



Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
**Academic Reference Standards for
Postgraduate Programs**



Academic Reference Standards (ARS)
for
Diploma of Biochemistry
Department of Biochemistry

ARS

Academic Year: 2021/2022

رئيس القسم
أ.م.د/ محمد السيد المسييري

signature



Mansoura University
Faculty of Pharmacy
Quality Assurance Unit
Academic Reference Standards for
Postgraduate Programs



I. Attributes of the graduate:

The graduates of the Master Degree of Pharmaceutical Sciences (Pharmaceutical Organic Chemistry) should be capable of:

- Applying the basics and methodologies of scientific research and manipulating its various tools in the field of Biochemistry.
- Identifying and solving problems in the field of Biochemistry.
- Mastering adequate range of specialized professional skills and using appropriate technology to improve his/her professional practice.
- Communicating effectively and having ability to participate and lead teamwork.
- Taking appropriate professional and scientific decisions in light of the available information.
- Employing the available resources to achieve and preserve the maximum benefit.
- Exhibiting awareness of his/her role in the community development and preservation of environment in response to regional global changes.
- Reflecting commitment to integrity, credibility and rules of the pharmacy profession.
- Developing continuous self-academic and professional learning.

II. General Standards

1. Knowledge and Understanding:

Upon successful completion of the Program, graduates should be able to:

- 1.1 Identify the theories and fundamentals of Biochemistry and other related fields.
- 1.2 Distinguish the value of ethics and legal issues of research and professional practice in Biochemistry.
- 1.3 Identify principles and fundamentals of quality in professional practice in the field of biochemical analysis.
- 1.4 Illustrate the mutual interaction between the biochemical professional practice and the surrounding environment.

2. Intellectual Skills

Upon successful completion of the Program, graduates should be qualified to:

- 2.1 Analyze and evaluate information in the field of Biochemistry
- 2.2 Deduce solutions for specialized problems in absence of some information



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- 2.3 Integrate information to solve professional problems.
- 2.4 Risk assessment in professional practice of Biochemistry.
- 2.5 Generate professional decision in response to various professional contexts.

3. Professional and Practical Skills

Upon completion of the program, graduates should be able to

- 3.1 The application of professional skills in Biochemistry.
- 3.2 Write professional research reports in Biochemistry.

4. General and transferable skills:

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

- 4.1 Communicate effectively by various methods
- 4.2 Utilize effectively information technology in professional practice development.
- 4.3 Perform self assessment, continuous learning and identifying personal educational needs.
- 4.4 Use different resources to acquire knowledge and information.
- 4.5 Work in a team and manage time effectively.
- 4.6 Lead a team in a familiar professional context.
- 4.7 Continuous self-learning.

Date of course specification approval: 8/11/2021



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biochemistry (1) Course Specification



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification
Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
الكيمياء الحيوية 1
Biochemistry I

القائم بأعمال رئيس القسم
أ.م.د/ محمد المسيري

منسق المقرر
أ.د/ آمال الجيار



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biochemistry (1) Course Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2021/2022–first semester
Date of course specification approval	8/11/2021

A. Basic Information: Course data:

Course Title	Biochemistry I
Course Code	PBD-101
Prerequisite	-----
Teaching Credit Hours: Lecture	2
Practical:	1
Total Credit Hours	3

B. Professional Information

1- Overall Aims of Course:

1. Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences.
2. Gain the skills and attributes required for the responsible practice of biochemistry field from the pharmaceutical view.
3. Study the chemical structure and function of nucleic acids and their role in carrying the genetic information.
4. Study the basic chemistry of biological molecules including: carbohydrates, lipid & protein.
5. Study the different types of immunoglobulins and their role in different types of diseases.
6. Study the different types of vitamins, their importance and their deficiencies.
7. Understanding the functions of enzymes and their role in metabolic pathways.
8. Equip students with skills of value to future employment in some areas of biology.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of metabolism
(A2)	a2	Identify the mutual interaction between professional practices on one hand and



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		Community and surrounding environment on the other hand.
(A3)	a3	Express clearly the up to date information and methods in biochemistry, genomics and applications of biotechnology in different fields

2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B3)	b1	Acquire the needed pharmaceutical knowledge to manage professional problems in biochemistry.
(B4)	b2	Write concrete reports on the obtained results with conclusive significances.
(B5)	b3	Recognize possible hazards during work and how to deal with.
(B7)	b4	Take professional decisions in the area of specialization.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
(C2)	c2	Write with confidence reliable scientific reports in biochemical research.
(C3)	c3	Perform various methods and biochemical techniques of analysis and assure the quality and suitability of instruments.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D1)	d1	Practice self-assessment of learning needs in the field of biochemistry.
(D2)	d2	Collecting information from various sources in the field of biochemistry.
(D3)	d3	Work effectively as a member of team.
(D4)	d4	Get maximum use of time to achieve goals.
(D5)	d5	Study independently and plan research studies.

3. Course Contents

Week No.	Topics	Lecture Hours
1, 2	Carbohydrates chemistry.	4
3, 4, 5	Lipid chemistry.	6



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6,7, 8	Protein chemistry.	6
9	Nucleic acids.	2
10, 11	Vitamins & Enzymes	2
12	Body fluids.	2
Total: 12 weeks		24
Week No.	Practical / Tutorial topics	hours
1, 2	Carbohydrates chemistry :monosaccharides/ disaccharides/polysaccharides	4
3, 4	Protein chemistry- Heat coaguable protein (Albumin)	4
5, 6	Protein chemistry-neutral proteins (Peptone& Gelatin)/ Alkaline proteins (M-protein &Casein)	4
6, 7	Non-protein Nitrogenous Compounds (Urea& Na-Urate)	4
8, 9	General scheme / Final Revision	4
10	Practical Exam	2

4- Matrix of knowledge and skills of the course(contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Carbohydrates chemistry.	a1,a2,a3	b1,b2	c2, c3	d1,d2,d3,d5
3	Lipid chemistry	a2,a3	b1,b4	c1, c2, c3	d1,d2,d3,d4
6	Protein chemistry	a2,a3	b2,b3,b4	c2,c3	d1,d2,d5
9	Nucleic acids.	a1,a2,a3	b1,b2,b3,b4	c3	d1,d2,d3,d4,d5
10	Vitamins & Enzymes.	a1,a2,a3	b1, b3	c1	d1,d2,d5
12	Body fluids.	a1,a3	b1,b2,b4	c2	d2,d3,d4,d5

* Knowledge and Understanding

Intellectual Skills*Professional and Practical Skills

****General and Transferable Skills



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5- Teaching and Learning Methods:

5.1	Lectures using Power Point(PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study
5.4	Practical training/laboratory by lab equipment.

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Practical Examination	Assignments prepared by students and sent to the supervisor electronically for evaluation. To assess professional skills	10	20
Assessment 2	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	70
Assessment 3	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10
				100 %

7- List of References

	Reference	Type
1.	Lippincott's Illustrated Reviews: Biochemistry. Pamela C. Champe, Richard A. Harvey, Denise R. Ferrier; 7th edition-2017.	Essential Book(Text Books)
2	Harper's Biochemistry. Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell30th edition-2018.	Books

8- Signature

Course Coordinator	Acting Head of Department	Date
Prof. Dr. Amal El Gayar	Ass. Prof. Dr. Mohamed El-Mesery	8/11/2021

* Date of Dept. Council Approval: 8/11/2021



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Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biochemistry II Course Specification



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification
Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
الكيمياء الحيوية 2
Biochemistry II

القائم بأعمال رئيس القسم
أ.م.د/ محمد المسيري

منسق المقرر
أ.د/ آمال الجيار



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biochemistry II Course Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2020/2021 - second semester
Date of course specification approval	14/12/2021

A. Basic Information: Course data:

Course Title	Biochemistry II
Course Code	PBD-106
Prerequisite	-----
Teaching Hours: Lecture	عدد الساعات الزمنية 2
Practical:	عدد الساعات الزمنية 1
Total Credit Hours	3

B. Professional Information

1- Overall Aims of Course:

- 1- Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences.
- 2- Gain the skills and attributes required for the responsible practice of biochemistry field from the pharmaceutical view.
- 3- Study different metabolic pathways involved in carbohydrates, lipid & protein metabolism.
- 4- Understanding the functions of enzymes and their role in metabolic pathways.
- 5- Equip students with skills of value to future employment in some areas of biology.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of the metabolism.
(A5)	a2	Understande the coordination and integration between different metabolic pathways.
(A6)	a3	Study the metabolic pathways in normal human body.



