

B.VOC PROGRAM (4 years Honors)

2020-21 onwards (21jan21)



B Voc
Agriculture & Entrepreneurship

Members of BOS (Contact details)		
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Note: BOS is to provide final soft copy in PDF and word formats and four copies of hard copies in bounded form to the office of Dean Academic affairs.

1. Resolutions of the Board of Studies

Meeting held on: - -21.....Time:10.30 am
At: Convention center, Adikavi Nannaya University
RAJAMAHENDRAVARAM

Agenda: 1. Discussion on the format, syllabus of the proposed B Voc (Agriculture & Entrepreneurship) Course

- Eligibility of students
- Eligibility of faculty
- Other requirements

Members present:

- Dr A Matta Reddy
- Dr K V Seetharamaiah
- Dr A Srinivasa Rao
- Dr V Padmavathi
- Dr Mutyala Naidu

Resolutions:

- Approved the format of the course as it was as per the guidelines given by the UGC ,APSCHE and ANU for the formation of Vocational courses
- Resolved to approve the course up to 4th semester of the course
- Approved the titles of the courses, credits and teaching hours
- Approved the syllabus of the courses, Model papers
- Resolved to approve the paper setters of the courses from outside the university
- Resolved to approve the paper evaluators of the courses from the university

2. DETAILS OF PAPER TITLES & CREDITS

ADIKAVI NANNYA UNIVERSITY
Bachelor of Vocation: Agriculture & Entrepreneurship & Entrepreneurship
Course structure and syllabi: w.e from 2020-2021 Admitted Batch

I Year; Semester I								
S e m	Course no	Course name	Course type (T/L/P)	Hrs/Week (Sciences 4+2)	Credits (Science 4+1)	Each course Evaluation		
						Conti- Assess	Univ- exam	Total
I	1	Chemistry (Inorganic and Physical Chemistry)*	T	4	4	25	75	100
	2	Chemistry (Practical-I Analysis of salt mixture)*	L	2	1	0	50	50
	3	Introduction to Agronomy	T	4	4	25	75	100
	4	Introduction to Agronomy Practicals	L	2	1	0	50	50
	5	Introduction to Soil Science	T	4	4	25	75	100
	6	Introduction to Soil Science Practicals	L	2	1	0	50	50
	7	Principles Of Plant Breeding	T	4	4	25	75	100
	8	On Job Training	L	2	1	0	50	50
		Total		24	20			
I Year; Semester II								
II	1	Chemistry (Organic and General Chemistry)*	T	4	4	25	75	100
	2	Chemistry (Practical-II Volumetric Analysis)*	L	2	1	0	50	50
	3	Introduction to Entomology	T	4	4	25	75	100
	4	Introduction to Entomology Practicals	L	2	1	0	50	50
	5	Introduction to Plant Pathology	T	4	4	25	75	100
	6	Introduction to Plant Pathology Practicals	L	2	1	0	50	50
	7	Fundamentals of Crop Physiology	T	4	4	25	75	100
	8	On Job Training	L	2	1	0	50	50
		Total		24	20			

Note; Course type code: T: Theory, L: Lab, P: Problem solving

***Common With B.Sc**

II Year; Semester III								
S e m	Course no	Course name	Course type (T/L/P)	Hrs/Week (Sciences 4+2)	Credits (Science 4+1)	Each course Evaluation		
						Conti- Assess	Univ- exam	Total
III	1	Chemistry (Organic Chemistry and Spectroscopy)*	T	4	4	25	75	100
	2	Chemistry (Practical – III Organic preparation and IR Spectral Analysis)*	L	2	1	0	50	50
	3	Agronomy of Field Crops	T	4	4	25	75	100
	4	Agronomy of Field Crops Practicals	L	2	1	0	50	50
	5	Manures, Fertilizers & Soil Fertility Management	T	4	4	25	75	100
	6	Manures, Fertilizers & Soil Fertility Management Practicals	L	2	1	0	50	50
	7	Agricultural Economics & Farm Management	T	4	4	25	75	100
	8	On Job Training	L	2	1	0	50	50
		Total		24	20			
II Year; Semester IV								
IV	1	(Chemistry Inorganic, Organic and Physical Chemistry)*	T	4	4	25	75	100
	2	Chemistry (Practical – IV Organic Qualitative analysis)*	L	2	1	0	50	50
	3	Chemistry (Inorganic and Physical Chemistry)*	T	4	4	25	75	100
	4	Chemistry (Practical-V Course Conductometric and Potentiometric Titrimetry)*	L	2	1	0	50	50
	5	Pests of field crops & Their management	T	4	4	25	75	100
	6	Pests of field crops & Their management Practicals	L	2	1	0	50	50
	7	Water Management	T	4	4	25	75	100
	8	Water Management Practical	L	2	1	0	50	50
	9	Agri Business Management	T	4	4	25	75	100
	10	Agri Business Management practical	L	2	1	0	50	50
	11	Farm Power & Machinery	T	4	4	25	75	100
	12	On Job Training	L	2	1	0	50	50
		Total		36	30			

Note; Course type code: T: Theory, L: Lab, P: Problem solving

* Common With B.Sc

a. Proposed combination subjects:

1. Chemistry
2. Agriculture & Entrepreneurship

b. Student eligibility for joining in the course:

Pass in Intermediate (10+2)

Pass in Diploma in Agriculture & Entrepreneurship (10+2)

c. Faculty eligibility for teaching the course

Post Graduate in Agriculture & Entrepreneurship with Specialization in any Agricultural Science Subjects

d. List of Proposed Skill enhancement courses with syllabus, if any

All core papers are skill enhancement courses

e. Any newly proposed Skill development/Life skill courses with draft syllabus and required resources

NO

f. Required instruments/software/ computers for the course (Lab/Practical course-wise required i.e., for a batch of 15 students) : Enclosed separately in Annexure I

g. List of Suitable levels of positions eligible in the Govt/Pvt organizations

Suitable levels of positions for these graduates either in industry/govt organization like, technical assistants/ scientists/ school teachers., clearly define them, with reliable justification

S.No	Position	Company/ Govt organization	Remarks	Additional skills required, if any
1	Teaching Asst	Public & private B Voc Colleges		
2	Technical Asst	Public and private agri industries involved in the ag inputs		
3	Marketing managers	Public and private agri industries involved in the ag inputs		
4	Extension officers	Public and private agri industries involved in the ag inputs		

h. List of Govt. organizations / Pvt companies for employment opportunities or internships or projects

S.No	Company/ Govt organization	Position type	Level of Position			
1	ATMA	internship	Middle managemant			
2	Dept of Agriculture & Entrepreneurship	M A O A E O Tech.Asst	Middle management Village level			

i. Any specific instructions to the teacher /paper setters/Exam-Chief Superintendent

NIL

3. Program objectives, outcomes, co-curricular and assessment methods

B. VOCATION	AGRICULTURE ENTREPRENEURSHIP
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Programme objectives & Outcomes

