

COURSE COMPACT GUIDE

Course

Course code: BCH 424

Course title & credit unit. Tissue Biochemistry and Immunochemistry (3 UNITS)

Course status if it's either - (compulsory)

Course Duration

Three hours per week for 15 weeks (45hours)

Lecturer Data

Name of the lecturer: Prof. Opoku; Mr. Nwonuma C.O.

Qualifications obtained: PhD.

Department: Biological Science

College: College of Science and Engineering

E-mail: nwonuma.charles [@lmu.edu.ng](mailto:nwonuma.charles@lmu.edu.ng)

Office Location: 49/ A 302

Consultation Hours: Monday- Wednesday 2:00pm

Course Content – Illustration below:

Liver; Distribution of nutrients, urea synthesis, excretory functions, detoxification reactions. Kidney renal functions and the composition of urine. Blood: cellular components, plasma proteins. Muscle structure, mechanism of contraction. Nerves; synapses, neurotransmitters, hormones; physiological actions and biochemical mechanisms. Immunochemical techniques and immunology. Body defence mechanism.

Course Description – Illustration below:

The course will explain the functions and importance of some vital organ animal organism.

Course Justification – Illustration below:

The main justification to the study of this course is to explain the structures of the body organs and how these structure helps in the functionality of the organs and the effect in the overall organism

Course objectives

At the end of this course, students should be able to:

- i. *Identify all the major organs in the body and their major functions*
- ii. *To know the part of the body where these organs are located*
- iii. *The relationship between these organs and the blood circulation in the body*
- iv. *The ways to regulate the organs for the proper functioning of the body*
- v. *To know the cell structure of the organs*

Course Requirement – Illustration below:

It is required that the students pass all the 100 level courses

Method of Grading- An example below

S/N	Grading	Score (%)
1.	Test	10
2.	Assignment	5
3.	Practical (laboratory work)	15
4.	Final Examination	70
	Total	100

N.B.

This varies from College to College. So please, find out the grading method in your College

Course Delivery Strategies – Illustration below:

Lecture and Collaboration method complimented with laboratory work will be adopted. In the laboratory, working programs will be demonstrated through execution and students will be given programs to write, execute and discuss. Students may sometimes be grouped for the laboratory work.

LECTURE CONTENT

- **Week 1 & 2:** Liver; Distribution of nutrients, urea synthesis, excretory functions, detoxification reactions
- **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- i. Describe the structure and the location of the liver in the body
- ii. Describe how the food are broken down and excreted by the organ
- iii. Explain the ways by which the liver functions in the detoxification process in the body
- iv. How urea is synthesized in the liver

- **Description**

First hour: Explain the shape size and location of liver, and other features of the liver

Second hour: Explain the mechanism by which liver distribute nutrients in the body and way by waste are excreted from the body

Third hour: Explain the detoxification process and other function of the liver for the well-being of the organism, the risk exposed to the body function when liver fail in its function

➤ **Study Question: This section entails study question for the week lecture.**

- i. Describe the metabolic role of Liver in the body
- ii. Describe the detoxification role of the liver in the body
- iii. Explain the significance of the size and location of liver to its functions
- iv. Explain health challenges associated with diseased liver

➤ **Reading List - Books and materials students can read. Illustration below:**

Murray, R.K., Granner, D.K., Mayes, P. A. and Rodwell, V. W. (2003) twenty-sixth edition. McGraw-Hill companies limited.

Nelson, D. L. and Cox, M. M. (2004) Lehninger Principles of Biochemistry. 4th edition. Worth Publishers, New York.

Reginald H. Garrett and Charles M. Grisham (2007) Biochemistry third edition. Thomson Learning, Inc.

➤ **Week 3 & 4: *Kidney renal functions and the composition of urine* Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- v. Describe the structure and the location of the kidney in the body
- vi. Describe the excretory function of the kidney
- vii. Explain the ways by which the kidney functions in the synthesis and excretion of urine
- viii. Explain the parts of the functional unit of the kidney

➤ **Description**

First hour: Explain the shape size and location of kidney, and other features of the kidney

Second hour: Explain the mechanism by which kidney function in the excretion of urine

Third hour.: Explain the composition of urine

➤ **Study Question: This section entails study question for the week lecture.**

- v. Describe the metabolic role of kidney in the body
- vi. Describe the urine synthesis function of the kidney in the body
- vii. Explain the significance of the size and location of kidney to its functions
- viii. Explain health challenges associated with diseased liver
- ix. What is renal pressure and its significant

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➤ **Week 5 & 6: Blood: cellular components, plasma proteins**

➤ **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- ix. Describe the structure and the location of the liver in the body
- x. Describe how the food are broken down and excreted by the organ
- xi. Explain the ways by which the liver functions in the detoxification process in the body
- xii. How urea is synthesized in the liver

