UNIT-I: SURVEYING AND HYDROLOGY


UNIT-II: SOIL EROSION AND CONSERVATION


UNIT-III: WATERSHED DEVELOPMENT AND MANAGEMENT

Watershed – Concept, types and delineation - Land capability classification - Participatory rural appraisal technique – Watershed development plan – Estimation of
cost and benefits - Gully and ravine reclamation – In-situ & Ex-situ water harvesting, micro catchments – Ground water recharge - Farm pond and percolation pond – Selection of suitable soil and water conservation practices – Afforestation – Holistic planning - Watershed based rural development – Use of aerial photography and remote sensing in watershed management - Applications of GIS in planning and development of watersheds including forest cover and water resources.

UNIT-IV: IRRIGATION AND DRAINAGE


UNIT-V: FARM AND IRRIGATION STRUCTURES

UNIT-VI: FARM POWER

Agricultural mechanization – Scope and sources of farm power - Animate and electromechanical - Thermodynamics - Construction and working of internal combustion engines - Fuel, ignition, lubrication, cooling, air intake, exhaust, governing and electrical systems of IC engines - Different types of tractors and power tillers - Power transmission, ground drive, power takeoff, steering, brake, implement control and hydraulic systems - Bulldozer – Features, traction, suspension, steering, operations using bulldozer – Weight transfer, theory of traction – Tractive efficiency – Mechanics and stability – Care and maintenance of tractors.

UNIT-VII: FARM MACHINERY

Farm machinery - Primary tillage implements – Mould board plough, disc plough and chisel plough - Secondary tillage implements – Cultivators, harrows and rotary tillers - Land shaping machinery – Leveller, ridger and bund former - Sowing and transplanting – Seed drills, planters and rice transplanters - Interculture implements - Plant protection equipment – Sprayers and dusters - Harvesting, threshing and combining equipment - Machinery for earth moving and land development - Machinery for horticulture, agro-forestry and forages – Haulage of agricultural and forest produces - Management of farm machinery - Cost estimation for farm operations.

UNIT-VIII: UNIT OPERATIONS IN FOOD AND AGRICULTURAL PROCESSING

UNIT- IX: PROCESS ENGINEERING OF AGRICULTURAL AND HORTICULTURAL CROPS


UNIT-X: RENEWABLE AND BIOENERGY