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2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B3)	b1	Acquire the needed pharmaceutical knowledge to manage professional problems in biochemistry.
(B4)	b2	Write concrete reports on the obtained results with conclusive significances.
(B5)	b3	Recognize possible hazards during work and how to deal with.
(B7)	b4	Take professional decisions in the area of specialization.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
(C2)	c2	Write with confidence reliable scientific reports in biochemical research.
(C3)	c3	Perform various methods and biochemical techniques of analysis and assure the quality and suitability of instruments.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D1)	d1	Practice self-assessment of learning needs in the field of biochemistry.
(D2)	d2	Collecting information from various sources in the field of biochemistry.
(D3)	d3	Work effectively as a member of team.
(D4)	d4	Get maximum use of time to achieve goals.
(D5)	d5	Study independently and plan research studies.

3. Course Contents

Week No.	Topics	Lecture Hours
1	Carbohydrates: introduction to metabolism.	1
2	Digestion and absorption of carbohydrates.	1
3	Glycolysis and Regulation of glycolysis.	2
4	Kreb's cycle and Glycogen metabolism.	2



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5	HMP shunt and Uronic acid pathway.	1
6	Monosaccharides interconversion and gluconeogenesis.	1
7	Digestion and absorption of lipids.	1
8	Neutral lipid metabolism and B-oxidation.	2
9	Fatty acid synthesis, ketogenesis and ketolysis.	2
10	Phospholipids and Cholesterol and Sphingomyelins metabolism.	2
11	Respiratory chain.	1
12	Protein digestion, absorption and Urea cycle.	2
13	Individual amino acid metabolism.	4
Total: 12 weeks		24
Week No.	Practical / Tutorial topics	hours
1	Urine analysis	2
2	Urine report	2
3	Urine report	2
4	Serum and urine glucose levels	2
5	Renal function tests: Measurements of serum Urea and uric acid	2
6	Measurement of serum Creatinine	2
7	Liver function tests	2
8	Blood cholesterol levels	2
9	Revision	2
10	Practical Exam	2
11	Practical Exam	2



4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Carbohydrates: introduction to metabolism.	a1,a3	b1,b2,b3	c1,c2	d1,d2,d3,d4
2	Digestion and absorption of carbohydrates.	a1,a3	b1,b2,b3	c1,c2	d1,d2,d3,d4
3	Glycolysis and Regulation of glycolysis.	a1,a2	b1,b2,b4	c1 ,c3	d1,d2,d3,d5
4	Kreb's cycle and Glycogen metabolism.	a1,a2	b1,b2,b4	c1,c3	d1,d2,d3,d5
5	HMP shunt and Uronic acid pathway.	a2,a3	b1,b3,b4	c1,c2,c3	d1,d2,d4,d5
6	Monosaccharides interconversion and gluconeogenesis.	a2,a3	b1,b3,b4	c2,c3	d1,d2, d4,d5
7	Digestion and absorption of lipids.	a1,a3	b2,b3,b4	c1, c3	d1,d3,d4,d5
8	Neutral lipid metabolism and B-oxidation.	a1,a2	b2,b3,b4	c2,c3	d1,d3,d4,d5
9	Fatty acid synthesis, ketogenesis and ketolysis.	a2,a3	b1, b4	c1,c2	d2,d3,d4,d5
10	Phospholipids and Cholesterol and Sphingomyelins metabolism.	a1,a2	b1, b4	c1, c3	d2,d3,d4,d5
11	Respiratory chain.	a1,a3	b3,b4	c2,c3	d1,d2,d5
12	Protein digestion, absorption and Urea cycle.	a2,a3	b3,b4	c1,c2,c3	d1,d4,d5
13	Individual amino acid metabolism.	a1,a2,a3	b2,b3,b4	c1,c2,c3	d1,d2,d3,d4,d5

* Knowledge and Understanding

Intellectual Skills*Professional and Practical Skills

****General and Transferable Skills



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Postgraduate Studies
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5- Teaching and Learning Methods:

5.1	Lectures using Power Point(PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study
5.4	Practical training/laboratory by lab equipment.

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Practical Examination	Assignments prepared by students and sent to the supervisor electronically for evaluation. To assess professional skills	11 th week	20%
Assessment 2	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13 th week	70%
Assessment 3	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13 th week	10%
				100 %

7- List of References

	Reference	Type
1.	Lippincott's Illustrated Reviews: Biochemistry. Pamela C. Champe, Richard A. Harvey, Denise R. Ferrier; 7th edition-2017.	Essential Book(Text Books)
2	Harper's Biochemistry. Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell30th edition-2018.	Books



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Postgraduate Studies
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8- Signature

Course Coordinator	Acting Head of Department	Date
Prof. Dr. Amal El Gayar	Ass. Prof. Dr. Mohamed El-Mesery	14/12 /2021

* Date of Dept. Council Approval: 14/12/2021



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification
Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
التكنولوجيا الحيوية
Biotechnology

القائم بأعمال رئيس القسم
أ.م.د/ محمد المسيري

منسق المقرر
رئيس القسم



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biotechnology Course Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2020/2021 - second semester
Date of course specification approval	14/12/2021

A. Basic Information: Course data:

Course Title	Biotechnology
Course Code	PBD-109
Prerequisite	-----
Teaching Hours: Lecture	عدد الساعات الزمنية 2
Practical:	عدد الساعات الزمنية 0
Total Credit Hours	2

B. Professional Information

1- Overall Aims of Course:

- 1- Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences
- 2- Gain the skills and attributes required for the responsible practice of biochemistry field from the pharmaceutical view.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of the metabolism.
(A2)	a2	Identify the mutual interaction between professional practices on one hand and community and surrounding environment on the other hand.
(A3)	a3	Express clearly the up to date information and methods in biochemistry, genomics and applications of biotechnology in different fields.



2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B1)	b1	Analyze and interpret quantitative data obtained from biochemistry research in a specific and suitable form.
(B2)	b2	Suggest significant solutions for biochemical results and outcome errors based on a wide academic background.
(B3)	b3	Acquire the needed pharmaceutical knowledge to manage professional problems in biochemistry.
(B4)	b4	Write concrete reports on the obtained results with conclusive significances.
(B5)	b5	Recognize possible hazards during work and how to deal with.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
(C2)	c2	Write with confidence reliable scientific reports in biochemical research.
(C3)	c3	Perform various methods and biochemical techniques of analysis and assure the quality and suitability of instruments.
(C4)	c4	Analyze the laboratory data and their clinical significance.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D1)	d1	Practice self-assessment of learning needs in the field of biochemistry.
(D2)	d2	Collecting information from various sources in the field of biochemistry.
(D3)	d3	Work effectively as a member of team.
(D4)	d4	Get maximum use of time to achieve goals.
(D5)	d5	Study independently and plan research studies.
(D6)	d6	Utilize the available resources to update their knowledge.
(D7)	d7	Function as a productive member of team engaged in research and education.
(D8)	d8	Develop presentation skills.
(D9)	d9	Appreciate the importance of life-long learning.



