills				
		a1	a2	a3	a4	b1	b2	b3	c1	c2	d1	d2	d3	d4	d5
1	• Principles of healthy Nutrition	x			x										
2	• Components of energy expenditure	x	x		x										
3	• Macronutrients (carbohydrates, lipids and proteins)	x	x		x					x					
4	• Micronutrients: Vitamins	x	x		x					x					
5	• Micronutrients : Minerals	x	x		x					x					
6	• Anemia and its different types			x	x				x						
7	• Iron deficiency anemia (definition, causes, symptoms and diagnosis). • Dietary sources of iron		x	x	x				x	x					
8	• Hematochromatosis symptoms and management			x	x				x						

	of iron overload														
9	• Megaloblastic anemia causes and dietary management			x	x				x	x					
Practical:															
1	• Healthy nutrition	x			x	x	x	x							
2	• Basal metabolic rate and energy expenditure		x		x	x	x	x							
3	Food pyramids	x			x	x	x	x		x					
4	• Assessment of iron deficiency anemia • Serum Iron • Ferritin and transferritin			x	x	x	x	x							
5	• Assessment of hematochromatosis			x	x	x	x	x							
6	• Assessment of Megaloblastic anemia			x	x	x	x	x	x						
7	Case study	x	x	x	x				x	x	x	x	x	x	x
8	• Activity	x	x	x	x				x	x	x	x	x	x	x

- **Course Coordinators: Prof Dr. Sousou I Ali**
- **Head of Department: Prof Dr/ Sahar Elsewify**

تم اعتماد توصيف المقرر بمجلس قسم الكيمياء الحيوية بتاريخ 26 /2019/9

Matrix II of Nutrition and anemia course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	Practical /case study	Self learning	Written exam	Practical exam	Oral exam
1	Principles of healthy Nutrition	Student book Essential books	x			x		x
	Healthy nutrition	Practical notes		x	x		x	
2	Components of energy expenditure	Student book Essential books	x			x		x
	Basal metabolic rate and energy expenditure	Practical notes		x	x		x	
3	Macronutrients (carbohydrates, lipids and proteins)	Student book Essential books	x			x		x
	• Food pyramids • Case study	Practical notes		x	x		x	
4	• Micronutrients: Vitamins	Student book Essential books	x			x		x
	Case study	Practical student book		x	x		x	
5	• Micronutrients : Minerals	Student book Essential books	x			x		x
	Case study	Practical notes		x	x		x	

6	•Anemia and its different types	Student book Essential books	x			x		x
	Activity 1	Practical notes		x	x		x	
7	Iron deficiency anemia (definition, causes, symptoms and diagnosis).	Student book Essential books	x			x		x
	•Assessment of iron deficiency anemia •Case study-1	Practical notes		x	x		x	
8	•Dietary sources of iron	Student book Essential books	x		x	x		x
	•Serum Iron •Ferritin and transferritin	Practical notes		x	x		x	
9	•Hematochromatosis symptoms and management of iron overload	Student book Essential books	x		x	x		x
	•Assessment of hematochromatosis •Case study - 2	Practical notes		x	x		x	
10	•Megaloblastic anemia causes and dietary management	Student book Essential books	x		x	x		x
	•Assessment of Megaloblastic anemia •Case study - 2	Practical notes		x	x		x	
11	Activity 2	internet search		x	x		x	

Clinical Pharmacokinetics

Course specification of Clinical Pharmacokinetics

A- Course specifications:

- Program on which the course is given: Diploma in clinical pharmacy
- Major or Minor element of program: Major
- Department offering the program: -
- Department offering the course: Pharmacy Practice
- Date of specification approval: October 2019

1- Basic information:

Title: Clinical Pharmacokinetics
Code: D1009
Lectures: 2 hrs/week Practical : 0
Total: 2hrs/week

2- Overall aim of the course:

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

- Define basic pharmacokinetic concepts, including bioavailability, volume of distribution, clearance, half life and the elimination rate constant.
- Recognize the theoretical background of the pharmacokinetic behavior of drugs .
- Apply the above principles for pharmacokinetic decision making and improvement of patient care.
- Design dosing regimen for following medications based on patient characteristics in specific clinical scenario :
  - ✓ Antibiotics (Aminoglycosides)
  - ✓ Cardiovascular Drugs (Digoxin)
  - ✓ Respiratory drugs (Theophylline)
  - ✓ Anticonvulsant drugs (phenytoin, Phenobarbital)
  - ✓ Antipsychotic drugs (lithium)

3. Intended learning outcomes (ILOs):

Knowledge and Understanding	
a1	Define various terms related to basic pharmacokinetics, bioavailability and bioequivalence
a2	List clinical pharmacokinetic variabilities related to diseases
a3	List the equations used to calculate drug clearance, elimination rate constant, volume of distribution and half life
a4	Outline therapeutic ranges and pharmacokinetic parameters for commonly used drugs which need therapeutic drug monitoring .e.g. aminoglycoside antibiotics, lithium, theophylline, digoxin and others
Professional and practical skills	
b1	Perform proper therapeutic monitoring of drugs with narrow therapeutic index .e.g. aminoglycoside antibiotics, lithium, theophylline, digoxin and others
Intellectual skills	
c1	Investigate the effect of age and disease on pharmacokinetic of digoxin, aminoglycoside, phenytoin, and theophylline
c2	Calculate clearance, volume of distribution and half life time of of digoxin, aminoglycoside, phenytoin, and theophylline
c3	Calculate Loading and maintenance dose of drugs based on patients specific parameters
General and Transferable Skills	
d1	Develop problem solving and critical thinking skills
d2	Retrieve information from different sources
d3	write a proper scientific report

