# Basic Biochemistry 2; Code: PHB 701

## A-Basic Information

| | |
|---|---|
| **Programme(s) on which the course is given:** | Master degree in Pharmaceutical Sciences (Biochemistry) |
| **Department responsible for offering the course:** | Department of Biochemistry and Molecular Biology |
| **Department responsible for teaching the course:** | Department of Biochemistry and molecular biology. |
| **Academic year:** | 2020/2021 |
| **Course title and code:** | Basic Biochemistry 2; Code: PHB 701 |
| **Contact hours (credit hours) :** | Lecture: 4 (4) |
| **Course Coordinator:** | Prof. Dr. / Nadia Hamdy |

## B- Professional Information

The course aim and intended learning outcomes are based on that mentioned in the programme specifications, with more course-related specific details.

**1-Overall Aims of Course**

Upon successful completion of this course, the students should be able to

- Illustrate the chemical structure, origin and fate of various biological molecules (sugars, lipids and fats, nucleic acids, and amino acids and proteins) and to apply this knowledge correctly in understanding the functions of different body organs.
- Recognize the biological reactions occurring in living tissues in both the diseased and healthy conditions.
- Explain several phenomena related to normal and physiological conditions of the human body.
- Identify the constituents of human body fluids (as urine and blood) and explain the changes in these constituents related to various physiological and pathological conditions, either related to diseases or genetically.

**2-Intended Learning Outcomes of Course (ILOs)**

**a-Knowledge and Understanding:**

The students should be able to:

a1-Know the structure, function and metabolic pathways of carbohydrates, lipids, proteins, nucleotides and their micro-molecules and their regulatory mechanisms.

a2-Know the related metabolic disorders and their clinical prints on biochemical and molecular basis.

a3-Recognize the morphologic and minute structures of human cells and its various compartments and the mode of action and kinetics of enzymes and their role in the diagnosis of diseases.

a4-Recognize the biochemical features of diseases and the appropriate medical interventions.

a5-Know advanced techniques of biochemistry lab and their applications in addressing issues related to human physiology and different diseases.

**b-Intellectual Skills:**

**The students should be able to:**

b1- Find and assess the biochemical information quickly.

b2-Evaluate and interpret symptoms, signs and biochemical laboratory findings of some metabolic disorders.

b3- Interpret the clinical significance of determination of plasma levels of glucose, total proteins, SGOT, SGPT, bilirubin, albumin, cholesterol, TG, creatinine and uric acid

b4-Apply advanced biochemistry knowledge in the field of clinical medicinal lab.

**d- General and Transferable Skills:**

The students should be able to:

d1- Search the internet for information

d2- Work as a member in a team

d3-Communicate effectively in different ways.

**3-Course Contents**

| Topics | # of hours | # of Lecture/weeks | Date |
|---|---|---|---|
| Introduction, How to ... | 2 | **1** | **3 April** |
| Biochemistry of Cancer Metabolism 1 CHO | 6 | **1.5** | **5 April** |
| Biochemistry of Cancer Metabolism 2 Lipids | 6 | **1.5** | **10,12 April** |
| Biochemistry of Cancer Metabolism 3 Protein | 6 | **1.5** | **12,17 April** |
| Biochemistry of Apoptosis, necrosis, necroptosis, autophagy, pyroptosis | 8 | **2** | **19,24 April** |
| Mitochondria and its Role in Metabolism and Cancer, aging, MDR | 8 | **2** | **26 April 8 May** |
| Hypoxia and Starvation or Oxygenation roles in Metabolism and Cancer | 4 | **1** | **10 May** |
| Hallmarks of Cancer | 8 | **2** | **17,22 May** |
| Mechanisms of Drug Resistance, MDR | 6 | **1.5** | **24,29 May** |
| Cases | 2 | **1** | **31 May** |
| Exams | | **Week # 15** | **June** |
| **Total** | **60** | **15** | |

## Lecturers:

Prof. Nadia Hamdy +
Dr Sara Mostafa

## 4-Teaching and Learning Methods (Blended mode)

- Lectures (board, data show)
- Peer discussion panels for various topics
- directed reading,
  independent study,
  web conferencing,
  self-directed study,
  self-study packages,
  computer simulations,
  practical demonstrations,