1. Agriculture & Entrepreneurship is a very comprehensive subject that involves various aspects. The entire programme is aimed at making the students understand basic aspects and practices involved in Agriculture & Entrepreneurship from seed to seed i.e., production aspects, protection aspects, storage and marketing aspects of an agricultural product. It also involves economic aspects such as cost of production, cost of selling, profit etc, .The student will also able to establish an entrepreneur on his own and help to generate employment to others. By learning extension methodology to transfer of technology, he will acquire good communication skills and equip himself with personality development and become centre of attraction which helps him to become a successful entrepreneur.
2. This course also makes the students understand the basic requirements such as soil, water, nutrients, implements, labor, plant protection chemicals, finance and their management. The students should understand basic concepts of soil genesis, soil fertility, its various parameters of fertility status and their estimation and soil fertility conservation methods for sustainable Agriculture & Entrepreneurship.
3. The students should understand the life line of crop production i.e, Irrigation – sources of irrigation, water requirement of crops and or plants- critical stages of moisture stress Agriculture & Entrepreneurship with different regimes of water supply – abundance to scarcity. Comprehensive and integrated water management practices, water conservation practices particularly in dry land Agriculture & Entrepreneurship, rain fed Agriculture & Entrepreneurship etc.,
4. The students should be well versed with production aspects of Agriculture & Entrepreneurship, such as crop selection , varietal selection within crops based on resources and weather parameters , such as irrigation resources, rainfall quantity, distribution , droughts, floods , saline waters etc.,
5. The students should be well aware of field diagnostic techniques and crop conditions to identify nutritional disorders, biotic and abiotic stresses to the crop such as pests, diseases, salinity, moisture stress, (low & excess) and other problems.
6. This course must give the students a thorough understanding of crop cultivation, preservation and marketing, By the end of the course, the students should realize that farming is a viable and profitable option. This enables the students to be entrepreneurs and job providers rather than job seekers

Co-curricular and assessment methods

1. Course seminars on various chapters related to the course
2. Collection of samples and preparing herbarium in various courses such as Entomology (Insect collection boxes), Pathology (disease symptoms on various plant parts in various crops), Agronomy & Soil science (nutritional disorders)
3. Visiting of nearby Research stations, farms and farmers fields
4. Visiting nearby agro industries
5. Participating in Kisan melas, product exhibitions, farmers training programmes,
6. Participating in the webinars relevant to the curriculum, Important topics in the subject
7. Assignments
8. Participating in live projects
9. Conducting and or participating in Quiz programmes
10. Conducting and participating in the awareness programmes in rural areas to enlighten rural women, children and also farmers in various issues.

4. Details of course-wise syllabus for Theory and Lab

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year; Semester – I
INTRODUCTION TO AGRONOMY

CREDITS: 4

Teaching Hours: 4

Theory: Learning Outcome:

On successful completion of this course, the student will be able to

- **Understand basic principles of Agronomy**
- **Understand the methods of preparing soil ready for raising a crop**
- **Understand the soil, water and plant relationships**
- **Understands the water and nutrient use efficiency ,Irrigation and manuring**
- **Understand the weed competition , concepts of weed management**
- **Understand the growth and development of the crops , crop rotation and crop management techniques in problem soils**

COURSE OUTLINES –SYLLUBUS OF THE COURSE

UNIT- I: Importance and scope

Agriculture & Entrepreneurship - Definition
Branches of Agriculture & Entrepreneurship
History of agricultural development in the World and India.

UNIT - II: Agro climatic zones

Agronomy - Definition - Importance - Meaning and scope
Agro-climatic zones of Andhra Pradesh & India- Crops and their classification- Factors affecting crop production

UNIT - III: Tillage

Types - Objectives - Modern concepts of tillage
Crop establishment methods

UNIT – IV: Manures and fertilizers

Irrigation management - types
Fertilizer application - methods

UNIT – V: Cropping patterns and cropping systems

Weed management- harmful and beneficial effects of weeds- weed control methods
Sustainable Agriculture & Entrepreneurship
Integrated farming systems
Organic Agriculture & Entrepreneurship

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – I

INTRODUCTION TO AGRONOMY
(PRACTICAL)

Teaching hours: 2

CREDITS: 1

PRACTICAL SYLLABUS

1. Visit to college farm & Study of farm features and measurements
2. Identification of crops and seeds
3. Study of seed treatment practice
4. Study of tillage implements- practicing ploughing, puddling operations
5. Calculation of the seed rate and fertilized requirements.
6. Different methods of seed sowing and planting.
7. Methods of inter – cultivation operations and implements
8. Fertilizer applications and participation in field operations.

Reference Books

Reddy , S R and Reddi Ramu 5th edition 2016, -Kalyani publishers, Ludhiana.

YELLAMANDA REDDY,T. and SANKARA REDDY ,G.H.(2016) PRINCIPLES OF AGRONOMY. Kalyani publishers, Ludhiana

GOPALA CHANDRA DE.(1989) FUNDAMENTALS OF AGRONOMY. Oxford & IBH Publishing Company Pvt Ltd , New Delhi

GUPTA, O. P. (2011) MODERN WEED MANAGEMENT. Agribios (India) Jodhpur.

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP

2020-2021 Admitted Batch onwards

I Year Semester – I

INTRODUCTION TO SOIL SCIENCE

CREDITS: 4

Teaching Hours: 4

Theory: Learning Outcome:

On successful completion of this course, the student will be able to

- **Understand basic principles of Soil science**
- **Understand the soil formation, soil profile, and soil physical properties**
- **Understand the elementary knowledge of soil taxonomy**
- **Understands the problematic soils and their management**
- **Understand soil organic matter composition and its influence on soil micro organisms**

COURSE OUTLINES –SYLLUBUS OF THE COURSE

UNIT - I.INTRODUCTION:

- 1.1 Definition of soil
- 1.2 Soil as a Natural Body

UNIT - II.SOIL COMPONENTS:

- 2.1 Soil air
- 2.2 Soil water
- 2.3 organic and inorganic solids

UNIT - III.PHYSICAL PROPERTIES:

- 3.1 Soil separates, texture, Aggregation and Structural Characters, Temperature, Colour.
- 3.2 Properties of Soil Mixture, Pore Space, Bulk Density, Particle Density, Aeration.
- 3.3 Drainage, compaction, Surface area, Soil water relations.

UNIT - IV. MORPHOLOGY OF COLLOIDS & BIOLOGICAL PROPERTIES OF SOIL

- 4.1 Chemistry of clays, Ionic exchange
- 4.2 Acidity, alkalinity, PH, and salinity relations, Liming and Acidification.
- 4.3 Soil Organic matter, C:N relations
- 4.4 N Transformations, Soil organisms, Sulphur transformation.

UNIT - V. GENESIS AND CLASSIFICATION

- 5.1 Profile, Soil forming factors
- 5.2 Soil Survey methods
- 5.3 Soil survey Reports
- 5.4 Soil distribution, Classification of Systems, Drainage, Erosion: Mechanisms -Control.