4. Course Content:

Week number	Lecture contents (2hrs/week)
1	- Introduction to Clinical Pharmacokinetics & Course Objectives - Basic concepts: ➢ Linear & nonlinear pharmacokinetics ➢ Clearance ➢ Volume of distribution ➢ Bioavailability
2	Clinical pharmacokinetic equations and calculations
3	Drug dosing in special populations: renal and hepatic disease, Dialysis, heart failure, obesity and drug interactions
4	Tutorial & activity criteria (clinical pharmacokinetics of different drugs)
5	TDM of Aminoglycosides
6	TDM of Digoxin
7	Tutorial
8	TDM of Phenobarbital
9	TDM of Phenytoin
10	Tutorial & activity follow up
11	TDM of Lithium
12	TDM of Theophylline
13	Tutorial & activity report delivery
14	Case study
15	Final written exam

5- Teaching and Learning Methods:

- Lectures
- Case discussion
- Problem solving
- Think/pair and share

6- Student Assessment methods:

Written exam assess: a1, a2, a3, a4, b1, c1, c2, c3

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

Activity assess: b1, d1, d2,d3

Assessment schedule:

Assessment (1): Activity	Week 4,10 ,13
Assessment (2): Written exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
Final written exam	60	60%
activity report	20	20%
Oral exam	20	20%
TOTAL	100	100%

7- References and books:

List of References:

- Curtis L . Smith, Pharm.D, FCCP, BCPS. Pharmacokinetics: A Refresher. ACCP Updates in Therapeutics® 2017: Pharmacotherapy Preparatory Review and Recertification Course.
- Larry A. Bauer, PharmD, Applied Clinical Pharmacokinetics, 2nd edition, Copyright © 2008 by The McGraw-Hill Companies, Inc.
- Adam M. Persky, PhD, Copyright 2013 © Adam M. Persky.

Facilities required for teaching and learning:

- For lectures : Black (white) boards, data show, air conditioned classroom equipped with sound system

---

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Assis. Prof. Gehan Balata

Matrix I of Clinical Pharmacokinetics

	Course Contents	ILOs										
		Knowledge and Understanding				Professional and practical skills	Intellectual skills			General Transferable skills		
		a1	a2	a3	a4	b1	c1	c2	c3	d1	d2	d3
1	- Basic concepts: ➢ Linear & nonlinear pharmacokinetics ➢ Clearance ➢ Volume of distribution • Bioavailability	x		x							x	
2	• Clinical pharmacokinetic equations and calculations	x		x								
3	• Drug dosing in special populations: renal and hepatic disease, Dialysis, heart failure, obesity and drug interactions		x	x					x	x		
4	• TDM of Aminoglycosides		x	x	x	x	x	x	x	x		

5	• TDM of Digoxin		x	x	x	x	x	x	x	x		
6	• TDM of Phenobarbital		x	x	x	x	x	x	x	x		
7	• TDM of Phenytoin		x	x	x	x	x	x	x	x		
8	• TDM of Lithium		x	x	x	x	x	x	x	x		
9	• TDM of Theophylline		x	x	x	x	x	x	x	x		
10	• Activity report									x	x	x

Course Coordinator: Dr. Gehan Fathy Attia

Head of Department: Assis. Prof. Gehan Balata

Matrix II of Clinical Pharmacokinetics course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	case study	Self learning	Written exam	Practical exam	Oral exam
1	- Introduction to Clinical Pharmacokinetics & Course Objectives - Basic concepts: ➢ Linear & nonlinear pharmacokinetics ➢ Clearance ➢ Volume of distribution ➢ Bioavailability	Student book Essential books	x			x		x
2	Clinical pharmacokinetic equations and calculations	Student book Essential books	x			x		x
3	Drug dosing in special populations: renal and hepatic disease, Dialysis, heart failure, obesity and drug interactions	Student book Essential books	x			x		x
4	TDM of Aminoglycosides	Student book Essential books	x	x		x		x
5	TDM of Digoxin	Student book Essential books	x	x		x		x
6	TDM of Phenobarbital	Student book Essential books	x	x		x		x
7	TDM of Phenytoin	Student book Essential books	x	x		x		x
8	TDM of Lithium	Student book Essential books	x	x		x		x

9	TDM of Theophylline	Student book Essential books	x	x		x		x
10	Case study	Student book Essential books		x		x		x
11	Activity report	internet search			x			

Hospital Microbiology

Course specification of Hospital Microbiology

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

A- Course specifications:

Program (s) on which the course is given: **Clinical Pharmacy Diploma**

Major or Minor element of programs: Major

Department offering the program: Faculty of Pharmacy

Department offering the course: Microbiology and Immunology

Academic year Level: Post Graduates

Date of specification approval: September 2019

B- Basic information:

Title: Hospital Microbiology Code: **D1010**

Credit Hours: 2

Lectures: 2 hr// week

Practical: None

C- Professional information:

1-Overall aim of the course

This course aims to ensure that the students are well prepared to direct the hospital infection control services and to develop, implement and supervise infection control programs in different health care facilities. Moreover, this course will provide the students with the skills and knowledge that keep them alert to basic guidelines of infection control that make them able to work with the hospital team and in the integrated programs of quality management and accreditation.

2- Intended Learning Outcomes of Hospital Microbiology (ILOs)

A- Knowledge and Understanding	
a1	Identify basic concepts of infection control (IC), and guidelines for standard & general IC measures.
a2	Define hospital acquired infections (HAIs) and risk factors for their transmission
a3	Describe infection control measures and strategies to reduce infection risks associated with therapeutic and diagnostic procedures and devices
a4	Summarize surveillance strategies of HAIs and strategies for patient isolation and appropriate patient placement.
a5	Identify antimicrobial resistance and how to combat MDR organisms.
B- Intellectual skills	
b1	Assess hazards of infection and risks of exposure to infectious diseases
b2	Apply parameters for identification of HAIs and initiation of patient isolation precautions when indicated
b3	Recommend specific equipment, personnel, and resource for IC program
b4	Evaluate patient care environments for infection control practices
b5	Develop infection control strategies, policies and procedures
C- Professional skills	
c1	Develop a written mission statement, objectives, and action plans for IC program.
c2	Perform IC risk assessment for all procedures undertaken in the hospital
c3	Participate in antimicrobial monitoring and implement MDR Organisms control program
D-General and Transferable skills	

d1	Communicate effectively verbally and nonverbally in appropriate manner
d2	Develop self learning and research skills
d3	Develop critical thinking and problem solving skills

