# AGPC2002 AGRICULTURE FOR ENGINEERING (3-0-0)

**Objectives:** Know the crop types and their seasons, crop types and their seasons, effect of weather parameters on crop production, different tillage practices in the crop field, application of different types of fertilizers and organic manures, soil water constants and their role in crop production, weeds and methods of weed control, cropping patterns and their application, soil and climatic requirements of fruits, vegetables and flowers, nursery raising and planting methods of horticultural crops, irrigation methods, fertilizer application, harvesting and storage of fruits, vegetables and flowers.

## SOIL SCIENCE

**MODULE – I (12 Hours)**

Nature and origin of soil, soil forming rocks, minerals and their classification and composition, physical and chemical properties of soil, Soil formation, factors and processes, Soil Profile, surface soil and sub soil, classification of soils, Soil Taxonomy: Soil orders, sub orders, grate group and their characteristics; soil texture, soil structure, soil crusting, soil puddling and consistency, soil particle distribution, soil air and soil heat,

Soil colloids and their significance, Soil Organic Matter, soil acidity, soil salinity, saline and sodic soil, reclamation of saline and sodic soil, requirement of gypsum, Residual Sodium Carbonate, Essential Plant Nutrients, Deficiency Symptoms, types of inorganic fertilizers and their classification, Liquid Fertilizers, Quality of Irrigation Water: Analysis of irrigation water with respect to different parameters to study the quality of irrigation water; Interpretation of result and suitability criteria of irrigation water for different crops.

## AGRONOMY

**MODULE – II (08 Hours)**

Classification of crops based on their life cycle, season of growing and commercial use, agronomic importance and special purpose; weather parameters, effect of solar radiation on crop, weather hazards and their mitigation, types of tillage and tillage implements; tilth, factors influencing tilth and modern concepts of tillage, package of practice of major kharif field crops – paddy, maize and millets; rabi crops – oilseeds and pulses, field crops-sugarcane, jute and cotton; fodder crops(both Kharif and Rabi season), integrated nutrient management.

**MODULE – III (06 Hours)**

Organic Farming and Sustainable Agriculture, Soil – water – plant relationship, evapo-transpiration methods, crop coefficients, water requirement of important field crops and their critical stages of irrigation, methods of irrigation, irrigation efficiencies, Weeds - weed ecology and classification; methods of weed management - integrated weed management, Cropping System - crop rotation principles and advantages; cropping system, mixed and intercropping and relay cropping; integrated farming system

**HORTICULTURE**

**MODULE – IV (09 Hours)**

Soil and climatic requirements for fruits, vegetables, floriculture and plantation crops, different plant growing structures such as green house, lath house, hot bed, cold frame, other propagating frames etc. site selection, planning, lay out of different planting methods; Types of propagation, garden tools used in horticulture, their uses and maintenance, clean cultivation for orchard soil management, mulching, intercropping, cover cropping, filler cropping and weed management in orchards.

**MODULE – V (06 Hours)**

Fertilizer application, fertigation and irrigation methods for horticultural crops, Maturity indices, estimation of maturity, types of harvesting, grading, packaging, Methods of extraction of seeds, different types of storage; Major pest and diseases of fruit crops(mango, banana, papaya, guava, litchi, citrus, ber, pomegranate etc.) and their management; Major pest and diseases of vegetable crops(tomato, brinjal, chilli, okra, potato, cole crops, cucurbits, peas and beans etc.) and their management; Major pest and diseases of ornamental plants (rose, gladiolus, marigold, tuberose, chrysanthemum etc.) and their management.

**Books**


1. The nature and properties of soil (2002) - N.C. Brady and Ray, R. Weill; Pearson Education Inc. New Delhi.
2. A text book of soil science (1987) - T.D. Biswas and S.K. Mukharjee; Tata McGraw-Hill Publishing Co. Ltd.
3. Fundamentals of soil science (2002) - Indian Society of soil science, IARI, New Delhi.
4. Soil pedology (1996) – J. L. Sehgal, Kalyani publication, Ludhiana.
5. Soil Physics (1987) – B.P. Ghildyal and R.P. Tripathy; Wiley Eastern Ltd, New Delhi.
6. Introduction to soil physics-Daniel Hillel, Academic Press, New York
7. Introductory to soil science- Dilip Kumar Das, Kalyani publication, Ludhiana.
8. Practical manual for Introduction to soil science-P. K. Das, A. K. Dash, and G. H. Santra, Department of Soil Science & Agricultural Chemistry, Orissa University of Agriculture & Technology, Bhubaneswar.
9. Principles of Agronomy,Yellamanda Reddy T and S. Reddy G H, Kalyani Publishers
10. Principles and practices of Agronomy by S. S. Singh
11. Fundamentals of Agronomy by G. C. Dey
12. Principles of Agronomy by S.R.Reddy
13. Singh, Jitendra. *Fundamentals of Horticulture*-,Kalyani Publishers,Ludhiana.
14. Chadha, K.L. *Hand Book of Horticulture*., ICAR Publication, New Delhi
15. Kumar N. *Introduction to Horticulture*,Oxford & IBH Publishing Co.Pvt.Ltd., New Delhi
16. Janick, Jules. *Horticultural Science*, Surjeet Publications, Delhi
17. Muthukrishnan,N.,Ganapathy,N.,Nalini R. and Rajendran R. *Pest Management in Horticultural crops* ,New Madura Publishers, Madurai,Tamil Nadu

18. Ahamad Shahid, Anwar,Ali and Sharma,P.K. *Plant disease management in Horticultural crops*. Daya Publishing House, Delhi
19. Sudheer, K.P. and Indira, V. *Post harvest technology of Horticultural crops*. New India Publishing Agency, New Delhi
20. Panda, P.K. and Swain, S.C. *Practical Manual on Fundamentals of Horticulture*- College of Horticulture, Chiplima, OUAT, Bhubaneswar