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – I

INTRODUCTION TO SOIL SCIENCE
(PRACTICALS)

Teaching hours: 2

CREDITS: 1

PRACTICAL SYLLABUS

1. Soil sampling procedures for field and horticultural crops
2. Determination of EC.
3. Determination of PH of soil.
4. Land use, texture bulk density, Definition of Soil Physical properties.
5. Determination of N, P and K of the soil
6. Determination of Sulphur.
7. Fertilizer recommendations.
8. Soil health card, parameters, EC, PH and their Importance

References

- Indian Society of Soil Science.2012. Fundamentals of Soil Science. IARI, New Delhi
- Yawalkar K.S, Agarwal, T.P and Bokde, S 1995. Manures and Fertilizers. Agril. Publishing House, Nagpur
- Samuel Tisdale, Nelson Werner L, Beaton James D and Havlin John L. 2005.
- Soil Fertility and Fertilizers: An Introduction to Nutrient Management, Macmillan Publishing Co., New York.
- D. K .Das 2014. Introductory Soil Science. Kalyani Publishers, New Delhi

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP

2020-21 Admitted Batch

I Year Semester – I

PRINCIPLES OF PLANT BREEDING

Credits -4

Teaching Hours :4

Learning Out Comes: Theory

- The students should understand what is Plant breeding –its important in increasing the production, Productivity, Quality, resistance to biotic and abiotic stresses etc
- Understand the different special breeding methods of improvement in both self and cross pollinated crops
- the students should understand, acquaint and practice with the breeder's kit and its contents
- the students should have enough practice in emasculation, pollination and production of New hybrids in both self, cross pollinated crops and asexually propagated plants
- the students should have been the experts in selection of superior plants and progenies from the segregating generations
- the students should have well acquainted with statistical procedueres to evaluate different varieties, populations and segregating generations

Lecture outlines Theory

Lecture outlines Theory

UNIT 1

1. Plant Breeding - Definition, aim, objectives, history and developments of plant breeding, - Landmarks in plant breeding - Scope of plant breeding.
2. Modes of reproduction and apomixes - Asexual reproduction (vegetative reproduction and apomixis) and sexual reproduction - Their classification and significance in plant breeding.
3. Modes of pollination - Classification of crop species on the basis of mode of pollination– self pollination – mechanisms promoting self pollination – Genetic consequences of self pollination – Cross pollination – Mechanisms promoting cross pollination – Genetic consequences of cross pollination – Often cross pollinated crops.
4. Self– incompatibility - Classification – Heteromorphic, homomorphic, gametophytic and sporophytic systems of incompatibility – Advantages and disadvantages – Utilization in crop improvement.
5. Male sterility- Genetic consequences, cultivar options - Different types – Genetic, cytoplasmic and cytoplasmic genetic male sterility – Inheritance and maintenance– utilization of male sterile lines in hybrid seed production – Their advantages and disadvantages.

UNIT 2

1. Germplasm collections – Genetic erosion – Main reasons of genetic erosion – Extinction - Gene sanctuaries - Gene banks – Types of gene banks.
2. Breeding methods in self pollinated crops - Modes of selection - Selection – Natural and artificial selection, heritability (narrow and broad sense) – Genetic advance as per cent of mean.

3. Mass selection – Procedure for evolving a variety by mass selection – Modification of mass selection – Merits, demerits and achievements.
4. Pure line selection - Johannsen's pure line theory and its concepts and significance – Origin of variation in pure lines – Characters of pure lines – Progeny test, genetic basis of pure line selection – General procedure for evolving a variety by pure line selection – Merits, demerits and achievements – Comparison between mass and pure line selection.

UNIT 3

1. Hybridization techniques - Hybridization – Aims and objectives – Types of hybridization – Pre- for hybridization – Procedure / steps involved in hybridization.
2. Pedigree method – Procedure – Merits, demerits and achievements. Bulk method – Procedure – Merits, demerits and achievements – Comparison between pedigree and bulk methods - Single seed descent method – Merits and demerits.
3. Backcross method of breeding–Its requirements and applications – Procedure for transfer of single dominant gene - Procedure for transfer of single recessive gene – Merits, demerits and achievements - comparison between pedigree and backcross method.
4. Recurrent selection – Different types – Detailed procedure of simple recurrent selection and other recurrent selection methods – Conclusion on the efficiency of different selection schemes.

UNIT 4

1. Heterosis - Heterosis and hybrid vigour – Luxuriance – Heterobeltiosis – heterosis in cross pollinated and self pollinated species – Manifestations of heterosis-Genetic basis of heterosis – Dominance, over dominance and epistasis hypotheses – Objections and their explanations – Comparison between dominance and overdominance hypotheses – Physiological basis of heterosis – Commercial utilization.
2. Inbreeding depression - Brief history – Effects of inbreeding – Development of inbred lines and hybrids– History of hybrid varieties – Important steps in production of single and double cross hybrids.
3. Composite and synthetic varieties - Production procedures – Merits, demerits and achievements – Factors determining the performance of synthetic varieties – Comparison between synthetics and composites.

UNIT 5

1. Mutation breeding - Methods and uses - Mutation breeding – Procedure of mutation breeding – Applications – Advantages, limitations and achievements.
2. Breeding for important biotic and abiotic stresses
3. Polyploidy in relation to plant breeding - Polyploidy – Auto polyploids – Origin and production – Morphological and cytological features– Applications in crop improvement – Limitations– Allo polyploidy – Morphological and cytological features– Applications in crop improvement – Limitations.

Reference Books

B.D .Singh. Principles Of Plant Breeding. Kalyani Publication. New Delhi.

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-I, 2020-2021
OJT (ON JOB TRAINING)

Teaching hours: 2

CREDITS: 1

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

ADIKAVI NANNAYA UNIVERSITY

**Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – II**

INTRODUCTION TO ENTOMOLOGY

THEORY - Credits: 4

Teaching Hours:4

Learning Out Comes:

After completion of this course the students are able to

1. Understand Insect classification to some extent by taking phylum Arthropoda as an example
2. Understand basics of insect taxonomy and their arrangement
3. Understand basics insect ecology, factors effecting insect ecology such as biotic, abiotic and environmental
4. Understand basic concepts of pest forecasting
5. Understand basics of IPM-different aspects of IPM which is an important concept.

Unit I: History and importance

History of Entomology in India; Position of insects in the animal kingdom and their relationship with other classes of Arthropoda; Reasons for insect dominance.

Unit II: Morphology

General organization of insect body wall - structure and function, cuticular appendages, molting; Body regions - insect head, thorax and abdomen, their structure and appendages.

Unit III: Anatomy and physiology

Digestive, Excretory, Respiratory, Circulatory, Nervous And Reproductive Systems In Insects In Brief.

Unit IV: Taxonomy of Apterygota and Exopterygota

Insect systematics; distinguishing characters of agriculturally important orders and families of Hexapoda. Characters of Apterygota, Exopterygota (Ephemeroptera, Odonata, Orthoptera, Phasmida, Dictyoptera, Embioptera, Dermaptera, Hemiptera, Isoptera, Psocoptera, Mallophaga, Thysanoptera and Siphunculata).