D- Contents:

Week NO.	Lecture content
1st	Introduction to nosocomial infection and infection control (IC)
2nd	Standard and general IC measures (Hand hygiene, personal protective equipment & cough etiquette) **Activity** (**case study**)
3rd	Standard IC measures (Handling of sharps, reprocessing of reusable equipment, environmental control & waste disposal)
4th	Transmission-based measures for IC **Activity** (**case study**)
5th	Surveillance systems, Isolation precautions & Patient safety
6th	Antibiotic resistance and antibiotic stewardship. **Activity (case study)**
7th	Most common MDR strains (biggest threats)
8th	Most common healthcare-associated infections (HAIs)
9th	Infection control guidelines for Staff health and safety
10th	Infection control strategies for MDR organisms
11th	Infection control measures against Bioterrorism
12th	**Invited speaker** from IC unit in Zagazig University Hospitals:

	The role of clinical pharmacist in hospital IC program
13th	Revision
14th	Revision
15th	Final exams

E- Teaching and Learning Methods:

- Lectures
- Case studies
- Videos
- Open discussions

F- Student Assessment methods:

- Course activities to assess: d1, d2, d3, d4
- Written Exams to assess: a1, a2, a3,a4,a5,a6, b1,b2,b3, b4,b5
- Oral Exams to assess: a1, a2, a3,a4,a5,a6, b1,b2,b3, b4,b5

Assessment schedule

Assessment (1) Activity (risk management case study)	Week 2,4 & 6
Assessment (2): Written exam	Week 15
Assessment (3): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
• Written exam	60	60 %
• Oral exam	20	20%
• Activity	20	20%
TOTAL	**100**	**100%**

G- List of References:

1. Australian Dental Association (**2008**) *Guidelines for Infection Control*.
2. Siegel JD, Rhinehart E, Jackson M et al (Healthcare Infection Control Practices Advisory Committee), (**2007**) *Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings.* United States Centers for Disease Control and Prevention
3. Sehulster LM & Chinn RYW (**2003***) Guidelines for Environmental Infection Control in Health-care Facilities.* Recommendations of the CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). Chicago IL: American Society for Healthcare Engineering/American Hospital Association.
4. RACGP (**2006**) *Infection Control Standards for Office Based Practices* (4th edition)

H- Facilities required for teaching and learning:

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

Course Coordinator: Prof. Hemmat Kamal

Head of Department: Prof. Nehal Youssef

Date: 30/9/2019 **تم مناقشة و اعتماد توصيف المقرر بمجلس قسم الميكروبيولوجي بتاريخ**

Matrix 1 of Hospital Microbiology

Course Content	Course ILOs															
	Knowledge & Understanding					Intellectual skills					Professional skills			General & Transferable skills		
Course content	a1	a2	a3	a4	a5	b1	b2	b3	b4	b5	c1	c2	c3	d1	d2	D3
Introduction to nosocomial infection and infection control (IC)	x					x										
Standard and general IC measures **Activity (case study)**	x		x			x		x				x				x
Standard IC measures	x		x						X							
Transmission-based IC measures **Activity (case study)**	x		x			x			X			x				x
Surveillance systems, Isolation precautions & Patient safety				x			x								x	
Antibiotic resistance and antibiotic stewardship. **Activity (case study)**					x							x				x
Most common MDR strains (biggest threats)					x											
Most common healthcare-associated infections (HAIs)		x		x			x									
IC guidelines for Staff health and safety						x									x	
Infection control strategies for multi-drug resistant organisms					x	x							x			

Infection control measures against Bioterrorism						x										
Invited speaker from IC unit in Zagazig University Hospitals: The role of clinical pharmacist in hospital IC program			x							x	x			x		
Revision	x	x	x	x	x	x	x	x	X	x	x	x	x	x	x	x

Matrix II of Hospital Microbiology										
ARS		**Program ILOs**	**Course ILOs**	**Course content**	**Source**	**Teaching and learning methods**		**Method of Assessment**		
						Lectures	Self-learning	Written exam	Oral exam	Activity
Knowledge and Understanding	2.1.4. The impact of professional practice on the development of the environment	A7 Summarize infection control programs in different health care facilities	a1	Lectures (1-4)	Scientific papers, text books & Internet	X	X	X	X	
			a2	Lectures (8)	Scientific papers, text books & Internet	X	X	X	X	
			a3	Lectures (2,3,4, 9,11, 12)	Scientific papers, text books & Internet	X	X	X	X	
			a4	Lectures (5,8)	Scientific papers, text books & Internet	X	X	X	X	

			a5	Lectures (4,5, 8)	Scientific papers, text books & Internet	X	X	X	X	
Intellectual skills	2.2.4. Risk assessment in the field of practice	B3 Interpret different laboratory results including biochemical, haematological and microbiological data and other patient clinical data B4 Advise patients and other healthcare professionals about effective use of medicines, possible interactions with other drugs or food and health promotion as well as infection control strategies.	b1-b5	Lectures (Risk managemen t case studies)	Scientific papers, text books and Internet	X	X	X	X	X
Professional skills	2.3.1. Apply professional skills in the field of practice	C5 Adopt risk management strategies including infection control programs as well as	c1	Lectures (all)	Scientific papers, text books and Internet	X	X	X	X	X

		medication errors minimizing strategies	c2	Lectures (1-5)	Scientific papers, text books and Internet	X	X	X	X	X
		C6 Comprehend the importance of good laboratory and clinical practice (GCP) guidelines in pharmacy practice.	c1	Lectures (all)	Scientific papers, text books and Internet	X	X	X	X	X
			c3	Lectures (6-12)	Scientific papers, text books and Internet	X	X	X	X	
General & Transferable skills	2.4.1. Effective communication	D1Communicate effectively in an oral and a written way	d1	Activity (Risk management case study)	Scientific papers, text books and Internet		X		X	X
	2.4.6. show leadership skills in professional	D6 Develop decision making, critical thinking, problem solving and time management skills	d2	Activity (Risk management case study)	Scientific papers, text books and Internet		X		X	X

	field									
	2.4.4. Use different resources for data collection	D7 Develop self learning skills	d3	Activity (Risk management case study)	Scientific papers, text books and Internet		X		X	X

