



# UNIVERSITY OF NAIROBI

## DEPARTMENT OF ENVIRONMENTAL AND BIOSYSTEMS ENGINEERING

5<sup>TH</sup> YEAR CLASS

### FEB 642 ADVANCED IRRIGATION ENGINEERING

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#### **Module 1 Review of irrigation principles and practices**

- Rationale for irrigation
- Irrigation systems
- Irrigation water requirements
- Irrigation scheduling

#### **Module 2 Environmental impacts of irrigation projects**

- Impacts on water, ecosystems, salinity and alkalinity
- Assessment tools and methods

#### **Module 3 Economic/financial impacts of irrigation projects**

- Impacts on water, ecosystems, salinity and alkalinity
- Assessment tools and methods

#### **Module 4 Social impacts of irrigation projects**

- Impacts on water, ecosystems, salinity and alkalinity
- Assessment tools and methods

#### **Module 5 Design of on-farm sprinkler irrigation system**

- Layout and components
- Size selection
- Performance evaluation
- Design specifications

#### **Module 6 Design of on-farm surface irrigation system**

- Layout and components
- Size selection
- Performance evaluation
- Design specifications

#### **Module 7 Design of a canal system**

- Layout and components
- Design considerations
- Canal sizing

- Water control and measuring structure

### **Module 8 Design of a pipeline**

- Layout and components
- Design considerations
- Pipe sizing and performance assessment

### **Module 9 Intake structure design**

- Layout and component
- Design considerations
- Component design

### **Module 10 Cause and effects of excess water**

- Sources of excess water
- Quantifying excess water
- Removal of excess water

### **Module 11 Cause and effects of excess salts**

- Sources of excess salts
- Quantifying excess salts
- Removal of excess salts

### **Module 12 Evaluating performance of irrigation projects**

- Yield and profitability
- Water use efficiency
- Water productivity

### **Module 13 Operation and maintenance of irrigation and drainage projects**

- Management of irrigation
- Maintenance and operation of irrigation
- Organizational and policy aspects