Unit V: Taxonomy of Endopterygota Distinguishing characters of agriculturally important families of Lepidoptera, Coleoptera, Diptera, Hymenoptera, Siphonaptera, Neuroptera and Strepsiptera.

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – II

INTRODUCTION TO ENTOMOLOGY
PRACTICAL

Credits: 1

Teaching Hours:2

- a. Observations on external features of grasshopper / cockroach,
- b. Methods of insect collection, preservation – Preparation of Riker mount.
- c. Types of insect head, antenna, mouth parts – Structure of thorax.
- d. Types of insect legs, wings and their modifications – wing coupling.
- e. Structure of abdomen, and its modifications.
- f. Metamorphosis in insects – immature stages in insects.
- g. Study of digestive and reproductive systems of grasshopper / cockroach –
- h. Observing the characters of agriculturally important orders and families.

REFERENCES:

1. Vasantharaj David, B. and Rama Murthy V.V. 2016. Elements of Economic Entomology, Popular Book Depot, Coimbatore.
2. Vasantharaj David, B and Aanathakrishnan, T.N. 2006. General and Applied Entomology. Tata McGraw-Hill Publishing House, New Delhi.
3. Metcalf, R.L. and Luckman, W.H. 1982. Introduction to Insect Pest Management. Wiley Inter Science Publishing, New York.
4. Atwal, A. S. and Bains, S.S. 1989. Applied Animal Ecology. Kalyani Publishers, New Delhi
5. Yazdani, S.S. and Agarwal, M.L. 1979. Elements of Insect Ecology. Narosa Publishing House, New Delhi.
6. Dhaliwal, G.S. and Ramesh Arora 2001. Integrated Pest Management: Concepts and Approaches, Kalyani Publishers Ludhiana
7. Gautam, R. D. 2008. Biological Pest Suppression. Westville publishing House New Delhi
8. Larry P Pedigo and Marlin E Rice. 2009. Entomology and Pest Management. Prentice Hall of India Private Ltd., New Delhi

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP

2020-21 Admitted Batch

I Year Semester – II

INTRODUCTION TO PLANT PATHOLOGY

Credits: 4

Teaching Hours: 4

Learning Out Comes:

After completion of the course the students are able to

1. Understand the importance of plant diseases, scope and objectives of plant pathology
2. Understand the importance of disease causing organisms, economic loss to the crop and economic threshold limits (etl)
3. Understand the basic aspects of pathogen morphology, propagation methods
4. Understand the identification of diseases and casual organisms based on the symptoms

UNIT 1: Introduction to plant diseases and their causal organisms

History, Importance of plant diseases, scope and objectives of Plant Pathology. Important plant pathogenic organisms, Classification of Plant Diseases Binomial system of nomenclature, rules of nomenclature

UNIT 2 : Fungi

Fungi: General characters, definition of fungus, somatic structures, Types of fungal thalli, fungal tissues, modifications of thallus, Reproduction (asexual and sexual)

UNIT 3 :

1. Bacteria and Mollicutes Bacteria – General Characters, Classification of plant pathogenic bacteria
2. Important plant bacterial diseases and their causal agents
3. Mollicutes :Phytoplasm and Spiroplasma – General characters and important Diseases and vectors

UNIT4 : Plant Viruses

Fastidious vascular Bacteria – general characters and important diseases and vectors
Viruses: General characters of plant viruses, nature, architecture
Symptoms of various viral diseases, transmission of plant viruses.
Important plant viral diseases and their vectors.

UNIT 5: Viroids, phanerogamic plant parasites and plant parasitic nematodes 5.1 Viroids – General characters and important diseases

Phanerogamic plant parasites – general characters, propagation, survival and their hosts Plant parasitic nematodes–general characters and important plant parasitic nematodes.

ADIKAVI NANNAYA UNIVERSITY

**Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – II**

**INTRODUCTION TO PLANT PATHOLOGY
(PRACTICALS)**

Credits: 1

Teaching Hours:2

PRACTICALS:

1. Study of lab equipments.
2. Preparation of PDA (Potato Dextrose Agar).
3. Preparation of NA (Nutrient Agar).
4. General study of different structures of fungi.
5. Study of symptoms of various plant diseases.
6. Staining and identification of plant pathogenic bacteria.
7. Study of phanerogamic parasites.
8. 30 Herbarium of plant diseases caused by fungi, bacteria and viruses.

References:

1. Agribios, G.N. 2005. Plant Pathology. Elsevier Academic Press, New York.
2. Chaube, H.S. and Ramji Singh. 2001. Introductory Plant Pathology. International Book Distribution Co., Lucknow. 136
3. Mehrotra, R.S. 1980. Plant Pathology. Tata McGraw-Hill Publishing Co. Ltd., New Delhi.
4. Singh, R.S. 2002. Introduction to Principles of Plant Pathology. Oxford & IBH Publ. Co. Pvt. Ltd., New Delhi.
5. Vidyasekharan, P. 1993. Principles of Plant Pathology. CBS Publishers and Distributors, New Delhi.

ADIKAVI NANNAYA UNIVERSITY

**Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
I Year Semester – II**

FUNDAMENTALS OF CROP PHYSIOLOGY

THEORY Credits: 4

Teaching Hours: 4

Learning outcomes:

Crop physiology is a very important subject that reveals the various aspects of growth of the plants and its dynamics. After completion of this course the student learns to understand

1. The process of germination, different phases of germination of the seed and plantlet growth
2. Water absorption and distribution to various parts of the plant, transpiration and evaporation
3. Nutritional intake, effects of various important nutrients and their deficiency symptoms nutrient uptake mechanisms; assimilation of mineral nutrients: nitrate, ammonium,
4. Able to identify deficiency of nutrients based on symptoms and behavior of plants
5. The seed dormancy, types, methods to overcome the same

Lecture outlines

UNIT 1

1. Introduction to Crop Physiology and its importance in Agriculture & Entrepreneurship.
2. Metabolic changes during seed development - Physiological maturity, harvestable maturity - Indices of physiological maturity in crops - Seed germination - Metabolic changes during seed germination.
3. Growth and Development - Definition - Growth analysis - Growth parameters - Definitions and mathematical formulae
4. Absorption of water - Diffusion and osmosis - water potential and its components - Importance of water potential – Active and passive uptake of water – Stomatal complex – Transpiration - Water use efficiency of C3, C4 and CAM plants –

UNIT 2

1. Photosynthesis – Reactions of photosynthesis – Energy synthesis – Principle of light absorption by plants – Light reactions - Cyclic and non cyclic photophosphorylation – CO₂ fixation – C3 and C4 pathways – Significance of C4 pathway – CAM pathway and its significance – Photorespiration and its significance – Photosynthetic efficiency of C3, C4 and
2. CAM plants - Factors affecting photosynthesis (light, CO₂, temp and water stress) - Relationship of photosynthesis and crop productivity.
3. Respiration – Energy balance – Significance of respiration – Oxidative Pentose Phosphate Pathway (OPPP) and its significance – Growth respiration and maintenance respiration – Alternate respiration – Salt respiration – Wound respiration.