## 5- Student Assessment Methods

- To assess general and transferable skills (blended) via
  seminars,
  case studies,
  independent research,
  student-led seminars,
  workshops,
  tutorials,

**Weighting of Assessments**

| | | |
|---|---|---|
| Final-term Examination | 80.00 | % |
| Oral Examination | 10.00 | % |
| Periodicals | 10.00 | % |
| **Total** | **100** | **%** |

**1 - List of References**

https://en.wikipedia.org/wiki/Tumor_metabolome

https://www.sciencedirect.com/topics/medicine-and-dentistry/tumor-metabolism

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4928883/pdf/1600200.pdf

http://themedicalbiochemistrypage.org/ https://www.ibiology.org/explore/ Elsevier Research Academy with countless e-learning resources/ Research Cycle

https://researcheracademy.elsevier.com/learn How to Write a Research Proposal

https://ascholarship.com/research-proposal-how-to-write-a-research-proposal/ How to Read a Paper http://blizzard.cs.uwaterloo.ca/keshav/home/Papers/data/07/paper-reading.pdf How to Present a Paper https://ocw.mit.edu/courses/brain-and-cognitive-sciences/9-916-the-neural-basis-ofvisual-object-recognition-in-monkeys-and-humans-spring-2005/assignments/

https://youtu.be/kYmLQP2M-qo
https://www.youtube.com/watch?v=hcGrpd0CRV0
http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWcitations.html
https://www.facebook.com/Egypt.Scholars.Labs/videos/167978331259768/
https://ablesim.com/the-conclusion-chapter/
https://poorvucenter.yale.edu/teaching/ideas-teaching/preparing-lecture
https://www.youtube.com/watch?v=EngTE65x_oQ&fbclid=IwAR1qxNEK05O8bI8ChbB5N5N4Lux59ZvKT_zYKC5vQJiwvCeSWYDI_B_KRto

https://www.youtube.com/watch?time_continue=2&v=WmMqcAwVQrk&feature=emb_logo

**6- Facilities Required for Teaching and Learning**

Google classroom,
Emails, youtube, ppt,
Videos, virtual labs,
Group discussion, Links, Voice messages,
zoom meeting for live sessions.

***Course Coordinator: Prof. Dr. / Nadia Hamdy***
***Head of Department: Prof. Dr. / Nadia Hamdy***

**Date: 2 / 2021**

| Course name | Basic Biochemistry |
|---|---|
| Code | PHB 701 |

## Basic Biochemistry 701 Course matrix

| Course content | a1 | a2 | a3 | a4 | a5 | b1 | b2 | b3 | b4 | d1 | d2 | d3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Introduction, How to ... | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ |
| Biochemistry of Cancer Metabolism 1 CHO | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ |
| Biochemistry of Cancer Metabolism 2 Lipids | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ |
| Biochemistry of Cancer Metabolism 3 Protein | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | ■ |
| Biochemistry of Apoptosis, necrosis, necroptosis, autophagy, pyroptosis | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ |
| Mitochondria and its Role in Metabolism and Cancer, aging, MDR | ■ | ■ | ■ | ■ | ■ | ■ | | | | ■ | ■ | ■ |
| Hypoxia and Starvation or Oxygenation roles in Metabolism and Cancer | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | ■ |
| Hallmarks of Cancer | ■ | ■ | ■ | ■ | ■ | ■ | | | ■ | ■ | ■ | ■ |
| Mechanisms of Drug Resistance, MDR | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | ■ |
| Cases | ■ | ■ | ■ | ■ | ■ | | ■ | ■ | | ■ | ■ | ■ |

**تم الاعتماد فى (محضر مجلس قسم الكيمياء الحيوية)**
**جلسة رقم (٦) بتاريخ**
**٢٠٢١/٢/١٦م**

**رئيس قسم الكيمياء الحيوية**

Prof. Nadia Hamdi

**ا.د. ناديه حمدي الحفني**