

AGX6478 Hydrology and Water Resources

Level	6
Course Code	AGX6478
Course Title	Hydrology and Water Resources
Credit value	4
Core/Optional	Core
Course Aim/s	To provide knowledge on hydrological principles and application for sustainable water resources management
Course Learning Outcomes (CLO):	<p>At the completion of this course student will be able to;</p> <p>CLO1: Understand the hydrological cycle and its components[PLO1][PLO2] [PLO12]</p> <p>CLO2: Estimate precipitation, infiltration, evapo-transpiration, interception and other components [PLO1][PLO2][PLO4][PLO5] [PLO11][PLO12]</p> <p>CLO3: Study the stream gauging methods and its application[PLO1][PLO5] [PLO6][PLO11][PLO12]</p> <p>CLO4: Analyse the hydrographs estimate runoff [PLO1][PLO5] [PLO8][PLO9]</p> <p>CLO5: Design and open and tube wells [PLO1][PLO5] [PLO10][PLO12]</p> <p>CLO6: Evaluate the aquifer properties using well hydraulics knowledge [PLO1] [PLO5] [PLO6] [PLO7]</p>
Content (Main topics, sub topics)	<p>Outline Syllabus:</p> <p>Unit 1: Soil Erosion</p> <p style="padding-left: 40px;">Session 1 : Hydrological cycle</p> <p style="padding-left: 40px;">Session 2 : Statistical concepts in hydrology</p> <p style="padding-left: 40px;">Session 3 : Precipitation</p> <p style="padding-left: 40px;">Session 4 : Infiltration</p> <p style="padding-left: 40px;">Session 5 : Evapo-transpiration</p> <p style="padding-left: 40px;">Session 6: Interception and depression storage</p> <p style="padding-left: 40px;">Session 7 : Surface detention and seepage</p> <p>Unit 02: Runoff</p> <p style="padding-left: 40px;">Session 8: Surface runoff</p> <p style="padding-left: 40px;">Session 9 : Methods of stream gauging I</p> <p style="padding-left: 40px;">Session 10 : Methods of stream gauging II</p> <p style="padding-left: 40px;">Session 11: Hydrograph</p> <p style="padding-left: 40px;">Session 12: Applications of hydrographs</p> <p>Unit 3: Groundwater</p> <p style="padding-left: 40px;">Session 13 : Ground water and aquifers</p> <p style="padding-left: 40px;">Session 14 : Aquifer characteristics</p> <p style="padding-left: 40px;">Session 15: Well hydraulics I</p> <p style="padding-left: 40px;">Session 16 : Well hydraulics II</p> <p style="padding-left: 40px;">Session 17 : Groundwater exploration and aquifer yields</p> <p style="padding-left: 40px;">Session 18 : Water quality</p> <p style="padding-left: 40px;">Session 19 : Groundwater quality for irrigation and industrial uses</p> <p style="padding-left: 40px;">Session 20 : Groundwater contamination I</p> <p style="padding-left: 40px;">Session 21 : Groundwater contamination II</p> <p>Unit 4: Wells</p> <p style="padding-left: 40px;">Session 22 : Design of open wells</p>

Session 23 : Construction open wells

Session 24: Design of tube well / borehole I

Session 25: Design of tube well / borehole II

Session 26 : Construction of tube well/borehole

Session 27 : River abstraction and spring water tapping

Laboratory work :

1. Measurement of soil erosion using universal soil loss equation
2. Determination of amount of sediment trap in water sample
3. Quantitative analysis of phosphate in soil and water sample