UNIT 3

1. Lipid metabolism – Biosynthesis of fatty acids in plastids – Functions of lipids - Significance of lipids in plant metabolism.
2. Physiology of flowering – Photoperiodism and flowering – Importance of photoperiodism – Classification of plants based on photoperiodic responses – Perception of photoperiodic stimulus – Biological clock – Phytochrome – Flowering hormones – Vernalization and flowering – importance of vernalization in Agriculture & Entrepreneurship.

UNIT 4

1. Plant growth regulators – Auxins – Occurrence, transport, biosynthesis, mode of action and physiological roles – Commercial uses.– Gibberellins – occurrence, transport, biosynthesis, mode of action and physiological roles – Commercial uses
2. Cytokinins – Occurrence, transport, biosynthesis, mode of action and physiological roles – commercial uses –
3. ABA – Occurrence, transport, biosynthesis, mode of action and physiological roles – Commercial uses –

UNIT 5

1. Ethylene – Occurrence, transport, biosynthesis, mode of action and physiological roles – Commercial uses.
2. Senescence and abscission – Definition – Classification of senescence – Physiological and biochemical changes that occur during senescence - Prevention of leaf and flower senescence – Abscission and its relationship with senescence.
3. Fruit ripening - Climacteric and non climacteric fruits – Metabolic changes during fruit ripening - Hormonal regulation of fruit ripening – Ripening induction and ripening inhibition – Use of hormones in increasing vase life of flowers.

REFERENCE BOOKS:

1. GOPALA CHANDRA DE.(1989) FUNDAMENTALS OF CROP PHYSIOLOGY.
Oxford & IBH Publishing Company Pvt Ltd , New Delhi

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-II, 2020-2021
OJT (ON JOB TRAINING)

Teaching hours: 2

CREDITS: 1

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester - III
AGRONOMY OF FIELD CROPS

Credits: 4

Teaching Hours: 4

Learning outcomes:

This course deals with the actual crop husbandry aspects of various important crops. After completion of the course the students should be in a position to

- 1. Raise the crops independently following the package of practices for higher yields**
- 2. Selection of the crops, varieties/hybrids**
- 3. Preparation of land, irrigation and drainage channels etc.,**
- 4. Harvesting of crop at right time, processing and storage**
- 5. How to avoid losses at all stages of crop growth due to pests, diseases and nutritional disorders**

Syllabus \ course outlines

UNIT-I: PACKAGE OF PRACTICES TO RAISE THE CEREALS : Rice, wheat.

UNIT-II: : PACKAGE OF PRACTICES TO RAISE THE MILLETS : Maize, sorghum, Pearl millet, Finger millet, Proso millet, Kodo millet, Foxtail millet, Little millet, Barnyard millet

UNIT-III: : PACKAGE OF PRACTICES TO RAISE THE PULSES: Pigeon pea, Green gram, Black gram, Bengal gram, Peas, Horse gram, Cowpea

UNIT-IV: : PACKAGE OF PRACTICES TO RAISE THE OIL SEEDS: Ground nut , Sesame, Sunflower, Castor, Rape seed, mustard, safflower, niger, Coconut and oil palm

UNIT-V: : PACKAGE OF PRACTICES TO RAISE THE SUGAR & FIBER CROPS: Sugarcane, Sweet sorghum, Cotton, Jute, Mestha, Sunhemp and other crops

: PACKAGE OF PRACTICES TO RAISE THE OTHER CROPS AND FODDER CROPS:: Tobacco, Fodder sorghum, cowpea, Napier, Lucerne, Berseam AND OATS

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP

2020-2021 Admitted Batch onwards

II Year Semester - III

AGRONOMY OF FIELD CROPS

(PRACTICAL)

Teaching hours: 2

CREDITS: 1

1. Identification of cereals, millets, pulses, oil seed, sugar and fiber crops in the crop Cafeteria.
2. Practicing various nursery types and main field preparation for field crops.
3. Acquiring skill in different seed treatment techniques in important field crops.
4. Estimation of plant population, seed rate and fertilizer requirement for important field
5. Acquiring skill in field preparation, sowing and manuring of crops under pure and intercropping situations for field crops.
6. Acquiring skill in using seed drill for sowing operations.
7. Observations on growth parameters of cereals, millets, pulses, green manures and forage
8. Study on yield parameters and estimation of yield in field crops.
9. Working out cost and returns of important cereals, millets and pulses.
10. Collection of seeds of field crops.

Reference Books

1. Reddy , S R and Reddi Ramu 5th edition 2016, Agronomy of Field Crops- Kalyani , Ludhiana.
2. Chidda Singh, Singh ,P and Singh R, Modern Techniques of Raising field crops-oxford publishing house, New Delhi.
- 3 Rajendra Prasad 2004 text book of Field Crop Production Volume i, Volume ii
- 4 Panda S C 2014 Agronomy of Fodder a forage crops, kalyani publishers Ludhina

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – III

MANURES, FERTILIZERS AND SOIL FERTILITY MANAGEMENT

Credits: 4

Teaching Hours: 4

Learning Out Comes:

After the completion of the course, the students should be able to

- 1. Understand the essential nutrients for the crop growth, their deficiency symptoms and remedial measures**
- 2. Understand the methods of manufacture of urea, ammonium sulphate, SSP, DAP, MOP and SOP. Complex, mixed fertilizers, customized/Specialty fertilizers – Water soluble fertilizers, liquid fertilizers.**
- 3. Understand various methods of fertilizer application**
- 4. Understand the concepts of INM (integrated nutrient management), STCR, IPNS, SSNM (Site Specific Nutrient Management) and RTNM**

Syllabus of the course:

Unit–I : Essential Nutrients Soil fertility and productivity-

Essential nutrients – functions, deficiency and toxicities. Concepts and methods of soil fertility evaluation.

Nutrient Dynamics Nutrients – sources, forms, mobility, transformations, fixation, losses and availability of nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, iron, manganese, zinc, copper, boron, molybdenum, nickel, chloride in soils – Beneficial elements – Nutrient interactions.

Unit–II : Classification of Fertilizers

Fertilizers – Definition and classification, sources, properties and reactions of primary, secondary and micro nutrient fertilizers in soil – Manufacture of urea, ammonium sulphate, SSP, DAP, MOP and SOP. Complex, mixed fertilizers, customized/Specialty fertilizers – Water soluble fertilizers, liquid fertilizers. Micro nutrient mixtures and chelated micronutrients – Preparation, characteristics and compatibility – Fertilizer Control Order (FCO). Manures – classification, nutrient contents. Composting techniques.

Unit–III : Application Methods

Methods of fertilizer application – Seed coating, pelletization, seedling dipping – Nutriseed pack – Soil Application – Foliar spray – Fertigation – water soluble fertilizers, fertigation scheduling (Fertilizer – water interaction, fertilizer solubility, comparison of fertilizer application methods).

Unit–IV : Nutrient Management

Nutrient management concepts – INM, STCR, IPNS, SSNM and RTNM. Nutrient use efficiencies of major and micronutrients and enhancement techniques (Soil, Cultural and Fertilizer strategies). Soil health – Quality indices and their management – Long term effect of fertilization on soil.