Hospital Pharmacy

Course specification of Hospital Pharmacy

Course specifications:

- **Program on which the course is given:** Clinical Pharmacy Diploma
- **Major or Minor element of program:** Major
- **Department offering the program:** -
- **Department offering the course:** Pharmacy practice Dept.
- **Date of specification approval:** 2019

1- Basic information:

Title: **Hospital Pharmacy** Code: Elective course

Credit hours: 2 hrs/week (Lecture only)

Total: 2 hrs lectures /week

2- Overall aim of the course:

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

Describe the healthcare functions of private and public facilities, inpatient and outpatient services, military facilities, and volunteer facilities, different pharmaceutical services in hospital pharmacy, hospital formulary, Pharmacy & therapeutic committee, pharmacist-patient care process and medication distribution systems, different drug related problems and medication errors as well as good dispensing practices of different classes of medications including controlled drugs, sterile preparations, hazardous products, biopharmaceuticals and vaccines

3- Intended learning outcome s (ILO's):

Knowledge and Understanding	
a1	outline different types of health facilities, duties of hospital pharmacist as well as hospital pharmacy services
a2	Describe medication management and distribution systems
a3	Enumerate guidelines for proper handling of special classes of medicines including narcotics, vaccines, biopharmaceuticals, radiopharmaceuticals and cytotoxic drugs
a4	Describe several pharmacy automated dispensing technologies such as carousel, pneumatic tube, barcode and others
a5	List different drug related problems and medication errors
Professional and practical skills	
b1	Conduct counselling sessions with patients or other healthcare professionals effectively
b2	Apply different strategies to minimize medication errors and drug related problems
b3	Demonstrate understanding of the pharmacist code of ethics as well as patients' rights
Intellectual skills	
c1	Differentiate between good and bad practices for dispensing of different pharmaceuticals including controlled drugs, vaccines, biopharmaceuticals and hazardous compounds
c2	Analyze common hazardous situations contributing to medication errors and drug related problems
c3	Evaluate different communication situations with other pharmacists, physicians or patients

General and Transferable skills	
d1	Communicate effectively both verbally and nonverbally
d2	Use information technology to collect and present data

4. Course Content:

Week	Lecture content (2 hr/w)
1st	Introduction to hospital pharmacy
2nd	Job description of clinical pharmacist & code of ethics
3rd	Medication management
4th	Medication distribution systems
5th	Dispensing of controlled drugs
6th	Pharmacist-patient care process
7th	Drug related problems
8th	Medication errors & management strategies
9th	Use of technology in medication dispensing
10th	Patient counselling
11th	Dispensing of vaccines
12th	Dispensing of biological products
13th	Dispensing of cytotoxic drugs & radiopharmaceuticals
14th	Presentation

15th	Final written exams

5- Teaching and Learning Methods:

- Lectures
- Open discussion
- Case study
- Demonstrative video
- Self learning: presentation about different topics related to hospital pharmacy practice selected , prepared and presented by the students

6- Student Assessment methods:

Written exam to assess: a1, a2, a3, a4, a5, b1, b2, b3, c1, c2, c3

Oral exam to assess: a1, a2, a3, a4,a5, b1, b2, b3, c1, c2, c3

Course activities to assess: d1, d2

Assessment schedule:

Assessment (1): Presentation	Week 14
Assessment (2): Written exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
• Presentation	20	20%
• Written exam	60	60 %

• Oral exam	20	20%
TOTAL	**100**	**100%**

7- References and books:

A-Scientific Papers

P. Elsinga, S. Todde, I. Penuelas, G. Meyer, B. Farstad, et al. Guidance on current good radiopharmacy practice (cGRPP) for the small-scale preparation of radiopharmaceuticals. Eur J Nucl Med Mol Imaging, 20 March, 2010

Ruths S, Viktil KK, Blix HS. Classification of drug-related problems. Tidsskr Nor Lægeforen 2007; 127: 3073–6

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

C- Suggested books:

Egyptian Clinical Pharmacy Standards of Practice, Egyptian Drug Authority, Ministry of Health

Facilities required for teaching and learning:

For lectures: Black (white) boards, data show

Course Coordinator: Assis Prof. Gehan F. Balata

Matrix I of Hospital Pharmacy

	Course Contents	ILOs												
		Knowledge and Understanding					Professional and practical skills			Intellectual skills			General Transferable skills	
		a1	a2	a3	a4	a5	b1	b2	b3	c1	c2	c3	d1	d2
1	• Introduction to hospital pharmacy	x												
2	• Job description of clinical pharmacist & code of ethics	x							x					
3	• Medication management		X											
4	• Medication distribution systems		x											
5	• Dispensing of controlled drugs			x			x			x				
6	• Pharmacist-patient care process	x		x			x							
7	• Drug related problems			x		x	x	x		x	x			
8	• Medication errors & management strategies			x		x	x	x		x	x			

9	• Use of technology in medication dispensing				x									
10	• Patient counselling						x					x	x	
11	• Dispensing of vaccines and biopharmaceutical products			x						x				
12	• Dispensing of radiopharmaceuticals and cytotoxic drugs			x						x				
13	• Presentation												x	x

