

COURSE CODE: MCB 309  
COURSE TITLE: MICROBIAL ECOLOGY  
NUMBER OF UNITS: 3UNITS  
COURSE DURATION: Three hours per week

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### **COURSE DETAILS:**

Course Coordinator: Dr. Akintokun, A.K. Bsc., Msc., PhD  
Email: [ron\\_akintokun@yahoo.com](mailto:ron_akintokun@yahoo.com)  
Office Location: Room A212, COLNAS  
Other Lecturers: Dr. Balogun, S.A and Dr. Obuortor, Tolu

### **COURSE CONTENT:**

- Microorganisms in their natural environments
- Survey of the roles of microorganisms in the ecosystems
- Symbiotic relationships
- Microbial populations and community dynamics
- Nitrogen fixation
- Methods of investigation of soil microflora

### **COURSE REQUIREMENTS:**

This is a compulsory course for all microbiology students. The students are expected to attend classes and practical sessions

### **READING LIST:**

1. Gillings, M. And Holmes, A. Plant Microbiology.
2. Simon Baker, Jane Nicklin, Naveed Khan and Richard Killington. Instant Notes microbiology
3. Agrawal/ Parihar. Industrial Microbiology Fundamental and Application.

### **LECTURE NOTES**

#### **DEFINITION OF MICROBIAL ECOLOGY**

- Microbial ecology is the study of the behaviour of microorganisms in their natural habitats and with the relationships between different organisms

#### **DEFINITION OF NITROGEN FIXATION**

- Nitrogen fixation is a process of conversion of gaseous form of nitrogen into combined form by some bacteria and cyanobacteria.

Nitrogen fixation is of two types symbiotic and asymbiotic nitrogen fixation.

The difference between symbiotic and asymbiotic nitrogen fixation is that microorganisms form symbiotic association with leguminous plants to fix atmospheric nitrogen. The asymbiotic nitrogen fixation microorganisms does not formed symbiotic association with plants

#### METHODS OF INVESTIGATION OF SOIL MICROFLORA

Soil dilution method

Soil plate method

Direct inoculation method

Immersion method

Fluorescent antibody technique

Fluorescent in-situ hybridisation (FISH)