



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR**

THIRD YEAR FIRST SEMESTER

**SCHOOL OF TOURISM AND NATURAL
RESOURCES MANAGEMENT**

**DEPARTMENT OF ENVIRONMENTAL
STUDIES GEOGRAPHY AND AGRICULTURE
BACHELOR ENVIRONMENTAL STUDIES (EBH)**

**COURSE CODE: EPM 307
COURSE TITLE: SOIL AND WATER
CONSERVATION**

DATE: 11TH DECEMBER, 2018

TIME: 0830 - 1030 HRS

INSTRUCTIONS TO CANDIDATES

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A (30 MARKS) AND ANY FOUR IN SECTION B (40 MARKS)

SECTION A (30 MARKS)

1. Distinguish between the following terms:

- a. Watershed versus catchment area **(2 mk)**
 - b. Elluviation versus Illuviation **(2 mk)**
 - c. Minerals versus Organic Matter **(2 mk)**
 - d. Saline versus sodic soil **(2mk)**
 - e. Land Capability **(2 mk)**
2. Briefly discuss important rainfall parameters that can provide basic information required for management of land and water resources. **(5 mk)**
3. Briefly describe the impact of soil erosion on biomass productivity **(5 mk)**
4. Briefly describe some of the techniques used to reduce evapotranspiration in the field **(2 mk)**
5. Briefly discuss the three basic approaches to water management in agricultural field **(2 mk)**
6. Briefly discuss at three measures used to conserve water. **(3 mk)**
7. List six (6) principal factors influencing watershed operations **(3 mk)**

SECTION B (40 MARKS)

8. A=RKLSCP. Discuss. **(10 mk)**
9. Discuss in sufficient Details the causes and consequences of watershed deterioration. **(10 mk)**
10. Discuss in sufficient details the advantage of conservation agriculture **(10 mk)**
11. Describe in sufficient details, factors that contribute to soil erosion **(10 mk)**
12. Discuss in sufficient details some of the technigques used to conserve soil on steeply sloping land **(10 mk)**

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EPM 307: SOIL AND WATER CONSERVATION MANAGEMENT

(Use land according to its capability and treat it according to its needs by applying suitable scientific soil and water conservation measures for maximum sustained production)

Purpose of the Course

The Soil and Water Conservation course is a combination of subject matter and planned learning experiences on the principles involved in the conservation and/or improvement of soil and water resources for economic and recreational purposes. Typical learning activities include erosion control, land use planning, site surveying and profile leveling techniques, drainage and irrigation systems, constructing and maintaining ponds and dams, participating in personal and community leadership development activities, planning and implementing conservation management.

Expected Learning Outcomes

At the end of the course students are able:-

1. To acquaint themselves with conservation practices for both soil and water and their effect on environmental quality.
2. To develop an appreciation of agricultural and small-scale watershed hydrology and its relation to natural resources, agriculture, and the environment.
3. To understand water and wind erosion and their control.
4. To use some of the basic models in soil and water conservation.
5. To develop the analytical thinking and problem solving skills in soil and water conservation.

Course Content

- Overview of Kenyan soils, landscapes, and precipitation patterns.
- Soil erosion by water and wind: processes, mechanics, factors influencing assessment, measurement and modeling.
- Methods of soil conservation: control of erosion and sedimentation.
- Role of vegetation in erosion control. Environmental impact analysis of deforestation. Reducing erosional impacts of roads and other development. Strategies, approaches and systems in integrated watershed management. Soils, forests, land management, wetlands and their relationship with floods.
- Effect of land management on stream flow, storm flow, water quality, quantity and timing of flows.
- Design and construction of soil and water conservation structures.
- Soil and water conservation strategies in different eco-regions and in irrigation schemes.

Mode of Delivery

Lectures, demonstrations, group/class discussions and practical exercises

Instructional Materials/ Equipments

Computer, writing boards, writing materials, projectors, etc.

Course Assessment

The course will be assessed in two parts:

- Coursework (continuous assessment tests) which will normally contribute 30% of the total mark
- Examination shall normally contribute 70% of the total mark

Core Reading Materials for the course

1. "When the Rivers Run Dry: Water-The Defining Crisis of the Twenty-First Century" by Fred Pearce
2. Managing Our Natural Resources. Camp, William G., etal. 2002. DELMAR, 4th ed.