Course Coordinator: Assis Prof. Gehan F. Balata

Matrix II of Hospital pharmacy course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	case study/ videos	Self learning	Written exam	preentation	Oral exam
1	Introduction to hospital pharmacy	Student book Essential books	x			x		x
2	Job description of clinical pharmacist & code of ethics	Student book Essential books	x			x		x
3	Medication management	Student book Essential books	x			x		x
4	Medication distribution systems	Student book Essential books	x	x		x		x
5	Dispensing of controlled drugs	Student book Essential books	x			x		x
6	Pharmacist-patient care process	Student book Essential books	x			x		x
7	Drug related problems	Student book Essential books	x	x		x		x
8	Medication errors & management strategies	Student book Essential books	x	x		x		x
9	Use of technology in medication dispensing	Student book Essential books	x	x		x		x
10	Patient counselling	Student book Essential books	x	x		x		x
11	Dispensing of vaccines	Student book Essential books	x			x		x

12	Dispensing of biological products	Student book Essential books	x	x		x		x
13	Dispensing of cytotoxic drugs & radiopharmaceuticals		x					
14	Presentation	internet search			x		x	

Zagazig university

Faculty of Pharmacy

Sterile solutions

Course specification of sterile solutions

Course specifications:

- **Program on which the course is given:** Clinical Pharmacy Diploma
- **Major or Minor element of program:** Major
- **Department offering the program:** -
- **Department offering the course:** Pharmaceutics Dept.
- **Date of specification approval:** 2019

1- Basic information:

Title: **Sterile solutions** Code: Elective course

Credit hours: 2 hrs/week Practical: -

Total: 2 hrs lectures /week

2- Overall aim of the course:

On completion of the course, the students will be able to: Describe Characteristics of parenteral dosage forms, their routes of administration, advantages and disadvantages of parentral preparations, different types of parentral formulations, large and small volume parentrals, packaging of parentrals, total parentral nutrition, IV incompatibilities, different types of sterilization as well as Pharmacopeia requirements for compounding of parentrals.

3- Intended learning outcome s (ILO's):

Knowledge and Understanding	
a1	Enumerate advantages, disadvantages, characteristics and requirements of parentral preparations as well as different routes of parentral administration and guidelines for needle selection
a2	Outline different ingredients and packaging materilas used in formulation and packaging of different parentral preparations
a3	Describe parentral nutrition: advantages, disadvantages, limitations, types and uses as well as different incompatibilities
a4	Describe different pharmacopeia requirements for compounding of parentrals as well as sterilization methods
Professional and practical skills	
b1	Solve different problems related to parentral solutions including milliequivalent, milliosmoles, millimoles, rate of flow and quantities for TPN preparation
Intellectual skills	
c1	Select the proper ingredients and packaging materials for preparation and packaging of parentrals
c2	Identify different types of parentral incompatibilities and management strategies
c3	Select the proper sterilization method suitable for different parentarls
General and Transferable skills	
d1	Develop problem solving and critical thinking skills

4. Course Content:

Week	Lecture content (2 hr/w)
1st	Chapter 1: Introduction to Parenteral Solutions: General description Characteristics of parenteral dosage forms
2nd	Chapter 1: Introduction to Parenteral Solutions: Parenteral Administration Routes Guide line for needle selection
3rd	Chapter 1: Introduction to Parenteral Solutions: Advantages of parenteral preparations Disadvantages of parenteral preparations Safety, Accuracy, and Attitude
4th	Chapter 2: Parenteral formulations: 1- Solutions
5th	Chapter 2: Parenteral formulations: 2- suspensions 3- emulsions
6th	Chapter 3 : Large and Small Volume Parenteral Manufacturing:
7th	Calculations involved in preparation of isotonic parenteral solutions
8th	Calculations involved in preparation of isotonic parenteral solutions
9th	Chapter 4: Packaging of parenteral preparation
10th	Chapter 5: Total Parenteral Nutrition (TPN)
11th	Chapter 6: I.V Drug Incompatibilities

12th	Chapter 7: Sterilization **Delivery of self- assessment sheet (problem solving)**
13th	Chapter 8: Pharmacopeia requirements for compounding of parentrals
14th	Chapter 8: Pharmacopeia requirements for compounding of parentrals
15th	Final written exams

5- Teaching and Learning Methods:

- Lectures
- Case study
- Demonstrative video
- Problem solving

6- Student Assessment methods:

Written exam to assess: a1, a2, a3, a4, b1, c1, c2, c3, d1

Oral exam to assess: a1, a2, a3, a4, b1, c1, c2, c3

Problem solving to assess: d1

Assessment schedule:

Assessment (1): Presentation	Week 12
Assessment (2): Written exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
• Problem solving	20	20%
• Written exam	60	60 %
• Oral exam	20	20%
TOTAL	**100**	**100%**

7- References and books:

1. Pharmaceutical dosage forms: Parenteral medications vol. 1, 2nd edn, Dekker, 1992.
2. Sterile Dosage Forms: Their preparation and clinical application. Ed., Salvatore Turco, Publisher:Lippincott Williams and Wilkins.
3. Good pharmaceutical manufacture practice, rational and compliance, Jhon Sharp, CRC press
4. 2. Pharmaceutics; the Science of Dosage Form Design. Ed., Michael E. Aulton (2006). Publisher: Thomson Learning.
5. 3. Remington; the Science and Practice of Pharmacy (21st edition). Publisher: Lippincott Williams and Wilkins.
6. 4. USP (797) Pharmaceutical Compounding—Sterile Preparations

D- Websites:

www.researchgate.net

www.speciation.net

www.ncbi.nlm.nih.gov

http//www.lib.utexas.edu/etd/d/2003/codyk036/codyk036.pdf

http://en.wikipedia.org/wiki/Code-switching

Matrix I of Sterile Solutions

	Course Contents	ILOs								
		Knowledge and Understanding				Professional and practical skills	Intellectual skills			General Transferable skills
		a1	a2	a3	a4	b1	c1	c2	c3	d1
1	Chapter 1: Introduction to Parenteral Solutions: • General description • Characteristics of parenteral dosage forms	x								
2	Chapter 1: Introduction to Parenteral Solutions: • Parenteral Administration Routes • Guide line for needle selection	x								
3	Chapter 1: Introduction to Parenteral Solutions: Advantages of parenteral preparations	x								