Unit–V: Compost and composting-

Green manures- Definitions of penning -Introduction and importance of organic manures- Bulky organic manures- Different methods of composting including the starters and raw materials

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – III

MANURES, FERTILIZERS AND SOIL FERTILITY MANAGEMENT
(PRACTICAL)

Teaching hours: 2

CREDITS: 1

1. Introduction to analytical instruments and principles-spectrometry and flame photometry
2. Estimation of available N in soils
3. Estimation of available P in soils
4. Estimation of available K in soils
5. Estimation of available S in soils
6. Estimation of available Ca and Mg in soils
7. Estimation of available Zn in soils
8. Basic of plant analysis and estimation on N in plant samples
9. Estimation of P in plant samples
10. Estimation of K&S in plant samples
11. Identification acid radicals in fertilizers / salts
12. Identification of basic radicals in fertilizers / salts
13. Estimation of N in Ammonium sulphate
14. Estimation of N in Urea and FYM
15. Estimation of water soluble P₂O₅ SSP
16. Estimation of K Muriate of potash or Sulphate of potash by using flame photo meter.

References

1. Indian Society of Soil Science.2012. Fundamentals of Soil Science. IARI, New Delhi
2. .Yawalkar K.S, Agarwal, T.P and Bokde, S 1995. Manures and Fertilisers. Agril. Publishing House, Nagpur
3. Samuel Tisdale, Nelson Werner L, Beaton James D and Havlin John L. 2005. Soil Fertility and Fertilizers: An Introduction to Nutrient Management, Macmillian Publishing Co., New York.
4. D. K .Das 2014. Introductory Soil Science. Kalyani Publishers, New Delhi

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
II Year Semester – III

AGRICULTURAL ECONOMICS & FARM MANAGEMENT

CREDITS: 4

Teaching Hours: 4

Theory: Learning Outcome:

On successful completion of this course, the student will be able to

- Understand basic principles of Agricultural economics. How it is different from normal economics
- Understand the basics of demand, supply, and consumer's equilibrium
- Understand the elementary knowledge of Production, market structure, market dynamics and Distribution theory
- Understands the fundamental concepts of public finance, Agriculture & Entrepreneurship taxation, VAT, GST
- Understand the roles of money, banking, credit, price index credit and role of credit policy

COURSE OUTLINES –SYLLUBUS OF THE COURSE

UNIT I:

Economics – meaning – definitions – subject matter of economics – traditional approach – Modern approach – microeconomics and macroeconomics- Agricultural economics – definitions – meaning – importance of agricultural economics-branches of agricultural economics - Agricultural production economics – meaning – definitions –Farm management – meaning– scope – definitions – objectives.

; Agricultural marketing – meaning – definition – importance of agricultural marketing.

Basic terms and concepts in economics – goods and services – free and economic goods, utility.

Value – definition – characteristics; price – meaning; wealth – meaning – attributes of wealth – Wants – meaning – characteristics of human wants.

Law of diminishing marginal utility – statement – assumptions of law – explanation –limitations of the law – importance- Law of equi-marginal utility – meaning – assumptions – explanation of the law limitations of the law – practical importance

UNIT 2

Consumer's surplus – meaning – assumptions – explanation – difficulties in measuring consumer's surplus importance.

Demand – meaning – definition – types of demand – income demand, price demand and cross demand Demand schedule – demand curve – Law of demand – Elasticity of demand – meaning – elastic and inelastic demand – kinds of elasticity of demand.

3.Price elasticity – income elasticity and cross elasticity of demand – practical importance of elasticity of demand.

Supply – meaning – definition – Law of supply – supply schedule – supply curve Increase and decrease in supply – contraction and extension of supply – factors affecting supply -Elasticity of supply – kinds of elasticity of supply.

Markets – definition – essentials of market – classification of market structure – perfect and imperfect markets Characteristics of monopolistic competition – monopoly and oligopoly.

UNIT 3

National income – concepts of national income – gross domestic product, gross national product, net national product, net domestic product -Methods of measurement of national income – product method, income method and expenditure method.

Public finance – meaning – role and importance of public finance – functions of the government – differences between public finance and private finance Public revenue.

Tax – meaning – classification – direct and indirect taxes – methods of taxation – proportional, progressive, regressive and degressive taxation, agricultural taxation -other types of taxation – Value Added Tax (VAT) -Canons of taxation

Public expenditure – social and economic balanced regional growth, development of Agriculture & Entrepreneurship and industry, exploitation and development of mineral resources and subsidies and grants to local governments, and exports .

UNIT 4

Inflation – meaning – definition – related concepts of inflation – deflation, disinflation, stagflation and refutation.

Measurement of inflation - consumer price index, wholesale price index, producer price index and GDP deflator.

Types of inflation – demand pull and cost push inflation – comprehensive and sporadic inflation – suppressed and repressed inflation – creeping, walking, running and galloping inflation – markup inflation- Causes of inflation.

UNIT 5

Factors causing increase in demand – increase in money supply, increase in disposable income, increase in public expenditure, increase in consumer spending.

Cheap monetary policy, deficit financing and increase in exports, factors causing shortage of supply – shortage of factors of production, industrial disputes, natural calamities, artificial scarcities, increase in exports, lop-sided production

Law of diminishing returns and international factors

Remedial measures to control inflation – monetary measures – credit control, demonetisation of currency and issue of new currency – fiscal measures-

REFERNCE BOOK:

1. Fundamentals Of Agriculture Economics . Praveen Kumar Verma, Santhosh Kumar Nag. JAYA Publications.

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-III, 2020-2021
OJT (ON JOB TRAINING)

Teaching hours: 2

CREDITS: 1

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

PESTS OF FIELD CROPS AND THEIR MANAGEMENT

Credits:4

Teaching Hours: 4

Learning Out Comes:

After completion of the course every student should able to

- 1. Understand the various insects that damage the crop plants, thereby causing economic loss to the farmers.**
- 2. Identify the casual organism, insect by seeing the symptoms, etiology, assess the loss**
- 3. Should able to identify, take up correct ameliorative measures to immediately check the damage and further infestation.**
- 4. Should able to measure the dosage of chemical, proper method and safe way of application of the insecticide**

SYLLABUS:

UNIT: I:

Pests of Cereals and Millets Distribution, bionomics, symptoms of damage and management strategies for insect pests and integrated pest management of rice, wheat, maize, sorghum, cumbu and ragi.

Unit II:

Pests of Pulses and Oilseeds Distribution, bionomics, symptoms of damage and management strategies of insect pests and integrated pest management of pulses (grams, cowpea.), groundnut, castor, gingelly, sunflower, safflower, soybean and mustard.

Unit III.

Pests of Cotton and Sugarcane Distribution, bionomics, symptoms of damage and management strategies of insect pests and integrated pest management of cotton and sugarcane.

Unit IV:

Pests of Green Manures, Stored Products, bionomics, symptoms of damage and management strategies of pests of green manures (Sunnhemp, Sesbania, Daicha)and stored products.

