COURSE CONTENT

Course

Course code: **BCH 313**

Course title followed by the credit unit: **Metabolism of Amino acids and Proteins** (3 UNITS)

Course status: (compulsory)

Course Duration

4 hours practical 2 – 6pm (Tuesday)

2 hours teaching 10 – 12pm (Friday)

Total hours per week = 6hours for 15 weeks (90 hours)

Lecturer Data

Name of the lecturer: Mr C.O. Nwonuma
Qualifications: Msc. Biochemistry
Department: Biological Science
Faculty: Science and Engineering
E-mail: nwonuma.charles@lmu.edu.ng
Office Location: Rm A 303
Consultation Hours:

Course Content –

Module 1: Amino acids

Module 2: covalent backbone and biological functions of proteins

Module 3: Protein catabolism

Module 4: oxidative degradation of Amino acids and metabolism of one carbon unit

Module 5: Biosynthesis of Amino acids and derivatives

Module 6: Urea cycle

Module 7: Ketogenicity and Glucogenecity

Module 8: Inborn errors of Amino acid metabolism

Module 9: Creatine and Creatinine metabolism

Module 10: laboratory work

Course Description –

The course will enhance the understanding of the students about the relationship between amino acids and proteins and the metabolism. The student will appreciate the more, the importance of protein and amino acid in the overall function of the body.

Course Justification – Illustration below:

The course will enable the students have full knowledge of the pathway metabolism of amino acid and protein. The advantage of the proteins and amino

acids in the overall functions of the biological system.

Course objectives

At the end of the course, students will be able to;

I. Explain the difference between protein and amino acids

II. General functions of proteins

Course Requirement –

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**

Course Delivery Strategies –

Course delivery will be by Face-to-face method, Participatory method and Lecture method. Assignments will be given out to students periodically as individual and in groups.

LECTURE CONTENT

Week 1&2: Amino acids, covalent backbone and biological functions of proteins

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

i. Know the names and the structures all the amino acids.

ii. Know the chemical bond among amino acids in proteins and functions of proteins.

iii. Description:

First and second hours: introduction/

Study Question

i.

Week 3&4: Protein catabolism & oxidative degradation of Amino acids and metabolism of one carbon unit

Objective(s)

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

i. Describe the amino acid sequence and it importance in the protein function.

ii. Describe some metabolic pathways in amino acid metabolism.

Description

First &second hour: protein catabolism and metabolic pathways

Study Question

i. What is protein catabolism?

Week 5&6: Biosynthesis of Amino acids and derivatives & Urea cycle

Objective(s)

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

iii. Know the pathway unique for each amino acids

iv. Know the importance of urea cycle in a living system.

Description

First &second hour: Introduction/

Study Question

i. Describe the biosynthesis of any known amino acid

Week 7&8: Ketogenicity and Glucogenecity&Inborn errors of Amino acid metabolism

Objectives

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

i. Know and classify amino acids on the bases whether are ketogenic , glucogenic or both.

ii. Know the mechanism or the cause of inborn error of amino acids metabolism

- **Description**

  First and second hour: introduction of the topic/definition/explanations

- **Study Question:**

  i. Classify the twenty amino acids

  ii. What is inborn metabolic error

- **Week 9&10:** Creatine and Creatinine metabolism

- **Objectives**

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

  i. Know the importance of creatine metabolism

  ii. Know the importance and metabolism of creatinine

- **Description**

  First and second hour: introduction of the topic/definition/explanations
- **Study Question:**
  i. What is the difference between creatine and creatinine?
- **Reading List - Books and materials students can read. Illustration below:**

Week 12&14: Practical

- **Week 15**
- **Topic:** Examination

- **Objectives:**
- To examine the students on all that has been taught during the semester.

- **Reading List –**

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.

29th Edition Harper's Illustrated Biochemistry