Syllabus for B.Sc. (Hons) Agriculture Year – II (Sem. III)

Subject Code: 16AS0310

Subject Short Name: Agron. 3.4

Subject Name: Principles and Practices of Natural Farming

Objective:

1. To provide comprehensive understanding and knowledge to students about natural farming.
2. To teach students the concept, need and principles of native ecology-based production under natural farming.
3. To impart practical knowledge of natural farming and related agricultural practices in Indian and global environmental and economic perspectives.

Credits Earned: 2 Credits (1+1)

Course Outcomes: After completion of this course, Students will be able to

- Understand the history, principles, and scope of natural farming.
- Analyze the role of natural farming in climate change mitigation, soil health, and biodiversity conservation.
- Evaluate nutrient, pest, disease, and weed management strategies in natural farming.
- Assess government initiatives, certification standards, and market potential of natural farm produce.
- Develop practical skills in on-farm input preparation, indigenous seed production, and ecosystem service evaluation.

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Progressive Assessment (PA)	Viva (V)	Term work (TW)	
1	0	2	3	40	20	20	10	10	100

Theory Content:

Unit	Topics	Contact Hours
1	Indian Heritage of Ancient Agriculture and history of Natural Farming,	**1**

2	Concept, definition, objective, essential characteristics, principles, scope and importance of natural farming	**1**
3	Main Pillars of natural farming and Methods/ types/schools of natural farming	**1**
4	Characteristics and design of a natural farm	**1**
5	Concept of ecological balance, ecological engineering and community responsibility in natural versus other farming systems	**1**
6	Introduction to concept of ecological, water, carbon and nitrogen foot prints	**1**
7	Concept and evaluation of ecosystem services, integration of crops, trees and animals, cropping system approaches, Biodiversity, indigenous seed production, farm waste recycling, water conservation and renewable energy use approaches on a natural farm	**1**
8	Rearing practices for animals under natural farming	**1**
9	Nutrient management in natural farming and their sources, Insect, pest, disease and weed management under natural farming	**1**
10	Mechanization in natural farming, Processing, labelling, economic considerations and viability, certification and standards in natural farming	**1**
11	Marketing and export potential of natural farming produce and products	**1**
12	Initiatives taken by Government (central/state), NGOs and other organizations for promotion of natural farming and chemical free agriculture	**1**
13	Case studies, success stories and entrepreneurship opportunities in natural farming	**1**
	Total	**13**

Practical Content:

Unit	Topics	Contact Hours
1	Visit of natural farm and chemical free traditional farms to study the various components and operations of natural farming principles at the farm	**2**
2	Indigenous technical knowledge (ITK) for seed, tillage, water, nutrient, insect-pest, disease and weed management	**2**
3	On-farm inputs preparation methods and protocols	**4**
4	Studies in green manuring in-situ and green leaf manuring	**2**
5	Studies on different types of botanicals and animal urine and dung based non-aerated and aerated inputs for plant growth, nutrient, insect and pest and disease management	**2**
6	Weed management practices in natural farming	**2**
7	Techniques of Indigenous seed production- storage and marketing	**2**
8	Partial and complete nutrient and financial budgeting in natural farming	**2**
9	Evaluation of ecosystem services in natural farming (Crop, Field and System)	**2**
	Total	**20**

Reference Books:

- Ayachit, S.M. 2002. Kashyapi Krishi Sukti (A Treatise on Agriculture by Kashyapa). Brig Sayeed Road, Secunderabad, Telangana: Asian Agri-History Foundation 4: 205.
- Boeringa, R. (Eed.). 1980. Alternative Methods of Agriculture. Elsevier, Amsterdam, 199 pp.
- Das, P., Das, S.K., Arya, H.P.S., Reddy, G. Subba, Mishra, A. and others: Inventory of Indigenous Technical Knowledge in Agriculture: Mission mode Project on Collection, Documentation and Validation of Indigenous Technical Knowledge, Document 1 To 7, Indian Council of Agricultural Research, New Delhi.
- Ecological Farming -The seven principles of a food system that has people at its heart. May 2015, Greenpeace.

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process.

Distribution of Theory for course delivery and evaluation					
Remember	Understand	Apply	Analyze	Evaluate	Create
25%	25%	20%	10%	10%	10%

Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by white board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the class-rooms.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory/ field.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.