Unit V:

Rodents and birds of agricultural importance and their management.Locusts and their management.

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

PESTS OF FIELD CROPS AND THEIR MANAGEMENT
(PRACTICAL)

Teaching hours: 2

CREDITS: 1

- Pests of rice
- Pests of maize, sorghum and cumbu
- Pests of wheat and ragi
- Pests of grams and cowpea
- Pests of groundnut, gingelly and sunflower
- Pests of castor, soybean, safflower and mustard
- Pests of cotton
- Pests of sugarcane
- Pests of stored products
- Gadgets for management of stored product insects.
- Calculation on the doses and their application techniques
- Assessment of loses in stored grain pests, fumigation of grains stored in godowns
- Visit to nearest FCI/AWC/SWC godown

Reference Books

1. Vasanthraj David. B and Rama murthy VV 2016 Elements of Economic Entomology, popular book depot, Coimbatore
2. Vasanthraj David. B and Ananthakrishnan T.N.2016. General and applied Entomology , Tata McGraw-Hill publishing house, New Delhi.
3. Nair MRGK 1986, Insects and Mites of Crops in India, ICAR, New Delhi.
4. Khare, S.P 1993 Stored Grain Pests and their Management, kalyani publishers, Ludhina.

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

WATER MANAGEMENT

THEORY CREDITS: 4

Teaching Hours :4

LEARNING OUT COMES:

After completion of this course the student should understand

- 1. The concept of weed, weed-crop plant competition, loss due to weeds, weed menace**
- 2. The ways to identify the weeds in a crop, the ways to control the weeds economically**
- 3. Critical stages of crop growth sensitive to weed menace weed control measures, integrated weed management**
- 4. Roll of water in crop growth, yield, weed control and nutrient up take**
- 5. Sources of irrigation water, types of irrigation, field capacity, losses of irrigation water – prevention**
- 6. Drainage of excess water- losses due to floods**

Lecture outlines Theory

UNIT 1

Importance and History of Irrigation

- 1.Role of water in plant growth – Importance of irrigation – Water resources and irrigation potential of India – History and development of irrigation in India – Irrigation systems of India.

UNIT 2

1. Soil-water relations – physical properties of soil viz., depth, soil texture, soil structure, particle density, bulk density and porosity influencing water retention, movement and availability.
2. Water retention in soil – adhesion and cohesion – soil moisture tension – pF – soil moisture characteristic curves- Water movement in soils – infiltration – percolation – seepage – permeability – hydraulic conductivity – saturated and unsaturated water flow.
3. Kinds of water in soil – gravitational water – capillary water – hygroscopic water – their importance in crop production - Soil moisture constants – saturation – Field capacity (FC) – Permanent Wilting Point (PWP) – Available Soil Moisture (ASM) – hygroscopic coefficient –theories of soil water availability.
4. Plant-water relationships – rooting characteristics – effective root zone depth – moisture extraction pattern – moisture sensitive periods of crops – Soil Plant Atmospheric Continuum (SPAC).

UNIT 3

1. Evapotranspiration – evaporation – transpiration – factors influencing evapotranspiration – Reference crop evapotranspiration (ET_o) – Crop coefficient – Crop Evapotranspiration (ET_c) - daily, seasonal and peak period consumptive use.
2. Crop water requirement – irrigation requirement – net and gross irrigation requirement – irrigation interval – irrigation period – seasonal water requirement of important crops – duty of water – base period – relation between duty and base period – conjunctive use of water – advantages of conjunctive use.
3. Scheduling of irrigation – different criteria – soil moisture regime approach – feel and appearance method – soil moisture tension and depletion of available soil moisture method - climatological approach – Irrigation Water (IW) / Cumulative Pan Evaporation (CPE) ratio method.
4. Scheduling of irrigation – plant indices approach – visual symptoms – soil cum sand mini plot technique – growth rate – relative water content – plant water potential – canopy temperature – indicator plants and critical growth stages.

UNIT 4

1. Methods of irrigation - surface methods – wild flooding check basin, ring basin, border strip, furrow and corrugations – advantages and disadvantages- Sub surface irrigation.
2. Micro irrigation systems - sprinkler irrigation – merits and demerits – system components and layout – suitable crops – rain guns.
3. Drip irrigation (surface and sub surface) – merits and demerits – system components and layout – suitable crops - fertigation and maintenance of micro irrigation systems.

UNIT 5

1. Water Use Efficiency (WUE) – crop and field water use efficiency – factors influencing WUE – climatic, genetic and management (agronomic) factors - Irrigation efficiencies – water conveyance efficiency, water application efficiency, water storage efficiency, water distribution efficiency and project efficiency.
2. Quality of irrigation water – salinity hazard, sodium hazard, residual sodium carbonate and boron toxicity – criteria and threshold limits – management practices for using poor quality water.
3. Water logging – causes for waterlogging – drainage- surface and sub-surface drainage systems

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

WATER MANAGEMENT
(Practical)

Credits:1

Teaching Hours: 2

1. Installation and working with tensiometer and resistance blocks
2. Determination of field capacity by field method Measurement of soil moisture content by moisture probe
3. Measurement of irrigation water through flumes, weirs and V notches
4. Calculation of irrigation water requirements
5. Lay out of surface irrigation methods
6. Demonstration of drip irrigation system (filter cleaning, flushing of laterals and fertigation)
7. Demonstration of operation of sprinkler irrigation system
8. Visit to micro irrigation systems in farmers fields.
9. Water management practices in rice, wheat and maize.
10. Water management practices in groundnut, sunflower and sugarcane.

References

1. Michael, A.M. 2006. Irrigation – Theory and Practice. Vikas Publishing House Pvt. Ltd., New Delhi.
2. Reddy, S.R. 2016. Irrigation Agronomy 3 rd Edition. Kalyani Publishers, Ludhiana.
3. Sankara Reddi, G.H. and Yellamanda Reddy, T. 2006. Efficient Use of Irrigation Water.. Kalyani Publishers, Ludhiana.
4. Majumdar, D.K. 2013. Irrigation water management: Principles and practices. PHI learning Pvt Ltd, Delhi-92

ADIKAVI NANNAYA UNIVERSITY
B Voc AGRICULTURE & ENTREPRENEURSHIP & ENTREPRENEURSHIP
II Year Semester – IV
AGRI BUSINESS MANAGEMENT

Credits:4

Teaching Hours: 4

Learning outcomes

After completion of the course, the students should be able to

1. understand the meaning, scope and structure and dimensions of Agricultural economics
2. Understand the Meaning and definitions and salient features of Agri Business management
3. Human resource training and development – Participative management, Production management and Marketing management and Developing marketing strategies
4. They should also understand Capital management. Financial management Strategic management
5. And understand NPW, BCR, IRR, N/K ratio, Sensitivity analysis.