3. Course Contents

Week No.	Topics	Lecture Hours
1	Introduction and historical review of biotechnology	2
2	Nucleic acids (DNA & RNA): Chemical structure, Gene expression (Replication, transcription and their regulation) and Protein synthesis and regulation	4
3	Biophysical and biochemical techniques for analysis and identification of nucleic acids and proteins: electrophoresis (nucleic acids and proteins), blotting techniques (Western, Eastern and Northern blotting), immunoassays, ELISA, ... etc.).	6
4	Recombinant DNA technology	4
5	Applications of recombinant DNA in pharmaceutical industry and medicine.	4
6	Current FDA approved biotechnology drugs such as human insulin, growth hormones and interferons.	4
Total: 12 weeks		24

4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Introduction and historical review of biotechnology	a1, a2	b1,b2, b3, b5	c1,c2,c3,	d1,d5, d6, d7, d8, d9
2	Nucleic acids (DNA & RNA): Chemical structure, Gene expression (Replication, transcription and their regulation) and Protein synthesis and regulation	a1,a3	b3, b4, b5	c1,c2, c4	d1,d2, d6, d7, d8, d9
3	Biophysical and biochemical techniques for analysis and identification of nucleic acids and proteins: electrophoresis (nucleic acids and proteins), blotting techniques (Western, Eastern and Northern blotting), immunoassays, ELISA, ... etc.).	a2,a3	b1,b2, b4, b5	c1, c3, c4	d1,d2,d3,d4,d5, d8, d9
4	Recombinant DNA technology	a1, a2,a3	b3, b4, b5	c2,c3, c4	d1,d2,d3,d4,d5, d9



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5	Applications of recombinant DNA in pharmaceutical industry and medicine.	a1, a2,a3	b1,b2, b5	c1, c4	d6, d7, d8, d9
6	Current FDA approved biotechnology drugs such as human insulin, growth hormones and interferons.	a1, a2	b1,b2, b3,	c1,c2	d1,d2,d3,d4,d5,

* Knowledge and Understanding **Intellectual Skills***Professional and Practical Skills
 ****General and Transferable Skills

5- Teaching and Learning Methods:

5.1	Lectures using Power Point(PPT) presentations
5.2	Lectures using whiteboard
	Seminar / Workshop

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	90
Assessment 2	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10
				100 %

7- List of References

	Reference	Type
1.	Biochemistry Laboratory: Modern Theory and Techniques. Second edition(2012)	Essential Book(Text Books)

8- Signature

Course Coordinator	Acting Head of Department	Date
Head of Department	Ass. Prof. Dr. Mohamed El-Mesery	14/12/2021

* Date of Dept. Council Approval: 14/12/2021



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biotechnology Course Specification





Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Clinical Biochemistry II Course
Specification



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification

Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
الكيمياء الحيوية الاكلينيكية 2
Clinical Biochemistry II

القائم بأعمال رئيس القسم
أ.م.د/ محمد المسيرى

منسق المقرر
أ.د/ أيلى عيسى



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Clinical Biochemistry II Course
Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2020/2021 - second semester
Date of course specification approval	14/12/2021

A. Basic Information: Course data:

Course Title	Clinical Biochemistry II
Course Code	PBD-107
Prerequisite	-----
Teaching Hours: Lecture	عدد الساعات الزمنية 2
Practical:	عدد الساعات الزمنية 0
Total Credit Hours	2

B. Professional Information

1- Overall Aims of Course:

1. Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences.
2. Study the functional state of liver, kidney, heart, bone, GIT and endocrine glands.
3. Study the digestion of purine and pyrimidine nucleotides.
4. Study the inborn errors & disorders involved in carbohydrates, lipid & protein metabolism.
5. Acquire skills in conducting laboratory techniques and problem solving.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of the metabolism.
(A2)	a2	Identify the mutual interaction between professional practices on one hand and community and surrounding environment on the other hand.



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Specification



(A4)	A3	Explain the role of genes in disease
(A5)	a4	Considerate the coordination and integration between different metabolic pathways.
(A7)	a5	Understanding the causes and results of the defects in any step in metabolic pathways.

2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B1)	b1	Analyze and interpret quantitative data obtained from biochemistry research in a specific and suitable form.
(B2)	b2	Suggest significant solutions for biochemical results and outcome errors based on a wide academic background.
(B3)	b3	Acquire the needed pharmaceutical knowledge to manage professional problems in biochemistry.
(B4)	b4	Write concrete reports on the obtained results with conclusive significances.
(B7)	b5	Take professional decisions in the area of specialization.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
(C2)	c2	Write with confidence reliable scientific reports in biochemical research.
(C4)	c3	Analyze the laboratory data and their clinical significance.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D1)	d1	Practice self-assessment of learning needs in the field of biochemistry.
(D2)	d2	Collecting information from various sources in the field of biochemistry.
(D3)	d3	Work effectively as a member of team.
(D4)	d4	Get maximum use of time to achieve goals.
(D5)	d5	Study independently and plan research studies.



3. Course Contents

Week No.	Topics	Lecture Hours
1	Liver diseases, Hepatobiliary disease and liver function tests.	3
2	Renal diseases and kidney function tests.	2
3	Disorders of carbohydrate metabolism.	3
4	Disorders of amino acids metabolism.	3
5	Disorders of protein metabolism, collagen disorders, hemoglobin diseases and porphyria	3
6	Disorders of lipid metabolism.	2
7	Pancreatic disorders.	1
8	Plasma Protein.	1
9	Cardiovascular disorders.	1
10	Hormonal disorders.	2
11	Nucleic acid disorders.	2
12	Bone diseases.	1
Total: 12 weeks		24

4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Liver diseases, Hepatobiliary disease and liver function tests.	a1,a2,a3, a4,a5	b1,b2,b3,b4,b5	c1,c2,c3	d1,d2,d3,d4,d5
2	Renal diseases and kidney function tests.	a1,a2,a3, a4	b1,b2,b3,	c1,c2	d1,d2,d3
3	Disorders of carbohydrate metabolism.	a1,a2,a3,	b3,b4,b5	c1, c3	d1,d2,d3,d4



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4	Disorders of amino acids metabolism.	a4,a5,a6	b1 ,b4,b5	c2,c3	d1, d4,d5
5	Disorders of protein metabolism, collagen disorders, hemoglobin diseases and porphyria	a2,a3,a4	b1,b2 ,b5	c1,c2,c3	d3,d4,d5
6	Disorders of lipid metabolism.	a3,a4,a5,	b1,b2,b3,b4	c1,c2	d1,d2, d5
7	Pancreatic disorders.	a2,a3,a4, a5	b2,b3,b4,b5	c1,	d1, d3, d5
8	Plasma Protein.	a2, a4,a5	b1, ,b3, b5	c1,c2,c3	d1,d2, d4
9	Cardiovascular disorders.	a1,a2,a3, a4,a5	b2,b3, b5	c1, c3	d2,d3,d4
10	Hormonal disorders.	a1,a2,a3, a4,a5	b3, b5	c3	d2,d3,d4,d5
11	Nucleic acid disorders.	a1,a2, a5	b1,b2, b5	c1, c3	d2, d4,d5
12	Bone diseases.	a1,a2,a3, a5	b1,b2, b4, b5	c2,c3	d1 ,d5

* Knowledge and Understanding

Intellectual Skills*Professional and Practical Skills

****General and Transferable Skills

5- Teaching and Learning Methods:

5.1	Lectures using Power Point(PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	90%
Assessment 2	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10%
				100 %



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7- List of References

	Reference	Type
1	Clinical Chemistry, William Marshall , Marta Lapselky , Andrew Day , 8th edition , 2016.	Books
2	Basic Clinical Laboratory techniques , Barbara Estridge , Anna Renoylds (Eds), 6th edition , 2011	Books

8- Signature

Course Coordinator	Acting Head of Department	Date
Prof. Dr. Laila Ahmed Farag Eissa	Ass. Prof. Dr. Mohamed El-Mesery	14/12 /2021

* Date of Dept. Council Approval: 14/12/2021



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Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification

Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
التقنيات المعملية للكيمياء الحيوية
Biochemistry Lab Techniques

القائم بأعمال رئيس القسم
أ.م.د/ محمد المسيرى

منسق المقرر
أ.م.د/ محمد المسيرى



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Biochemistry Lab Techniques Course
Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2021/2022 - first semester
Date of course specification approval	8/11/2021

A. Basic Information: Course data:

Course Title	Biochemistry Lab Techniques
Course Code	PBD-103
Prerequisite	-----
Teaching Hours: Lecture	عدد الساعات الزمنية 2
Practical:	عدد الساعات الزمنية 1
Total Credit Hours	3

B. Professional Information

1- Overall Aims of Course:

1. Enable the student to understand the basic principles of various techniques used in molecular biology and biochemical experiments.
2. Teach the students how to analyze data and interpret results from various techniques
3. Train the students to perform practical biochemical experiments
4. Study the advanced techniques and equipment in biochemistry labs and in the area of molecular biology

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Recall the basic principles of molecular biology and tissue culture techniques
(A2)	a2	Understand the methods required for analyzing biological molecules.

