BCH510 – Tissue Biochemistry

COURSE PARTICULARS

Course Code: BCH510  
Course Title: Tissue Biochemistry  
No. of Units: 3  
Course Duration: three hours of lecture per week for 15 weeks.  
Status: Compulsory  
Course Email Address: bch510@gmail.com  
Course Webpage: http://www.bch.futa.edu.ng/courseschedule.php?coursecode=BCH%50510  
Prerequisite: NIL

COURSE INSTRUCTORS

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Dept. of Biochemistry,  
Federal University of Technology, Akure, Nigeria.  
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COURSE DESCRIPTION

The course provides comprehensive information on the biochemical mechanisms and physiological actions of the normal functioning of vital organs such as the liver, kidney, nerves and muscles. The course gives understanding of how the blood and hormones functions. It also provides insight into the biochemical parameters/indices that can be used to assess the functional capacity of these organs.

COURSE OBJECTIVES

The main objective of the course is to make students understand the structures and biochemical mechanisms underlying the normal functioning of liver, kidney, muscles, nerves, blood, hormones and plasma protein. To achieve this objective, students are expected to attend 45 hour lecture period. By the end of the course, students will be able to

• Describe the structure and metabolic function of the liver, kidney, muscle and central nervous system  
• Describe the blood and its cellular components  
• Describe the biochemical function of endocrine glands  
• Describe the structure of and types of muscle cells  
• Describe the structure of the nerve cells-axons, cell body and dendrite
• Describe the synapses and the various types
• Define neurotransmitters and the various types
• Describe the neurotransmitters as component of impulse transmission
• Describe reflect arc/the biochemical basis of transmission of impulses from the effector to the affector cells
• Define and discuss the various classes of hormones with examples
• Discuss the mechanism of action of a named steroid hormone
• Discuss the mechanism of action of a named water soluble hormone
• Discuss the various importance of hormones
• Describe the biochemistry of vision

COURSE LEARNING OUTCOMES / COMPETENCIES

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

(Knowledge based)
• explain and understand the biochemical function of body organs;
• identify different types of tissues;
• classify and understand different types of body fluids;
• explain the mechanism of action of hormones
• have a basic understanding of the biochemical basis of Acquired Immune Deficiency Syndrome (AIDS);

(Skills)
• use the skills acquired in the class to be able to:
  o isolate various body organs in an experimental animal;
  o carry out some biochemical test on isolated organs
  o carry out some biochemical test on some body fluids;

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class Attendance</td>
<td>10%</td>
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<tr>
<td>Assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Test(s)</td>
<td>20%</td>
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<tr>
<td>Final Examination</td>
<td>60%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
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GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures. Attendance records will be kept and used to determine each person’s qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Academic Integrity: Violations of academic integrity, including dishonesty in assignments, examinations, or other academic performances are prohibited. You are not allowed to make copies of another person’s work and submit it as your own; that is plagiarism. All cases of academic dishonesty will be reported to the University Management for appropriate sanctions in accordance with the guidelines for handling students’ misconduct as spelt out in the Students’ Handbook.
Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn you zero for that assignment. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

Code of Conduct in Lecture Rooms and Laboratories: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, etc.) during lectures. Food and drinks are not permitted in the laboratories.

READING LIST


Legend
1. Available in the University Library
3. Available as Personal Collection
4. Available in local bookshops.
5. Departmental library
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>1&amp;2</td>
<td>Muscle, kidney, liver and central nervous system</td>
<td>Student should be able to understand the biochemistry and metabolic function of muscle, kidney, liver and central nervous system</td>
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<td>3 &amp; 4</td>
<td>Monoclonal antibodies, Body fluids, electrolytes and homeostasis</td>
<td>Students should be able to define monoclonal antibodies, body fluids, electrolytes, homeostasis and understand their biochemical function</td>
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</table>
| 5 & 6| Blood and its cellular components                                     | At the end of the two weeks students should be able to do the following:  
- Define blood  
- State the composition of the blood  
- Highlight the function of the blood  
- Define hematological parameters  
- Describe the red and white blood cells and its related indices  
- Discuss the clinical relevance of alterations on the hematological parameters |
<p>| 7    | The endocrine organs                                                 | At the end of the two weeks, student should be able to identify the endocrine organs (pituitary, adrenal, gonads, thyroids and parathyroids) and know their biochemical function |
| 8-9  | Hormones and mechanisms of action                                     | Student should be able to know what hormones are and their biochemical mode of action                                                     |
| 10-11| Muscu-skeletal systems                                                | At the end of the 2 weeks lecture students should be able to know the biochemistry of muscle, contractile process and connective tissues |</p>
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<tr>
<th>12&amp;13</th>
<th>The immune system and Biochemistry of vision</th>
<th>At the end of the 2 weeks lecture student should understand the nature of humoral and cellular immunity; biochemical basis of acquired immune deficiency syndrome and biochemistry of vision</th>
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<tbody>
<tr>
<td>14</td>
<td>Revision</td>
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<tr>
<td>15</td>
<td>Course evaluation</td>
<td>This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students’ expectations for the course have been met.</td>
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