	Disadvantages of parenteral preparations Safety, Accuracy, and Attitude									
4	Chapter 2: Parenteral formulations: 1- Solutions		x				x			
5	Chapter 2: Parenteral formulations: • suspensions • emulsions		x				x			
6	Chapter 3 : Large and Small Volume Parenteral Manufacturing:	x				x				x
7	Calculations involved in preparation of isotonic parenteral solutions					x				x
8	• Chapter 4: Packaging of parenteral preparation			x			x			
9	• Chapter 5: Total Parenteral Nutrition (TPN)			x	x	x	x			
10	• Chapter 6: I.V Drug Incompatibilities			x				x		x
11	• Chapter 7: Sterilization				x				x	

12	• Chapter 8: Pharmacopeia requirements for compounding of parentrals				x		x			
13	• **self- assessment sheet (problem solving)**					x				x

Course coordinator: Gehan F.Balata

Head of department: Prof. Nagia ElMeghrab

Matrix II of Sterile solutions course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	videos	case study/ problem solving	Written exam	problem solving sheet	Oral exam
1	Chapter 1: Introduction to Parenteral Solutions: General description Characteristics of parenteral dosage forms	Student book Essential books	x			x		x
2	Chapter 1: Introduction to Parenteral Solutions: Parenteral Administration Routes Guide line for needle selection	Student book Essential books	x			x		x
3	Chapter 1: Introduction to Parenteral Solutions: Advantages of parenteral preparations Disadvantages of parenteral preparations Safety, Accuracy, and Attitude	Student book Essential books	x			x		x
4	Chapter 2: Parenteral formulations: 1- Solutions	Student book Essential books	x			x		x
5	Chapter 2: Parenteral formulations: 2-suspensions 3-emulsions	Student book Essential books	x			x		x
6	Chapter 3 : Large and Small Volume Parenteral Manufacturing:	Student book Essential books	x			x		x

7	Calculations involved in preparation of isotonic parenteral solutions	Student book Essential books	x		x	x	x	
8	Chapter 4: Packaging of parenteral preparation	Student book Essential books	x	x		x		x
9	Chapter 5: Total Parenteral Nutrition (TPN)	Student book Essential books	x		x	x	x	
10	Chapter 6: I.V Drug Incompatibilities	Student book Essential books	x	x		x		x
11	Chapter 7: Sterilization	Student book Essential books	x			x		x
12	Chapter 8: Pharmacopeia requirements for compounding of parentrals	Student book Essential books	x	x		x		x
13	problem solving	self-assessment sheet	x		x	x	x	

Course coordinator: Gehan F.Balata

Head of department: Prof. Nagia ElMeghrab

Course Specification of Metabolic syndrome and insulin resistance

Course Specification of selected topic

(Metabolic Syndrome and Insulin Resistance)

Course specifications:

- **Program on which the course is given:** Clinical Pharmacy Diploma
- **Major or Minor element of program:** Major
- **Department offering the program:** -
- **Department offering the course:** Pharmacology and toxicology Dept.
- **Date of specification approval:** 2019

1- Basic information:

Title: **Metabolic syndrome and insulin resistance** Code: **D1012**

Credit hours: 2 hrs/week Practical: -

Total: 2 hrs lectures /week

2- Professional information:

A-Overall Aims of the Course:

On completion of the course, students will be able to: Describe

Etiology, causes, role of life style of the person, types of the diseases involved, life threatening of the human being, management, causes of insulin resistance, pre-diabetes, complications of insulin resistance,

B-Intended Learning Outcomes of Metabolic syndrome and insulin resistance (ILOs):

Knowledge and Understanding	
a1	Describe the mechanisms insulin secretion and action
a2	Outline the clinical significance insulin resistance and metabolic syndrome
a3	Explain the endocrine aspects of the metabolic syndrome
Intellectual skills	
c1	Differentiate between insulin resistance and metabolic syndrome
c2	Suggest the appropriate treatment for insulin resistance and diabetes mellitus
Transferable and general skills	
d1	Demonstrate critical thinking and decision making
d2	Work effectively as a member of a team

C- Contents:

Week No.	Lecture (2 hrs/week)
1	Insulin Structure of insulin
2	Actions of insulin
3	Insulin resistance and its types Pathophysiology of Insulin Resistance Classification of pre-receptor, receptor, and post-receptor causes
4	Etiology of insulin resistance Signs and symptoms of insulin resistance
5	Epidemiology of insulin resistance Prognosis
6	What is Prediabetes Symptoms of insulin resistance and prediabetes Who should be tested for prediabetes Risk factors for prediabetes Diagnosis of insulin resistance and prediabetes
7	Steps to reverse insulin resistance and prediabetes Hyperinsulinemia, types, signs and symptoms Complications of hyperinsulinemia Pathological conditions associated with hyperinsulinemia
8	Reducing of Hyperinsulinemia Measurement of insulin and HOMA-IR

	The Kraft test
9	Diabetes People at High Risk for Diabetes American Board Guidelines Regarding Diabetes Management of diabetes mellitus
10	Metabolic Syndrome: Definitions, Diagnosis and co-morbid conditions Metabolic Syndrome: Pathophysiology and epidemiology Metabolic Syndrome: Factors affecting prevalence
11	Atherothrombosis and metabolic syndrome Consequences of metabolic syndrome: Endothelial dysfunction Endocrine aspects of metabolic syndrome
12	Non Alcoholic Fatty liver disease Treatments for the metabolic syndrome Polypharmacy in the treatment of metabolic syndrome
13	Obesity
14	Polycystic Ovary syndrome Activity
15	Final exams

D- Teaching and Learning Methods:

- Lectures
- Self-learning
- Open discussion

- Case studies

Projects (self learning about Polycystic Ovary syndrome & report writing)

E- Student Assessment Methods:

4. Written exam to assess: a1, a2, a3, c1, c2, d1
5. Oral exam to assess: a1, a2, a3, c1, c2, d1
6. Activity, quizzes and projects a1, a2, a3, c1, d1, d2

Assessment schedule:

Assessment (1):Activity	Week 14
Assessment (2): Written exam	Week 15
Assessment (3): Oral exam	Week 15

Weighting of Assessment

Assessment method	Marks	Percentage
Activity	20	20%
Written exam	60	60%
Oral exam	20	20%
TOTAL	100	100%

F- Facilities Required for Teaching and Learning:

Black (white) board, Data show.

