**SOS 4204 SOIL PRODUCTIVITY MANAGEMENT AND ASSESSMENT**

**Instructors:** Victor A. Ochwoh (PhD) Full time staff

 Dr. Peter Ebanyat (PhD Full time staff

**Course Type**: **CORE (B.Sc Agric IV – Soil Science option and B.Sc. LUM III)**

**Course Prerequisites: Soil Fertility and Plant Analysis I,**

**Course Credits (CU)**: **3 CU i.e. 45 Contact Hours per semester**

**Course Duration**: **15 Topics (45 hours) i.e. 30 LH, 30 PH**

**1. COURSE OUTLINE**

Definition of soil productivity, distinction between soil and land productivity. Concepts of soil productivity. Factors influencing soil productivity. Importance of soil productivity management. Relationship between soil fertility, management practices, water supply and climate. Soil productivity assessment principles, methods and modelling. Approaches to managing soil productivity (scale and intensification issues; local adaptation including climate variation). Gender relations and issues in soils productivity.

**2. COURSE OBJECTIVES**

The overall objective of this course is to enable students have skills to integrate management practices that promote sustainable soil productivity.

The **specific objectives** are to enable student to:

1. Assess soil productivity
2. Identify management and sustainability strategies for soil productivity
3. Utilise diagnostic and predictive tools in soil productivity management

**3. RECOMMENDED REFERENCES FOR READING**

Lal. R. 1998. Soil quality and Agricultural Sustainability

Lal. R. 1994. Methods and Guidelines for assessing sustainable use of soil and water in the tropics

Forth. H.D and L.M. Turk, 1972. Fundamentals of soil science

Brady, N.C. 1990. Nature and properties of soils

**4. COURSE CONTENT, METHODS OF INSTRUCTION, TOOLS AND EQUIPMENT REQUIRED**

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| **TOPIC** | **CONTENT** | **METHOD OF INSTRUCTION/ Time allocated** | **TOOLS/ EQUIPMENT NEEDED** |
| Introduction  | * Definitions soil/land productivity, soil fertility
* Key terms in soil productivity
 | * Interactive lecture (2 hrs)
 | Chalk / BB or Markers / Flip charts |
| Factors influencing soil production  | * Factor affecting soil productivity (soil, climatic, physiographic and management factors)
 | * Interactive lecture (2 hrs)
 | Chalk / BB or Markers / maps |
| **Relationship of soil factors**  | Interrelationships between factors of soil productivity* Physical
* chemical and
* biological
 | Interactive lecture (3 hrs) | Chalk / BB or Markers / Flip charts |
| Soil fertility evaluation  | Methods of soil fertility evaluation * Chemical
* biological and
* microbial method
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / maps |
|  | * Strength, weakness, opportunities and threats to farming systems of Uganda.
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |
| Biomass and Organic matter  | * Methods of Biomass production for soil rehabilitation
* The role of soil organic matter and nutrient stocks
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / Flip charts |
| Intensification of agricultural systems | * Types of agriculture intensification systems
* Traditional
* Low input
* High input
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / maps |
| Integrated Soil fertility Management  | * Integrated soil fertility management technologies
* organic and chemical fertilizers
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / |
| Method and principles of soil productivity  | * Methods of soil productivity assessment
* Principles of soil productivity assessment
 | Interactive lecture (2 hrs)  | Chalk / BB or Markers / maps  |
| Land productivity classes | * Definitions of land productivity classes
* Types of land productivity assessment
 | Interactive lecture (2 hrs)  | Chalk / BB or Markers / maps  |
| Gender issues in soils productivity | * Gender relations and sustainable soil productivity
 | Interactive lecture (2 hrs) | Chalk / BB or Markers / maps |

**5. SUMMARY OF TIME NEEDED**

Interactive lecture 30 hrs

Field visit/class practical 10 hrs

Seminar 05 hrs

Evaluation 02 hrs

(Continuous assessments in week 6 and week 12)

**6. OVERALL COURSE EVALUATION**

Continuous Assessment Test 20%

Class practicals, Field work 20%

Final examination 60%