ST. JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS) VISAKHAPATNAM

B.SC.(HONORS) AGRICULTURE AND RURAL DEVELOPMENT WITH SINGLE MAJOR

# II SEMESTER AGRICULTURE AND RURAL DEVELOPMENT Time: 15hrs/week

AGRD151 (1)  **SOIL AND WATER CONSERVATION ENGINEERING**Marks:100

w.e.f AK 2023-2024 (Admitted batch) **SYLLABUS**

**OBJECTIVES:**

* To study about natural resources management for sustainable agriculture.
* To study about management of land and water.
* To study about irrigation projects.

**COURSE OUTCOMES**

At the end of the course, students will be able to

**CO1**: Discuss types of soil erosion, and control measures.

**CO2:** Explain the concept of irrigation water measurements.

**CO3:** Outlinedifferentwater harvesting techniques.

**UNIT – I: (3Hrs.)**

1. Introduction to soil and water conservation and causes of soil erosion.

2. Definition and agents of soil erosion, water erosion - Forms of water erosion - Gully classification and control measures.

 3. Soil loss estimation by universal soil loss equation - Soil loss measurement techniques.

**UNIT – II: (3Hrs.)**

1. Principles of erosion control - Introduction to contouring, strip cropping.

2. Contour bund - Graded bund and bench terracing.

  3. Wind erosion - Mechanics of wind erosion, types of soil movement - Principles of wind erosion control and its control measures.

4. Grassed water ways and their design.

**UNIT – III : (3Hrs.)**

1. Introduction to irrigation - Classification of irrigation projects.

2. Importance of irrigation water measurements - Volumetric, area velocity, discharge methods - Weirs, orifice, flumes.

3. Open channel hydraulics - Discharge calculations.

**UNIT – IV: (3Hrs.)**

1. Types of wells - Water lifting devices - Classification of pumps, their capacity, power requirement and discharge calculations.

2. Functional components and working principle of underground pipeline systems.

**UNIT – V: (3Hrs.)**

1. Functional components of micro irrigation systems and its design like drip, sprinkler irrigation systems etc.

2. Water harvesting techniques - Lining of ponds, tanks and canal systems.

**References Text Books**

1. Ghanshyam Das., 2012. Hydrology and Soil Conservation Engineering,

including Watershed Management. Second edition, PHI Learning Private Limited, New Delhi - 110001

2. Murthy, V. V.N., 2004. Land and Water Management Engineering. Kalayani Publishers, New Delhi

3. Michael A.M., 2007. Irrigation Theory and Practice. Second edition. Vikas Publishing House Pvt. Ltd.

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