➤ **Description**

First hour: Explain the shape size and location of liver, and other features of the liver

Second hour: Explain the mechanism by which liver distribute nutrients in the body and way by waste are excreted from the body

Third hour.: Explain the detoxification process and other function of the liver for the well-being of the organism, the risk exposed to the body function when liver fail in its function

➤ **Study Question: This section entails study question for the week lecture.**

- x. Describe the metabolic role of Liver in the body
- xi. Describe the detoxification role of the liver in the body
- xii. Explain the significance of the size and location of liver to its functions
- xiii. Explain health challenges associated with diseased liver

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➤ **Week 5 & 6: Muscle structure, mechanism of contraction**

➤ **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- xiii. Describe the cellular components of the blood
- xiv. Describe the functions of the blood
- xv. Identify the plasma components of the blood and their functions

- xvi. Describe the process of erythropoiesis

➤ **Description**

First hour: Explain the shape size and location of liver, and other features of the liver

Second hour: Explain the mechanism by which liver distribute nutrients in the body and way by waste are excreted from the body

Third hour.: Explain the detoxification process and other function of the liver for the well-being of the organism, the risk exposed to the body function when liver fail in its function

➤ **Study Question: This section entails study question for the week lecture.**

- xiv. Describe the metabolic role of Liver in the body
xv. Describe the detoxification role of the liver in the body
xvi. Explain the significance of the size and location of liver to its functions
xvii. Explain health challenges associated with diseased liver

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➤ **Week 7& 8 : *Muscle structure, mechanism of contraction***

➤ **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- xvii. Describe the cellular structure of muscle
xviii. Describe the functions of muscle
xix. Identify the types of muscles
xx. Describe the mechanism of muscle contraction

➤ **Description**

First hour: Explain the types of muscles and their functions

Second hour: Describe the cellular structure of muscles

Third hour.: Explain the mechanisms of muscle contraction

➤ **Study Question: This section entails study question for the week lecture.**

- xviii. Describe the types of muscles
xix. Explain the significant of the smooth muscle

- xx. Explain the energy metabolism in the muscles
- xxi. Explain the mechanism of muscle contraction

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➤ **Week 9 & 10 : Nerves; synapses, neurotransmitters**

➤ **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- xxi. Describe the cellular structure of neurone
- xxii. Describe the structure and function of synapse
- xxiii. Explain the function and chemical structures of neurotransmitters
- xxiv. Explain the specificity of neurotransmitters to a synapses

➤ **Description**

First hour: Explain the importance of nerve cell to the body and the innervation system

Second hour: Explain the mechanism by which impulse are transferred through the synapse

Third hour.: Explain the chemical structure of neurotransmitters

➤ **Study Question: This section entails study question for the week lecture.**

- xxii. What is a nerve cell?
- xxiii. Describe with a structure the mechanism of impulse transfer through nerve cells
- xxiv. Describe the methods of action potential during impulse transmission in a neurone
- xxv. What is a neurotransmitter?

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➤ **Week 11 & 12: hormones; physiological actions and biochemical mechanisms**

➤ **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- xxv. Describe the chemical structures of some hormones
- xxvi. Describe the physiological functions of some hormone
- xxvii. Explain the endocrine and exocrine system
- xxviii. Explain the biochemical reactions of the hormones
- xxix. Give the classification of hormones

➤ **Description**

First hour: Explain the endocrine and exocrine systems.

Second hour: the structure and functions of hormones.

Third hour,: the biochemical reactions of endocrine systems

➤ **Study Question: This section entails study question for the week lecture.**

- xxvi. Are hormones proteins? Explain
- xxvii. Describe the mechanism of hormone actions
- xxviii. Give a detailed classification of hormones
- xxix. What is the relationship between the enzymes and hormones

➤ **Reading List - Books and materials students can read. Illustration below:**

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Week 13 & 14: *Immunochemical techniques and immunology. Body defence mechanism.*

➤ **Objectives (list the objectives)**

The students at the end of the lectures for the week should be able to:

- xxx. Explain the methods of immunochemical techniques
- xxxi. Explain the importance of immunology in a system
- xxxii. Explain the immunological system
- xxxiii. Explain of the components of body defence mechanism

➤ **Description**

First hour: Immunochemical techniques

Second hour: Immunology

Third hour,: the components and mechanism of body defence

➤ **Study Question: This section entails study question for the week lecture.**

- xxx. Describe the immunochemical techniques

- xxxi. What is immunity?
- xxxii. Explain the significance of immunology to the body
- xxxiii. Give a detailed account of the body defence mechanism

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Week 15

Topic: 2015/2016 Omega Semester Examination

Objectives:

The exam question will include all that was taught in the class and the assignment given to in the class

Reading List:

- i. The text book that will be recommended for the class
- ii. Lecture note book
- iii. Assignments