



**THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE**  
*School of Sciences*  
*Department of Biology*

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**BIO 201 - Introductory Genetics**

**COURSE PARTICULARS**

**Course Code:** BIO 201

**Course Title:** Introductory Genetics

**No. of Units:** 3

**Course Duration:** Two hour of lectures and three hours of practicals per week for 12 weeks.

**Status:** Compulsory

**Course Email Address:** bio201@yahoo.com

**Course Webpage:** <http://www.bio.futa.edu.ng/courseschedule.php?coursecode=BIO%20201>

**Prerequisite:** NIL

**COURSE INSTRUCTORS**

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**COURSE DESCRIPTION**

The course serves as an introduction to the branch of Biology known as Genetics. It serves to teach the students the scope as well as varied applications of the field of Genetics. It is of great importance to students of Biology, Biochemistry and Microbiology who are likely to offer more specialised higher level courses in their respective departments in the area of genetics. The practical aspect of the course aims to teach students how to differentiate between hereditary traits from environmentally induced traits, how to observe, record and analyse genetic data using various statistical tests as well as computer statistical software and carrying tests such as Blood group determination. Topics to be taught include Mendelian genetics, Non-Mendelian inheritance, Population genetics, Microbial genetics as well as Molecular genetics.

## COURSE OBJECTIVES

The objectives of this course are to:

- Introduce students to the field of study known as Genetics, its scope and applications.
- Enable students develop the basic practical skills in genetic analysis, reasoning and basic tests.

## COURSE LEARNING OUTCOMES / COMPETENCIES

At the conclusion of the course a student will be able to

- identify genetic traits/characters;
- have an understanding of the genetic principles governing the inheritance of the traits/characters and its molecular basis
- construct and analyse Pedigree (inheritance of traits/characters within families/related individuals)
- have the necessary basic knowledge for higher level genetic courses in their various departments
- analyze and interpret genetic data carry out basic tests such as blood group and genotype

## GRADING SYSTEM FOR THE COURSE

The course grading system is as follows:

Tutorials/ Assignments	10%
Test	10%
Practicals	20%
<u>Final Examination</u>	<u>60%</u>
<b><u>TOTAL</u></b>	<b><u>100%</u></b>

## GENERAL INSTRUCTIONS

Attendance at lecture and practical classes is non-negotiable and is in line with the University's rule of 70% attendance before a student will be allowed to write the final examination.

Absence at lectures and practical classes must be with the permission of the course lecturer. An exemption to this rule is in the case of ill health.

Assignments, tutorials and practical reports must be submitted through the Class Representatives as and when due. Late submission will under no guise be accepted.

Dress code for practical classes is a white, long-sleeved clean and spotless laboratory coat. Bags, handsets are not to be brought into practical classes. A practical manual for the practical aspect of the course is to be procured by each student and read before practical classes.

Decorum during lectures is the watchword. Any form of academic dishonesty and /or fraud will lead to a repeating of the course. Students are to please take note of this.

## READING LIST

<sup>1,2</sup>Klug, W.S., Cummings, M.R. (2000). Concepts of Genetics . 6<sup>th</sup> Edition Prentice Hall Publishers, USA. 815 pages.

<sup>1,2</sup>Elrod, S. Stansfield, W. (2002). Genetics. Schaum's Outlines 4<sup>th</sup> Edition. Tata McGraw-Hill Publishers, USA. 501 pages

<sup>1,2</sup>Brooker, R. (2013). Concepts of Genetics. McGraw-Hill Publishers; USA. 736 pages

<sup>1,2</sup>Brooker, R. (2012). Genetics; Analysis and Principles. McGraw-Hill Publishers, USA. 864 pages

### ***Legend***

1- Available in the University Bookshop

2- Available in Bookshops off-Campus

## COURSE OUTLINE

Week	Topic	Remarks
1	Definition, scope and applications of genetics especially in modern Biology	Introductory class when general rules, instruction and expectations are communicated to students. Practical I holds this week also.
2 & 3	Mendelian genetics. Probability in genetics and tests of goodness of fit (Chi-square test)	Practical II will involve identifying human genetic traits while Practical III will involve applying probability and Chi-square test in the analyzing of genetic data. Laptops are expected to be brought to class as a hands-on practical on the use of the Excel Spreadsheet to calculate Chi-square will be done. Tutorial I will be released.
4	Quantitative Inheritance. Gene and Chromosome theories of Inheritance Linkage, crossing over and chromosome mapping	Practical IV will involve tests in determining the ABO blood groups in Humans and its mode of inheritance. Tutorial II will be released.
5, 6 & 7	Molecular genetics, - Physical and Chemical nature of genes; DNA replication, transcription and translation.	Assignment I will be released.
8	Mutations and variation in Genome structure	Practical V will hold this week as well as the release of Tutorial III.
9	Introduction to microbial genetics, extra chromosomal and epigenetic systems.	Assignment II.

10 & 11	Variation, Natural selection and Introduction to Population genetics	TEST
12	Human genetics and Genetic analysis. Revision	Practical VI Revision class and Quality Assurance assessment will be done in this last week in order to determine if the expectations of the course have been met.