2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B1)	b1	Implement good laboratory practice and guidelines in pharmacy practice.
(B2)	b2	Design appropriate methods of analysis of biological molecules and molecular biology



2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Apply techniques used in operating pharmaceutical equipments and instruments.
(C3)	c2	Determine the proper and safe dispersing of chemicals and pharmaceutical preparations.
(C4)	c3	Utilize the appropriate methods for extraction, isolation, synthesis, purification, identification and/or standardization of active substances from different origins and for effective and safe dispensing, labeling, storing and distributing of chemicals and biochemical agents.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D1)	d1	Practice self-assessment of learning needs in the field of biochemistry.
(D2)	d2	Collecting information from various sources in the field of biochemistry.
(D6)	d3	Utilize the available resources to update their knowledge

3. Course Contents

Week No.	Topics	Lecture Hours
1	Introduction to molecular biology and use of computer and internet for research	2
2	General Laboratory Procedures: accurate measurements, pH metery and sample storage, Centrifugation Techniques.	2
3	Characterization of Proteins and Nucleic Acids by Electrophoresis	2
4	Western blot technique.	2
5	Immuno-techniques: ELISA	2
6-7	Tissue Culture methods	4
8-9	Polymerase chain reaction and cloning.	4
10-12	Real time PCR	4
Total: 12 weeks		22
Week No.	Practical / Tutorial topics	hours



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1	Microscopy	2
2	Pipetting techniques	2
3	Protein Electrophoresis	2
4	DNA electrophoresis	2
5	Immuno-techniques: ELISA	2
6	Immuno-techniques: ELISA	2
7,8	Western blot technique	2
9,10	Tissue Culture methods	2
11	Practical Exam	2

4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Introduction to molecular biology and use of computer and internet for research.	a1,a2	b1,b2	c1,c3	d1,d2,d6
2	General Laboratory Procedures: accurate measurements, pH meter and sample storage, Centrifugation Techniques	a1,a2	b1,b2	c3	d1,d2,d6
3	Characterization of Proteins and Nucleic Acids by Electrophoresis	a2	b1,b2	c1,c3	d1,d2
4	Western blot technique.	a1,a2	b2	c3,c4	D6
5	Immuno-techniques: ELISA	a1	b1,b2	c4	d1,d2,d6
6-7	Tissue Culture methods	a2	b2	c1	d1,d2
8-9	Polymerase chain reaction and cloning.	a1,a2	B1,b2	c1, c3	d2,d6
10-12	Real time PCR	a2	b1,b2	c1,c4	d2,d6

* Knowledge and Understanding

Intellectual Skills*Professional and Practical Skills

****General and Transferable Skills



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5- Teaching and Learning Methods:

5.1	Lectures using Power Point(PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study
5.4	Practical training/laboratory by lab equipment.

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Practical Examination	Assignments prepared by students and sent to the supervisor electronically for evaluation. To assess professional skills	11	20%
Assessment 2	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	70%
Assessment 3	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10%
				100 %

7- List of References

	Reference	Type
1.	Current protocols in molecular biology. Frederick Ausbell. Wiley-Blackwell	(Text Books)
2	Gene cloning and DNA analysis by TA Brown .Wiley-Blackwell	(Text Books)

8- Signature

Course Coordinator	Acting Head of Department	Date
Ass. Prof. Dr. Mohamed El-Mesery	Ass. Prof. Dr. Mohamed El-Mesery	8/11/2021

* Date of Dept. Council Approval: 8/11/2021



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
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Mansoura University
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Oncology and tumor markers Course
Specification



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification

Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
الأورام ودلالاتها
Oncology and tumor markers

القائم بأعمال رئيس القسم
أ.م.د/ محمد المسيري

منسق المقرر
د/ محمد نصر الدين



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Oncology and tumor markers Course
Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2021/2022 - second semester
Date of course specification approval	14/12/2021

A. Basic Information: Course data:

Course Title	Oncology and tumor markers
Course Code	PBD-108
Prerequisite	-----
Teaching Hours: Lecture	عدد الساعات الزمنية 2
Practical:	عدد الساعات الزمنية 0
Total Credit Hours	2

B. Professional Information

1- Overall Aims of Course:

1. Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences.
2. Gain the skills and attributes required for the responsible practice of biochemistry field from the pharmaceutical view.
3. Understanding the importance of stem cells and their possible role in treatment of diseases.
4. Study the different tumor markers and their importance in diagnosis and follow up of different types of cancer.
5. Study the difference between normal and cancer cells and the etiology of carcinogenesis.
6. Study different types of cancer and different methods of treatment and the acute complications associating cancer treatment.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of the metabolism.
(A2)	a2	Identify the mutual interaction between professional practices on one hand and community and surrounding environment on the other hand.



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(A3)	a3	Express clearly the up to date information and methods in biochemistry, genomics and applications of biotechnology in different fields.
(A4)	a4	Explain the role of genes in disease
(A10)	a5	Demonstrate the body as collection of integrating system

2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B1)	b1	Analyze and interpret quantitative data obtained from biochemistry research in a specific and suitable form.
(B3)	b2	Acquire the needed pharmaceutical knowledge to manage professional problems in biochemistry.
(B4)	b3	Write concrete reports on the obtained results with conclusive significances.
(B8)	b4	Describe the pathophysiology of different diseases.
(B11)	b5	Interpret the causes of leukemia.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
(C3)	c2	Perform various methods and biochemical techniques of analysis and assure the quality and suitability of instruments.
(C4)	c3	Analyze the laboratory data and their clinical significance.
(C5)	c4	Utilize the physiological basis to construct a research proposal.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D2)	d1	Collecting information from various sources in the field of biochemistry.
(D4)	d2	Get maximum use of time to achieve goals.
(D5)	d3	Study independently and plan research studies.
(D6)	d4	Utilize the available resources to update their knowledge.
(D8)	d4	Develop presentation skills.



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(D9)	d5	Appreciate the importance of life-long learning.
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3. Course Contents

Week No.	Topics	Lecture Hours
1	Introduction	2
2	Characteristics and differences between malignant and benign tumors.	2
3	Carcinogenesis	2
4	Breast cancer	2
5	GIT cancer	2
6	Liver cancer	2
7	Lung cancer	2
8	Different types of treatment	2
9	Methods of diagnosis	2
10	Complications of anticancer therapy	2
11	Specific tumor markers	2
12	Non-specific tumor markers	2
Total: 12 weeks		24

4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Introduction	a1,a2,a3,a4,a5	b1,b2,b3,b4,b5	c1,c2,c3,c4,	d1,d2,d3,d4,d5
2	Characteristics and differences between malignant and benign tumors.	a1,a2,a3,a4	b1,b2,b3	c1,c2	d1,d2,d3,d4
3	Carcinogenesis	a1,a2,a3	b1,b2	c1,c2,c3	d1,d2,d3
4	Breast cancer	a1,a2	b3,b4,b5	c1,c3,c4	d2,d3,d4,d5



