UNIT-I: Importance of Agriculture in national perspective; basic principles of crop production, diversification, diversification of Agriculture, principle of nutrient and water management, package of practices for rice, wheat sorghum, maize, chickpea, pigeon pea, potato, sugarcane, groundnut, major vegetable crops. Role of essential plant nutrients, their deficiency symptoms and management options. Structure and function of plant cells, cell division, Basic concept of plant physiology relating to crop production- Biochemical compounds viz, carbohydrates, proteins, enzymes, fats, liquid vitamins and their function, developmental programmes relating to rural upliftment and livelihood security; organisational set up of agricultural education research and extension and future strategies for up gradation.

UNIT-II: Volumetric and gravimetric analysis including complexometric methods, periodic classification of element, Basic principle of instrumental analysis including spectro-photometry (Absorption and emission spectrography), Atomic structure –elementary concept of radioactivity, element and compound common ion effect, solubility product— hydrolysis of salts, buffer solution indicates equivalent weights and standard solution. Elementary concepts of organic compounds- nomenclature and classifications including hydrocarbons, alcohol, aldehydes, acids and esters, carbohydrates, fats and liquids, amino acids, nucleic acids. Pesticides, their classification and uses; biopesticides and botanical pesticides.


UNIT-IV: Essential plant nutrients- criteria of essentiality, functions for plant growth, mechanisms for movement and uptake of ions in soils and plants, Forms of nutrients in soils, deficiency symptoms on plants, luxury consumption, nutrient interactions and chelated micronutrients. Soil fertility, evaluation and management for plant growth, soil testing and fertilizer recommendations. Soil classifications- diagnostic surface and sub- surface horizons, soil survey- types, objectives, uses, land capability classifications. Remote sensing and its application in agriculture, SIS, GIS and GPS- basic features and uses in agriculture, Elementary