H- List of References:

1- Essential books:

i- Richard A. Harvey, Michelle A. Clark, Lippincott's Illustrated Reviews Pharmacology 5th ed. Lippincott Williams & Wilkins, 2012

2- Recommended books:

vii-H.P.Rang,M.M.Dale,J.M.Ritter& R.J. Flower ed. RANG & DALE Pharmacology 6th 2008 Churchill 2. Livingstone Elsevier London.

viii- Katzung, B.G., ed. Basic and Clinical Pharmacology. 9th ed. New York : McGraw Hill, 2006.

ix- Bennet P.N., and M.J. Brown, eds. Clinical Pharmacology. 10th ed. London :Churchil Livingstone, 2006.

x- Hardman J.G., L.E. Limbrid, and A.G. Gilman, eds. Goodman &Gilman's the Pharmacological Basis of Therapeutics. 10th ed. New York : McGraw Hill, 2006.

xi- Luellmann H., L. Hein, K. Mohr, and D. Bieger. Color Atlas of Pharmacology. 3rd ed. Stuttgart :Thieme, 2005.

xii-Brenner,G.M.andSteven,C.W.., Pharmacology,3rd ed.,2010

3- Periodicals and websites:

- British J Pharmacol,
- European J Pharmacol,
- Pharmacology,
- Pharmacology and Toxicology
- Pubmed.com

www.medconsult.com/www.pharmanet.com

https://reference.medscape.com/drug-interactionchecker

Course Coordinator: **Prof. Dr. Salah A. Ghareib Atteiah**

Head of department/ Prof.Dr/ Mona Fouad

Date:

Matrix I of selected topics (Metabolic Syndrome and Insulin Resistance and course)								
Week number	Course Contents	Knowledge & understanding			Intellectual skills		General & Transferable skills	
		a1	**a2**	**a3**	**c1**	**c2**	**d1**	**d2**
1	Insulin Structure of insulin Mechanism of insulin release from the pancreas Factors affecting insulin secretion	X						
2	Actions of insulin Mechanism of action of insulin	X						
3	Insulin resistance and its types Pathophysiology of Insulin Resistance Classification of pre-receptor, receptor, and post-receptor causes	X	X					
4	Etiology of insulin resistance Signs and symptoms of insulin resistance		X					
5	Epidemiology of insulin resistance Prognosis		X					
6	What is Prediabetes Symptoms of insulin resistance and prediabetes Who should be tested for prediabetes Risk factors for prediabetes Diagnosis of insulin resistance and prediabetes		X					
7	Steps to reverse insulin resistance and prediabetes Hyperinsulinemia, types, signs and symptoms Complications of hyperinsulinemia Pathological conditions associated with hyperinsulinemia		X	X		X		

8	~~Reducing of Hyperinsulinemia~~ Measurement of insulin and HOMA-IR The Kraft test		X	X		X		
9	Diabetes People at High Risk for Diabetes American Board Guidelines Regarding Diabetes Management of diabetes mellitus		X	X		X		
10	Metabolic Syndrome: Definitions, Diagnosis and co-morbid conditions Metabolic Syndrome: Pathophysiology and epidemiology Metabolic Syndrome: Factors affecting prevalence		X		X			
11	Atherothrombosis and metabolic syndrome Consequences of metabolic syndrome: Endothelial dysfunction Endocrine aspects of metabolic syndrome		X					
12	Non Alcoholic Fatty liver disease Treatments for the metabolic syndrome Polypharmacy in the treatment of metabolic syndrome		X	X				
13	Obesity		X	X				
14	**Polycystic Ovary syndrome** **Activity**		X	X			X	X

Matrix II of Metabolic syndrome and insulin resistance course				
Week	**Course contents**	**Sources**	**Teaching and learning methods**	**Assessment method**

No.			Lectures	case study	self learning	Written exam	report	Oral exam
1	Insulin Structure of insulin Mechanism of insulin release from the pancreas Factors affecting insulin secretion	Student book Essential books	x			x		x
2	Actions of insulin Mechanism of action of insulin	Student book Essential books	x			x		x
3	Insulin resistance and its types Pathophysiology of Insulin Resistance Classification of pre-receptor, receptor, and post-receptor causes	Student book Essential books	x			x		x
4	Etiology of insulin resistance Signs and symptoms of insulin resistance	Student book Essential books	x			x		x
5	Epidemiology of insulin resistance Prognosis	Student book Essential books	x			x		x
6	What is Prediabetes Symptoms of insulin resistance and prediabetes Who should be tested for prediabetes Risk factors for prediabetes Diagnosis of insulin resistance and prediabetes	Student book Essential books	x			x		x
7	Steps to reverse insulin resistance and prediabetes Hyperinsulinemia, types, signs and symptoms Complications of hyperinsulinemia Pathological conditions associated with hyperinsulinemia	Student book Essential books	x	x		x		**x**
8	Reducing of Hyperinsulinemia Measurement of insulin and HOMA-	Student book Essential	x	x		x		x

	IR The Kraft test	books						
9	Diabetes People at High Risk for Diabetes American Board Guidelines Regarding Diabetes Management of diabetes mellitus	Student book Essential books	x	x		x		x
10	Metabolic Syndrome: Definitions, Diagnosis and co-morbid conditions Metabolic Syndrome: Pathophysiology and epidemiology Metabolic Syndrome: Factors affecting prevalence	Student book Essential books	x			x		x
11	Atherothrombosis and metabolic syndrome Consequences of metabolic syndrome: Endothelial dysfunction Endocrine aspects of metabolic syndrome	Student book Essential books	x			x		x
12	Non Alcoholic Fatty liver disease Treatments for the metabolic syndrome Polypharmacy in the treatment of metabolic syndrome	Student book Essential books	x	x		x		x
13	Obesity	Student book Essential books	x			x		x
14	**Polycystic Ovary syndrome** Activity	internet search			x		x	