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5	GIT cancer	a4,a5	b4,b5	c2,c3	d3,d4,d5
6	Liver cancer	a1,a4,a5	b1, b5	c1,c2,c3	d1,d2
7	Lung cancer	a1,a2,a3 ,a4,a5,a 6	b1,b2,b3,b4,b5,b6,b7, b8	c1,c2,c3,c4	d1, d3,d4
8	Different types of treatment	a2,a3,a4 ,a5	b2,b3,b4	c1,c2,c3,c4, c5	d1, d4,d5
9	Methods of diagnosis	a1,a3	b3,b4,b5	c2,c3,c4	d1,d2,d3, d5
10	Complications of anticancer therapy	a2,a3,a4	b1, b4,b5	c2,c3	d3,d4,d5
11	Specific tumor markers	a1,a2,a4	b3,b4,b5	c2, c4	d1,d2,d3,d4,d5
12	Non-specific tumor markers	a1 ,a4	b1,b3,b4	c3,c4	d1 ,d3,d4

* Knowledge and Understanding

Intellectual Skills*Professional and Practical Skills

****General and Transferable Skills

5- Teaching and Learning Methods:

5.1	Lectures using Power Point(PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	90%
Assessment 2	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10%
				100 %

7- List of References

	Reference	Type
1.	Lippincott's Illustrated Reviews: Biochemistry. Pamela C. Champe, Richard A. Harvey, Denise R. Ferrier; 7th edition-2017.	Essential Book(Text Books)



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2	Harper's Biochemistry. Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell30th edition-2018.	Books
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8- Signature

Course Coordinator	Acting Head of Department	Date
Dr. Mohamed Nasr	Ass. Prof. Dr. Mohamed El-Mesery	14/12/2021

* Date of Dept. Council Approval: 14/12/2021



Mansoura University
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Chemistry and diseases of blood
Course Specification



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification
Academic year: 2021/2022

البرنامج

دبلوم الكيمياء الحيوية

تقرير مقرر

Chemistry and Diseases of Blood

القائم بأعمال رئيس القسم

د. محمد المسييري

منسق المقرر

أ.د. ممدوح محمد الششتاوي



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Chemistry and diseases of blood
Course Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2021/2022 - second semester
Date of course specification approval	14/12/2021

A. Basic Information: Course data:

Course Title	Chemistry and diseases of blood
Course Code	PBD-105
Prerequisite	-----
Teaching Hours: Lecture	عدد الساعات الزمنية 2
Practical:	عدد الساعات الزمنية 1
Total Credit Hours	3

B. Professional Information

1- Overall Aims of Course:

- 1- Identify the different types of blood cells in health and disease state.
- 2- Describe the different types of anemia.
- 3- Acquire skills in conducting laboratory techniques and problem solving.
- 4- Study the different types of immunoglobulins and their role in different types of diseases.
- 5- Applying the basics and methodologies of scientific research and manipulating its various tools in the field of Biochemistry.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A1)	a1	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of the metabolism.
(A4)	a2	Understanding the role of genes in disease.
(A11)	a3	Define all aspects of anemia.



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(A12)	a4	Define various causes of bone marrow failure.
(A13)	a5	Demonstrate the constituents of blood and their functions.

2.2. Intellectual Skills

After completion of the course, graduates will be able to

(B9)	b1	Interpret clinical physiology tests.
(B10)	b2	Interpret clinical hematology tests.
(B11)	b3	Interpret the causes of leukemia.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C1)	c1	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
(C2)	c2	Write with confidence reliable scientific reports in biochemical research.
(C3)	c3	Perform various methods and biochemical techniques of analysis and assure the quality and suitability of instruments.
(C4)	c4	Analyze the laboratory data and their clinical significance.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D1)	d1	Practice self-assessment of learning needs in the field of biochemistry.
(D2)	d2	Collecting information from various sources in the field of biochemistry.
(D3)	d3	Work effectively as a member of team.
(D4)	d4	Get maximum use of time to achieve goals.
(D5)	d5	Study independently and plan research studies.

3. Course Contents

Week No.	Topics	Lecture Hours
1	Introduction to blood groups.	1
2	Types of blood cells.	2
3	Hematopoiesis	2
4	Disorders of erythrocytes	2



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5	Anemia	2
6	Disorders of platelets and homeostasis.	2
7	Some blood diseases.	2
8	Introduction to leukemia	2
9	Chronic Leukemia: Lymphocytic and myelogenous.	2
10	Acute Leukemia: Lymphocytic and myelogenous.	2
11	Blood Coagulation	2
12	Bleeding disorders and blood parameters.	2
Total: 12 weeks		24
Week No.	Practical / Tutorial topics	hours
1	Infection control principles/Blood Specimen Collection and Processing	2
2	Blood Grouping/ Cross-matching	2
3	Erythrocyte Sedimentation Rate	2
4	Complete blood count	2
5	Differential blood count	2
6	Leukemia	2
7	Glycated hemoglobin	2
8	Neonatal jaundice	2
9	Coagulation Factors	2
10	Revision	2
11	Exam	2
12	Exam	2



4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topics	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Introduction to blood groups.	a1,a2,a3,a4, a5	b1,b2, b3	c1,c2,c3, c4	d1,d2,d3,d4,d5
2	Types of blood cells.	a1, a5	b1,	c1,c2, c4	d1,d2,d3,
3	Hematopoiesis	a2,a3,a4	b1,b2	c1,c3	d1,d2, d5
4	Disorders of erythrocytes	a1,a2,a3	b1, b3	c2, c4	d1, ,d4,d5
5	Anemia	a1,a2, a5	b2,b3	c2,c3	d3,d4,d5
6	Disorders of platelets and homeostasis.	a1,a4, a5	b3	c1,c2,	d2,d3,d4
7	Some blood diseases.	a3,a4, a5	b1	c1, c4	d1, d3,d4,
8	Introduction to leukemia	a2,a3,a4, a5	b1,b2	c3, c4	d1,d2, d4
9	Chronic Leukemia: Lymphocytic & myelogenous.	a1, a3,a4, a5	b1,b3	c2,c3, c4	d2,d3, d5
10	Acute Leukemia: Lymphocytic & myelogenous.	a1,a2 ,a4, a5	b3	c1, c3, c4	d2,d3, d5
11	Blood Coagulation	a1,a2,a3, a5	b1,b2,b3	c1,c2, c4	d1, d3, d5
12	Bleeding disorders and blood parameters.	a1,a2,a3,a4	b1, b3	c1,c2,c3,	d2,d4,d5

* Knowledge and Understanding

**Intellectual Skills

***Professional and Practical Skills

****General and Transferable Skills

5- Teaching and Learning Methods:

5.1	Lectures using Power Point (PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study
5.4	Practical training/laboratory by lab equipment.



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Chemistry and diseases of blood
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6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Practical Examination	Assignments prepared by students and sent to the supervisor electronically for evaluation. To assess professional skills	12	20%
Assessment 2	Written Exam (Final)	Paper exams are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	70%
Assessment 3	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10%
				100 %

7- List of References

	Reference	Type
1.	Lippincott's Illustrated Reviews: Biochemistry. Pamela C. Champe, Richard A. Harvey, Denise R. Ferrier; 8 th edition-2021.	Essential Book (Text Books)
2	Blood: Textbook of Hematology, by <u>James H. Jandl</u> . 2 nd Edition.	Books

8- Signature

Course Coordinator	Acting Head of Department	Date
Prof. Dr. Mamdouh M. El-Shishtawy	Dr. Mohamed E. El Mesery	14/12/2021

* Date of Dept. Council Approval: 14/12/2021



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Clinical Biochemistry (I) Course
Specification



Biochemistry Department	Course Specification	Biochemistry Diploma
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Biochemistry Diploma
Course Specification
Academic year: 2021/2022

البرنامج
دبلوم الكيمياء الحيوية

توصيف مقرر
كيمياء حيوية إكلينيكية (1)
Clinical Biochemistry(1)

القائم بأعمال رئيس القسم
د /محمد المسيري

منسق المقرر
أ.د/ ممدوح محمد الششتاوي



Mansoura University
Faculty of Pharmacy
Postgraduate Studies
Biochemistry Diploma Program
Clinical Biochemistry (I) Course
Specification



General

University	Mansoura
Faculty	Pharmacy
Department offering the course	Biochemistry Department
Department supervising the course	Biochemistry Department
Program on which the course is given	Biochemistry Diploma Program
Academic Level	Postgraduate
Academic year	2021/2022 – First Semester
Date of course specification approval	8/11/2021

A. Basic Information: Course data:

Course Title	Clinical Biochemistry (I)
Course Code	PBD-104
Prerequisite	-----
Teaching Credit Hours: Lecture	2
Practical:	1
Total Credit Hours	3

B. Professional Information

1- Overall Aims of Course:

1. Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences.
2. Study the interpretation of the results in relation to health and disease.
3. Develop the ability to select chemical investigation those are appropriate to the diagnosis of disease and for the management of treatments.
4. Maintain a responsible and critical attitude in the use of the diagnostic services provided by Clinical Biochemistry and Laboratory based specialists.

