Revised Course Contents of Agricultural Engineering UG Courses

Ag. Engg. 111  Fundamentals of Soil, Water & Conservation Engineering  3(2+1)


Practical: Acquaintance with different survey equipment including GPS; Levelling equipment - dumpy level, levelling staff, temporary adjustments and staff reading; Differential leveling; Contour survey - grid method; Plotting of contours; Layout of contours in field. Measurement of land slope in the field. Study of watershed. Study of stage level recorder. Design of earthen channels using Manning’s formula. Study of soil and water conservation measures. Study and design of rainwater harvesting systems

Ag. Engg. 243  Farm Power and Machinery  2 (1+1)

Status and need of hill mechanization, different sources of farm power in India, I.C engines, working principles, two stroke and four stroke engines, I.C. engine terminology, different systems of I.C. engine. Tractors and power tillers, Types, Selection of tractor and cost of tractor power and power tiller power. Tillage implements: Primary and Secondary tillage implements, Implements for intercultural operations, seed drills, paddy transplaners, plant protection equipment and harvesting equipment.

Practical: Study of different components of I.C. Engine; Study of working of four stroke and two stroke engine; Study of M.B. plough, measurement of plough size, different parts, horizontal and vertical suction, Study of disc plough; Study of seed-cum-fertilizer drills-furrow opener, metering mechanism, and calibration; Study of paddy transplaners. Study, maintenance and operation of tractor and power; Study of different parts, registration, alignment and operation of mower. Study of different inter cultivation equipment in terms of efficiency, field capacity; Repairs and adjustments and operation of sprayers;

Ag. Engg.  Protected Cultivation and Post Harvest Technology  2 (1+1)

Green house technology, Introduction, Types of Green Houses; Plant response to Green house environment, Planning and design of greenhouses, Design criteria of greenhouse for cooling and heating purposes. Green house equipment, materials of construction for traditional and low cost green houses. Irrigation systems used in greenhouses, Typical applications, passive solar green house, hot air green house heating systems, green house drying. Cost estimation and economic

**Practical:** Study of different types of green houses based on shape, construction and cladding materials; Calculation of air rate exchange in an active summer winter cooling system; Estimation of drying rate of agricultural products inside green house; Testing of soil and water to study its suitability for growing crops in greenhouses; The study of fertigation requirements for greenhouses. Study of various growing media used in raising of greenhouse crops and their preparation and pasteurization / sterilization; Visit to commercial green houses; Study of threshers, their components, operation and adjustments; Study of maize shellers; Study of improved grain storage structure; Study of dryers; Study of air screen cleaners & grader.

**Ag. Engg. 232 Renewable Energy Sources 2 (1+1)**


**Practical:** Constructional details of KVIC, Janata and Deen Bandu type biogas plants; Field visit to biogas plants; To study the efficiency of solar cooker; To study the performance of a solar still; To study and find the performance of a solar dryers; Study and working of solar photovoltaic pumping system; Study and performance evaluation of domestic solar water heater, solar lantern, solar street light. Evaluation of improved smokeless chulha