Course Coordinator: Prof. Dr. Salah A. Ghareib Atteiah

Head of department/ Prof.Dr/ Mona Fouad

Cardiovascular evaluation

Course specification of Cardiovascular evaluation

Course specifications:

- **Program on which the course is given:** Clinical Pharmacy Diploma
- **Major or Minor element of program:** Major
- **Department offering the program:** -
- **Department offering the course:** Cardiology Dept.
- **Date of specification approval:** 2019

1- Basic information:

Title: Cardiovascular evaluation Code: D1008

Credit hours: 1 hrs/week Practical:1

Total: 2 hrs lectures /week

2- Overall aim of the course:

On completion of the course, the students will be able to: Describe history tarring, physical examination, heart sounds , jugular venous pressure, peripheral circulation and arterial , pulses , heart rate, prognostic and diagnostic testing , chest and radiography, electro cardiogram, exercise stress test , echocar diagram , nuclear cardiology , pharmacologic stress test , computed tomography , catheterization .

3- Intended learning outcome s (ILO's):

Knowledge and Understanding	
a1	Outline different procedures and techniques for diagnosing different cardiovascular diseases
a2	Describe different prognostic and diagnostic testing, exercise stress test, pharmacologic stress test
a3	Discuss basics of cardiovascular hemodynamics including pressure tracing, blood pressure response, and cardiovascular hemodynamics
Professional and practical skills	
b1	Interpret different laboratory findings of cardiovascular disease patients
Intellectual skills	
c1	Differentiate between several types of stress testing and their indications and contraindications
c2	Differentiate between ordering a nuclear stress test versus a stress echocardiogram
General and Transferable skills	
d1	Develop interpersonal communication skills
d2	Develop critical thinking and problem solving skills

4. Course Content:

Week	Lecture content (1 hr)	Practical (1 hr)
1st	Introduction to history tarring	Course orientation
2nd	physical examination, heart sounds , jugular venous pressure	Case study
3rd	peripheral circulation and arterial	Case study
4th	pulses , heart rate	Case study
5th	prognostic and diagnostic testing	Case study
6th	chest and radiography	Case study
7th	electro cardiogram	Case study
8th	exercise stress test	Case study
9th	echocar diagram	Case study
10th	nuclear cardiology	Case study
11th	pharmacologic stress test	Case study
12th	computed tomography	Case study
13th	catheterization	Case study
14th	Revision	Practical exam
15th	Final written exams	

5- Teaching and Learning Methods:

- Lectures
- Case study
- Demonstrative video
- Small group discussion

6- Student Assessment methods:

Written exam to assess: a1, a2, a3, c1, c2

Oral exam to assess: a1, a2, a3, c1, c2, d1

Practical exam & student work to assess: b1, d2

Assessment schedule:

Assessment (1): Practical exam	Week 14
Assessment (2): Written exam	Week 15
Assessment (3): oral exam	Week 15

Weighting of Assessment:

Assessment method	Marks	Percentage
• Practical exam	30	30%
• Written exam	50	50 %
• Oral exam	20	20%
TOTAL	**100**	**100%**

7- References and books:

- Marriot's Practical Electrocardiography.10th Edition, 2011 Lippincott Williams & Wilkins
- Harrisons' Principles of Internal Medicine.16th Edition, 2011 McGraw Hill • The Heart. 6th Edition, 2011 McGraw Hill
- http://www.filecluster.com/IPad/Hurst-s-the-heart-13th-edition-192386.hmtl
- http://www.ebookee.org/Hurst-s-the-Heart-13th-edition-2-volume-set1401966.hmtl

Matrix I of Cardiovascular evaluation

	Course Contents	ILOs							
		Knowledge and Understanding			Professional and practical skills	Intellectual skills		General Transferable skills	
		a1	a2	a3	b1	c1	c2	d1	d2
1	Introduction to history tarring	x							
2	physical examination, heart sounds , jugular venous pressure	x		x	x				
3	peripheral circulation and arterial	x		x	x				
4	pulses , heart rate	x		x	x				
5	prognostic and diagnostic testing	x	x						
6	chest and radiography	x							
7	electro cardiogram	x			x				
8	exercise stress test	x	x		x	x			
9	echocar diagram	x			x		x		
10	nuclear cardiology	x			x		x		

11	pharmacologic stress test	X	x		x	x			
12	computed tomography	X			x				
13	catheterization	x							
Practical sessions									
	Case study	x	x	x	x			x	x

Matrix II of Cardiovascular evaluation course

Week No.	Course contents	Sources	Teaching and learning methods			Assessment method		
			Lectures	videos	case study/ problem solving	Written exam	Practical exam	Oral exam
1	Introduction to history tarring	Student book Essential books	x			x		**x**
2	physical examination, heart sounds , jugular venous pressure	Student book Essential books	x	x	x	x	x	**x**
3	peripheral circulation and arterial	Student book Essential books	x	x	x	x	x	**x**
4	pulses , heart rate	Student book Essential books	x	x	x	x	x	**x**
5	prognostic and diagnostic testing	Student book Essential books	x	x	x	x	x	**x**
6	chest and radiography	Student book Essential books	x	x	x	x	x	**x**
7	electro cardiogram	Student book Essential books	x	x	x	x	x	**x**
8	exercise stress test	Student book Essential books	x	x	x	x	x	**x**
9	echocar diagram	Student book Essential books	x	x	x	x	x	x

10	nuclear cardiology	Student book Essential books	x	x	x	x	x	x
11	pharmacologic stress test	Student book Essential books	x	x	x	x	x	x
12	computed tomography	Student book Essential books	x	x	x	x	x	x
13	catheterization	Student book Essential books	x	x	x	x	x	x