2- Intended Learning Outcomes (ILOs)

2.1. Knowledge and Understanding

After completion of the course, graduates will be able to

(A2)	a2	Apply the mutual interaction between professional practices on one hand and community and surrounding environment on the other hand.
(A9)	a5	Define different causes of pathophysiology of human disease.

2.2. Intellectual Skills

After completion of the course, graduates will be able to



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(B1)	b1	Analyze and interpret quantitative data obtained from biochemistry research in a specific and suitable form.
(B2)	b2	Apply significant solutions for biochemical results and outcome errors based on a wide academic background.
(B8)	b5	Describe the pathophysiology of different diseases.

2.3. Professional and Practical Skills

After completion of the course, graduates will be able to

(C4)	c1	Analyze the laboratory data and their clinical significance.
(C5)	c2	Utilize the physiological basis to construct a research proposal.

2.4. General and Transferable Skills

After completion of the course, graduates will be able to

(D2)	d1	Collecting information from various sources in the field of biochemistry.
(D3)	d2	Work effectively as a member of team.
(D4)	d3	Get maximum use of time to achieve goals.
(D6)	d4	Utilize the available resources to update their knowledge.
(D9)	d5	Appreciate the importance of life-long learning

3. Course Contents

Week No.	Topics	Lecture Hours
1	Introduction: Types of Laboratory Tests. Types of Specimens & Blood samples. Quality Control. Clinical Endocrinology.	2
2	Male and Female Reproductive Systems	2
3	Male & Female Infertility due to hormonal disturbances	2
4	Porphyryns, hemoproteins and Oxygen transport.	2
5	Plasma proteins.	2
6	Disorders of minerals and trace elements.	2
7	Disturbances of Water balance.	2
8	Sodium and potassium balance. Acid-base balance.	2
9	Respiratory disorders	2
10	Cancer associated biochemical abnormalities.	2
11	Interpreting and using laboratory data.	2



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Total:		22
11 weeks		
Week No.	Practical / Tutorial topics	Hours
1, 2	Patient sample collection and use of the laboratory/ Laboratory Diagnosis of Diabetes Mellitus	4
3, 4	Mineral disturbance in Diabetes and Clinical cases on Diabetes Mellitus/ Oral Glucose Tolerance Test	4
5, 6	Tests for Evaluation of Liver Function/ Determination of serum (total-direct) bilirubin	4
7, 8	Diagnosis of renal dysfunction/ Acute myocardial infarction	4
9, 10	Tumor markers/ Revision	4
11	Practical Exam	2

4- Matrix of knowledge and skills of the course (contents versus ILOs of the course)

Week	Topic	Course ILOs			
		K.U*	IS**	P.P.S***	G.T.S****
1	Introduction: Types of Laboratory Tests. Types of Specimens & Blood samples. Quality Control. Clinical Endocrinology.	a1,a2,a3	b1,b2	c2	d1,d2,d3,d5
2	Male and Female Reproductive Systems	a1,a2, a4	b1,b2,b4	c2	d1,d2,d3
3	Male & Female Infertility due to hormonal disturbances	a1,a2, a4	b1,b2,b4	c2	d1,d2,d3
4	Porphyryns, hemoproteins and Oxygen transport	a2,a3, a5	b1,b2, b3	c1,c2	d1,d3,d4
5	Plasma proteins	a1,a2,a3	b2,b3,b4	c2	d3,d4
6	Disorders of minerals and trace elements.	a1,a3	b1,b2,b3	c2	d1,d2
7	Disturbances of Water.	a2,a4	b2,b3,b4	c1	d1,d2,d5
8	Sodium and potassium balance. Acid-base balance	a1,a2,a4	b3,b4	c1,c2	d4,d5
9	Respiratory disorders	a2,a3	b1,b2,b4,b5	c1,c2	d2,d3,d4,d5
10	Cancer associated biochemical abnormalities.	a1,a2,a5	b1,b2,b3	c2	d1,d2,d3,d4,d5
11	Interpreting and using laboratory data.	a2,a5	b1,b3	c1,c2	d2

* Knowledge and Understanding

**Intellectual Skills

***Professional and Practical Skills

****General and Transferable Skills



5- Teaching and Learning Methods:

5.1	Lectures using Power Point (PPT) presentations
5.2	Lectures using whiteboard
5.3	Case Study
5.4	Practical training/laboratory by lab equipment.

6- Student Assessment:

	Assessment Methods		Assessment Schedule	Weighing of Assessments
Assessment 1	Practical Examination	Assignments prepared by students and sent to the supervisor electronically for evaluation. To assess professional skills	11	20
Assessment 2	Written Exam (Final)	Paper exams that are corrected electronically and/or manually. To assess understanding, intellectual, professional skills	13	70
Assessment 3	Oral Exam	To assess understanding, intellectual skills, General and Transferable skills	13	10
				100 %

7- List of References

	Reference	Type
1.	Lippincott's Illustrated Reviews: Biochemistry. Pamela C. Champe, Richard A. Harvey, Denise R. Ferrier; 7 th edition-2017.	Essential Book
2	Harper's Biochemistry. Robert K. Murray, Daryl K. Granner, Peter A. Mayes, Victor W. Rodwell30 th edition-2018.	Books
3	Clinical Chemistry, William Marshall, Marta Lapselky, Andrew Day, 8 th edition, 2016.	Books



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8- Signature

		Signature
Course Coordinator	Prof. Dr. Mamdouh M. El-Shishtawy	
Acting Head of Department	Dr. Mohamed El-Mesery	

* Date of Dept. Council Approval: 8/11/2021



Program: Diploma in (Biochemistry) (PBD-100)
Biochemistry Department

Program Specification

Academic Year: 2021/2022

رئيس القسم
أ.م.د/ محمد السيد المسييري

Signature



A-Basic Information

1	Faculty	Pharmacy
2	Program Title:	Diplomain (Biochemistry)
3	Program Type:	Multiple
4	Department (s):	Department of Biochemistry
5	Final award:	Diplomain Biochemistry
6	Coordinator:	Ass. Prof. Dr. Mohammed El Mesery
7	External Evaluator(s):	Prof. Dr. Sahar El Swefy
8	Date of Program Specification Approval:	<i>Department council: 8/ 11/2021,</i>

B-Professional Information

1-Program Aims

Upon successful completion of the program, graduates should demonstrate comprehensive knowledge, clear understanding and outstanding skills in pharmaceutical sciences and Biochemistry.

1. Provide the post-graduate students with a special and advanced education in the field of biochemistry sciences.
2. Gain the skills and attributes required for the responsible practice of biochemistry field from the pharmaceutical view.
3. Study the chemical structure and function of nucleic acids and their role in carrying the genetic information.
4. Study the functional state of liver, kidney, heart, bone, GIT and endocrine glands.
5. Study the basic chemistry of biological molecules including: carbohydrates, lipid & protein.
6. Study the digestion of purine and pyrimidine nucleotides.
7. Study the different types of cytokines and their role in different biochemical pathways.
8. Study different metabolic pathways involved in carbohydrates , lipid & protein metabolism.
9. Study the inborn errors & disorders involved in carbohydrates , lipid & protein metabolism.
10. Study the interpretation of the results in relation to health and disease.
11. Study the different types of immunoglobulins and their role in different types of diseases.
12. Develop the ability to select chemical investigation those are appropriate to the diagnosis of disease and for the management of treatments.
13. Study the different types of vitamins, their importance and their deficiencies.
14. Understanding the functions of enzymes and their role in metabolic pathways.
15. Understanding the importance of stem cells and their possible role in treatment of diseases.
16. Study the different tumor markers and their importance in diagnosis and follow up of different types of cancer.



17. Maintain a responsible and critical attitude in the use of the diagnostic services provided by Clinical Biochemistry and Laboratory based specialists.
18. Equip students with skills of value to future employment in some areas of biology.
19. Study the advanced techniques and equipment in biochemistry labs and in the area of molecular biology.
20. Study how to analyze different biological samples and detect different markers.
21. Study the difference between normal and cancer cells and the etiology of carcinogenesis.
22. Study different types of cancer and different methods of treatment and the acute complications associating cancer treatment.

2-Intended Learning Outcomes (ILOs)

a- Knowledge and Understanding:

By the end of this program the graduate should be able to:

A1.	Illustrate properly the principle of biochemistry and their widely growing subjects including molecular biology, biotechnology, pathways and chemistry of the metabolism.
A2.	Identify the mutual interaction between professional practices on one hand and community and surrounding environment on the other hand.
A3.	Express clearly the up to date information and methods in biochemistry, genomics and applications of biotechnology in different fields.
A4.	Understanding the role of genes in disease.
A5.	Understanding the coordination and integration between different metabolic pathways.
A6.	Understanding the metabolic pathways in normal human body.
A7.	Understanding the causes and results of the defects in any step in metabolic pathways.
A8.	Define all aspects of general and special physiology.
A9.	Define different causes of pathophysiology of human disease.
A10.	Demonstrate the body as collection of integrating system.
A11.	Define all aspects of anemia.
A12.	Define various causes of bone marrow failure.
A13.	Demonstrate the constituents of blood and their functions.

b- Intellectual Skills

By the end of this program the graduate should be able to:

B1-	Analyze and interpret quantitative data obtained from biochemistry research in a specific and suitable form.
B2-	Suggest significant solutions for biochemical results and outcome errors based on a wide academic background.
B3	Acquire the needed pharmaceutical knowledge to manage professional problems in biochemistry.
B4-	Write concrete reports on the obtained results with conclusive significances.
B5-	Recognize possible hazards during work and how to deal with.
B6-	Design a laboratory protocol for a requested biochemical issue.



B7-	Take professional decisions in the area of specialization.
B8-	Describe the pathophysiology of different diseases.
B9-	Interpret clinical physiology tests.
B10-	Interpret clinical hematology tests.
B11-	Interpret the causes of leukemia.
B12-	Differentiate between the abnormalities in blood cell count and define the possible diagnosis.

c- Professional and Practical Skills

By the end of this program the graduate should be able to:

C1-	Recognize the recent laboratory techniques in medical laboratories and academic biochemical research as well.
C2-	Write with confidence reliable scientific reports in biochemical research.
C3-	Perform various methods and biochemical techniques of analysis and assure the quality and suitability of instruments.
C4-	Analyze the laboratory data and their clinical significance.
C5-	Utilize the physiological basis to construct a research proposal.
C6-	Utilize the hematological basis to construct a research proposal.

d. General and Transferable Skills

By the end of this program the graduate should be able to:

D1-	Practice self-assessment of learning needs in the field of biochemistry.
D2-	Collecting information from various sources in the field of biochemistry.
D3-	Work effectively as a member of team.
D4-	Get maximum use of time to achieve goals.
D5-	Study independently and plan research studies.
D6-	Utilize the available resources to update their knowledge.
D7-	Function as a productive member of team engaged in research and education.
D8-	Develop presentation skills.
D9-	Appreciate the importance of life-long learning.

3-Academic Reference Standards(ARS):

Approved by both the department and faculty councils

Department Council Approval Date: 8 / 11/2021,

Faculty Council Approval Date: //2021

3a- Academic References Standards: (Attached)

3b-Comparison of provision to External References

Achievement of academic reference standards via program Intended Learning Outcomes.



ILOs	ARS	Program
1. Knowledge and Understanding	1.1	A1, A2,A3,A4,A5,A6,A7,A8, A9
	1.2	A3,A4
	1.3	A3,A4
	1.4	A2,A3,A4
2. Intellectual Skills	2.1	B1,B2,B3,B4,B5,B6,B7,B8,B9
	2.2	B4,B7
	2.3	B9
	2.4	B7,B9
	2.5	B1,B8,B9
3. Professional and Practical Skills	3.1	C1,C2,C3,C4,C5,C6,C7
	3.2	C2,C3,C4,C5,C6
4. General and Transferable Skills	4.1	D1
	4.2	D2
	4.3	D3
	4.4	D5
	4.5	D5, D6
	4.6	D7
	4.7	D8

4-Curriculum Structure and Contents

4A. Program duration: 1 year.

4B. Program structure:

a- The program consists of 24 credit hours of study divided over two semesters. A graduation project is included with 2 credit hours.

b- All courses possess the code number [100], According to Faculty By-Law.

c. A scientific graduation project of 2 credit hours represents a main component of the program. It is achieved in a subject assigned by the academic supervisor, endorsed by the department council, the committee of graduate studies & research and the faculty council.



4C. Program Components

1- Courses according to the By-law

Code number	Name of the course	Type	Credit Hours	Semester
<i>PBD -101</i>	<i>Biochemistry (I)</i>	Compulsory	2	Fall
<i>PBD -102</i>	<i>Physiology and Pathology</i>	Compulsory	2	Fall
<i>PBD-103</i>	<i>Biochemistry Laboratory Techniques</i>	Compulsory	2	Fall
<i>PBD-104</i>	<i>Clinical Biochemistry(I)</i>	Compulsory	2	Fall
<i>PBD-105</i>	<i>Chemistry and Diseases of Blood</i>	Compulsory	2	Spring
<i>PBD-106</i>	<i>Biochemistry (II)</i>	Compulsory	2	Spring
<i>PBD-107</i>	<i>Clinical Biochemistry (II)</i>	Compulsory	2	Spring
<i>PBD -108</i>	<i>Oncology and Tumor Markers</i>	elective	2	Spring
<i>PBD -109</i>	<i>Biotechnology</i>	elective	2	Spring
Total (Courses)			22	
	graduation project		2	
Total			24	



5- Program Courses

1- Achievement of Program Intended Learning Outcomes via the courses

Course	C.H/ week	Program ILOs (by No.)			
		K.U*	IS**	P.P.S***	G.T.S****
Courses (24 C.H.)					
First term					
<i>Biochemistry (I)</i> PBD -101	2 + 1	A1,A2,A3	B3, B4,B5,B7	C1, C2, C3	D1, D2, D3, D4, D5
<i>Physiology and Pathology</i> PBD -102	2 + 1	A8,A9,A10	B8, B9	C1, C5	D1, D2, D3, D4, D5, D6, D7,D8, D9
<i>Biochemistry Laboratory Techniques</i> PBD-103	2 + 1	A1,A3	B1, B2	C1, C3, C4	D1, D2, D5,
<i>Clinical Biochemistry (I)</i> PBD-104	2 + 1	A1,A2,A3,A4,A5, A6,A7	B1, B2, B3, B4,B5,B6,B7	C1, C2, C3, C4	D1, D2, D3, D4, D5
Second Term					
<i>Chemistry and Diseases of Blood</i> PBD-105	2 + 1	A1,A4,A11,A12,A13	B9, B10, B11	C1, C2, C3, C4	D1, D2, D3, D4, D5
<i>Biochemistry (II)</i> PBD-106	2 + 1	A1, A5,A6,A7	B3, B4,B5, B7	C1, C2, C3	D1, D2, D3, D4, D5
<i>Clinical Biochemistry (II)</i> PBD-107	2 + 0	A1,A2,A3,A4,A5, A7	B1, B2, B3, B4,B7	C1, C2, C3, C4	D1, D2, D3, D4, D5
<i>Elective course</i> PBD -IEC <i>Oncology and Tumor Markers</i> PBD -108	2 + 0	A1,A2,A3,A4,A5, A10	B1, B2, B3, B4,B5,B6,B7,B11	C1, C2, C3, C4,C5	D1, D2, D3, D4, D5, D6, D7,D8, D9



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Biotechnology PBD -109		A1, A2, A3	B1, B2, B3, B4,B5	C1, C2, C3, C4	D1, D2, D3, D4, D5, D6, D7,D8, D9
Scientific Essay PBD -ISE	2	A1, A2, A3, A4, A5, A6, A7	B1, B2, B3, B4,B5,B12	C1, C2, C3, C4, C6	D1, D2, D3, D4, D5, D6, D7,D8, D9
Total	24				

- * **Knowledge and Understanding**
- ** **Intellectual Skills**
- *** **Professional and Practical Skills**
- **** **General and Transferable Skills**



Code	Course title	K.U*																
		A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13				
<i>PBD-101</i>	<i>Biochemistry (I)</i>	√	√	√														
<i>PBD-102</i>	<i>Physiology and Pathology</i>											√	√	√				
<i>PBD-103</i>	<i>Biochemistry Laboratory Technique</i>	√		√														
<i>PBD-104</i>	<i>Clinical Biochemistry(I)</i>	√	√	√	√	√	√	√										
<i>PBD-105</i>	<i>Chemistry and Diseases of Blood</i>	√			√									√	√			√
<i>PBD-106</i>	<i>Biochemistry(II)</i>	√						√			√							
<i>PBD-107</i>	<i>Clinical Biochemistry (II)</i>	√	√	√	√	√	√	√			√							
<i>PBD-108</i>	<i>Oncology and Tumor Markers(E)</i>	√	√	√	√	√	√	√						√				
<i>PBD-109</i>	<i>Biotechnology(E)</i>	√	√	√	√													
<i>PBD-1SE</i>	<i>Scientific Essay</i>	√	√	√	√	√	√	√	√	√	√							

* Knowledge and Understanding

E Elective course



Code	Course title	IS**												
		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	
<i>PBD-101</i>	<i>Biochemistry (I)</i>			√	√	√		√						
<i>PBD-102</i>	<i>Physiology and Pathology</i>								√					
<i>PBD-103</i>	<i>Biochemistry Laboratory Technique</i>	√	√							√				
<i>PBD-104</i>	<i>Clinical Biochemistry(I)</i>	√	√	√	√	√	√	√						
<i>PBD-105</i>	<i>Chemistry and Diseases of Blood</i>									√			√	
<i>PBD-106</i>	<i>Biochemistry(II)</i>			√	√	√	√	√						
<i>PBD-107</i>	<i>Clinical Biochemistry (II)</i>	√	√	√	√	√	√	√						
<i>PBD-108</i>	<i>Oncology and Tumor Markers(E)</i>	√	√	√	√	√	√	√				√		
<i>PBD-109</i>	<i>Biotechnology(E)</i>	√	√	√	√	√	√	√						
<i>PBD-1SE</i>	<i>Scientific Essay</i>	√	√	√	√	√	√	√						√

** Intellectual Skills

E Elective course



Code	Course title	P.P.S***						G.T.S****								
		C1	C2	C3	C4	C5	C6	D1	D2	D3	D4	D5	D6	D7	D8	D9
<i>PBD-101</i>	<i>Biochemistry (I)</i>	√	√	√				√	√	√	√	√				√
<i>PBD-102</i>	<i>Physiology and Pathology</i>	√				√		√	√	√			√			√
<i>PBD-103</i>	<i>Biochemistry Laboratory Technique</i>	√		√	√			√	√							
<i>PBD-104</i>	<i>Clinical Biochemistry(I)</i>	√	√	√	√			√	√	√	√					
<i>PBD-105</i>	<i>Chemistry and Diseases of Blood</i>	√	√	√	√			√	√	√	√					
<i>PBD-106</i>	<i>Biochemistry(II)</i>	√	√	√	√			√	√	√	√					
<i>PBD-107</i>	<i>Clinical Biochemistry (II)</i>	√	√	√	√			√	√	√	√					
<i>PBD-108</i>	<i>Oncology and Tumor Markers(E)</i>	√	√	√	√	√		√	√	√	√	√				√
<i>PBD-109</i>	<i>Biotechnology(E)</i>	√	√	√	√			√	√	√	√	√	√			√
<i>PBD-1SE</i>	<i>Scientific Essay</i>	√	√	√	√		√	√	√	√	√	√	√	√		√

P Professional and Practical Skills
E Elective course



6- Student Assessment Methods

6.1- Written exam	To assess Knowledge and Understanding and Intellectual Skills
6.2- Oral exam	To assess Knowledge and Understanding, Intellectual Skills and General and transferable Skills
6.3- Practical exam	Knowledge and Understanding, Intellectual Skills, Professional and practical Skills & General and Transferable Skills
6.4- Graduation Project (Written exam)	Knowledge and Understanding, Intellectual Skills, Professional and practical Skills & General and Transferable Skills
6.5- Graduation Project (Presentation and discussion)	Knowledge and Understanding, Intellectual Skills, Professional and practical Skills & General and Transferable Skills

7- Program Admission Requirements

- 7.1- The candidate should hold a bachelor degree in pharmacy from any Faculty of Pharmacy in Egypt, Arab or foreign countries recognized by the Supreme Council of Universities with minimum general grade of "**Good**". It is possible to enroll foreign students with general grade "**Good**" according to the rules determined by the Supreme Council of Universities
- 7.2- The candidate should be available for study at least two days per week throughout the duration of study.
- 7.3- The candidate should follow postgraduate rules of by-law (2014) and its modified by-law (2017) of Faculty of Pharmacy-Mansoura University.

8- Regulations for progression and program completion

- 8.1- The study period is one year of two semesters in addition to the Summer semester according to schedules determined by the faculty council.
- 8.2- The student has to pass the assigned courses included the graduation project for complete fulfilment of the diploma degree.
- 8.3- The faculty council should cancel the student enrollment if he does not gain the diploma degree in 3 years.
- 8.4- The candidate should follow postgraduate rules of by-law (2014) and its modified by-law (2017) of Faculty of Pharmacy-Mansoura University.



9- Facilities Required for Education and Research:

- 9.1- Suitable halls for lectures containing computers, internet and data show.
- 9.2- Library and digital library supplied by recent scientific books and journals.
- 9.3- Laboratories with enough chemicals, apparatus and advanced instruments.
- 9.4- Access to research engines for scientific periodicals in the field of *specialization*.
- 9.5- Sufficient number of staff members, demonstrators and technicians.

10-Graduation project

A graduation project should be prepared by the student for complete fulfillment of the Diploma certificate.

11- Evaluation of program

Evaluator	Method	Sample
Internal evaluator	Program evaluation Courses evaluation	Program report Courses report
External evaluator	Program evaluation Courses evaluation	Program report Courses report
Stakeholders	Questionnaires	To be Attached
Postgraduates	Questionnaires	To be Attached
Self-evaluation	Matrices	To be Attached
Supervisor and defence committee of graduation project	Evaluation Sheet	Evaluation sheet of staff members of committee

Program Coordinator: Ass. Prof. Dr. Mohammed El Mesery
Acting Head of Department: Ass. Prof. Dr. Mohammed El Mesery

Signature:

Annex 1

Attach courses specifications.