Course outlines Theory

UNIT 1:

1. Agribusiness – Meaning, scope and structure and dimensions (Agricultural input sector - Agricultural production sector - Agricultural processing sector and Marketing and trade sector)
Importance of agribusiness in Indian economy, - Distinctive features of agribusiness Management –
Definitions and concepts - Pipeline diagram –
2. Agribusiness Management – Meaning and definitions and salient features. - Management functions – Wheel diagram, planning, its importance –
3. Types of plans - Structure of planning - Goals or objectives - Strategies, policies, procedures, rules, programmes – Characteristics of good plan - Steps in planning.
4. Organizing– Meaning, purpose, staffing – Definition - Staffing process.
5. Directing – Motivation – Ordering – Leading – Supervision, coordination, communication and control – Meaning and definitions, purpose.

Unit 2

1. Leadership styles – Group dynamics – Motivation. Managing human resources in agribusinesses - HR Functions - Role of HR managers – Human resource planning. 1
2. Human resource training and development – Participative management, labour management relations, conflict management.
3. Production management - Production, plant layout and material handling, operations planning and control - Inventory management - Inventory – Meaning – Definition – Objectives of inventories - Quality management production control – Scheduling methods (Net working methods – PERT & CPM) - Quality control
4. Marketing management in agribusiness – New product development, consumer behavior and the buying process.
5. Developing marketing strategies - Four P's of marketing and planning, marketing mix.

UNIT 3

1. Market segmentation - Meaning, types, and importance. Product concept – Product line and mix - Branding agricultural products.
2. Packaging, its functions - Physical distribution.
3. Selling, advertising, marketing research, marketing extension, rural retailing supply chain management for agribusiness.
4. Capital management in agribusiness – Fixed capital and working capital - Meaning, types, operating cycle and working capital importance.
5. Financial management – Importance of financial statements – Balance sheet and profit and loss statement, cash flow statement - Meaning, components and formats of financial statements.

UNIT 4

1. Analyzing financial statements – Liquidity ratios – Leverage ratios – Activity ratios – Turnover ratios – Profitability ratios
2. Strategic management – Meaning, concept and scope – External and internal environmental factors influencing strategy – Scanning the external and internal environment –
3. Strategy formulation - SWOT analysis of agribusiness enterprise.
4. Agro based industries – Importance, need – Institutional arrangements for the promotion of agro-based industries – Procedure to be followed to set up agrobased industries – Constraints in establishing agro-based industries.

UNIT 5

1. Project – Meaning – Definition – Project cycle – Guidelines for preparation of project reports.
2. Project appraisal and evaluation techniques – Undiscounted measures and decision rules –
3. PBP ROR, and discounted measures and decision rules –
4. NPW, BCR, IRR, N/K ratio, Sensitivity analysis.

References 1.

1. Gitteger Price, J.1989. Economic Analysis of Agricultural Projects. John Hopkins University Press, London.
2. Harsh, S.B. Conner, U.J. and Schwab G.D. 1981. Management of the Farm Business. Prentice Hall Inc., New Jersey, USA.
3. Joseph, L. Massie.1995. Essentials of Management. Prentice Hall of India Pvt. Ltd., New Delhi.
4. Omri Rawlins, N. 1980. Introduction to Agribusiness. Prentice Hall of India Pvt. Ltd., New Delhi
5. Pandey, I M. Financial management 8. Philip Kotler, Kevin Lane Keller, Abraham Koshy and Mithileswar Jha. 2009. Marketing Management: A South Asian Perspective. International 13th edition. Pearson Prentice Hall.

ADIKAVI NANNAYA UNIVERSITY
B Voc AGRICULTURE & ENTREPRENEURSHIP
II Year Semester – IV
AGRIBUSINESS MANAGEMENT
Practical

Credits:1

Teaching Hours:2

1. Balance sheet analysis.
2. Analysis of profit and loss statement.
3. Break even analysis/ Cost volume profit analysis.
4. Financial ratio analysis.
5. Development of business performance tracking system.
6. Compounding and discounting techniques.
7. Project appraisal techniques – I Undiscounted measures -PBP, ROR
8. Project appraisal techniques – II Discounted measures NPW, BCR
9. Project appraisal techniques – III - IRR N/K Ratio & PI and sensitivity analysis
10. Preparing business plans.
11. Case study -1 : Visit and study of profile of Agro-based industries.
12. Case study -2: Formulation of project feasibility report of agribusiness enterprise.

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

FARM POWER AND MACHINERY

Credits:4

Teaching Hours: 4

Learning Out Comes:

After completion of the course the students should able to understand

1. That farm power and machinery is a very important course and back bone of all the agricultural operations
2. That knowing the working of engines of tractors, power tillers, sprayers etc is also very important. Working knowledge of all the machinery is an advantage
3. Knowledge of equipment used for land preparation, sowing, transplanting, weeding, spraying and harvesting is highly useful for practicing Agriculture & Entrepreneurship
4. Practice of driving tractor along with implements, power tillers, Sprayers is highly advantages for students transforming as entrepreneurs

Lecture outlines

Theory

UNIT 1

1. Farm power – Source of different farm power, advantages and disadvantages.
2. Internal combustion engine - Different components and their functions - Working Principle of four stroke and two stroke cycle engine - Comparison between diesel and petrol engine - Difference between four and two stroke engine.
3. Terminology related to engine power - IHP, BHP, FHP, DBHP, compression ratio, stroke bore ratio, piston displacement, and mechanical efficiency – Numerical problems on calculation of IHP, BHP, C.R., stroke bore ratio, piston displacement volume.
4. Fuel supply and cooling system of I.C. engine – Types, components and their functions, working principle of forced circulation cooling system.
5. Ignition and power transmission system of I.C engine – Types, components and their functions, working principle of battery ignition system.

UNIT 2

1. Lubrication system of I.C. engine – Types, purpose, components and their functions, working principle of forced feed system - Tractors classification, types, points to be considered in selection of tractors, estimating the cost of operation of tractor power.
2. Tillage - Primary and secondary tillage - M.B. plough – Functions, constructional features, operational adjustments and maintenance.
3. Disc plough – Functions, constructional details, operational adjustments and maintenance.
4. Numerical problems on M.B. plough and disc plough.

UNIT 3

1. Harrows – Types, functions, operation of disc harrows - Cultivators – Rigid and spring loaded types - Puddlers, cage wheel, rotovators - Intercultural implements – Hoes and weeders for dry and wetland cultivation.
2. Sowing equipment - Seed cum fertilizer drills – Types, functions, types of metering mechanisms, functional components, calibration - Paddy transplanters.
3. Harvesting equipment – Sickles, self propelled reaper, alignment and registration - Combines, functions of combines.

UNIT 4

1. Plant protection equipment – Types of sprayers, constructional features of knapsack sprayer, hand compression sprayer, foot sprayer, rocker sprayer and power sprayer, care and maintenance of sprayers.
2. Dusters – Hand rotary and power operated dusters, care and maintenance of dusters.

UNIT 5

1. Tractor mounted equipments for land development and soil conservation – Functions of bund former, ridger, and leveling blade.
2. Threshing equipment and principles of combine harvester.

References:

1. Farm Power And Machinery Management. Donnel hunt. MEDTEC publications

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: Agriculture & Entrepreneurship
2020-21 Admitted Batch
II Year Semester – IV
ON JOB TRAINING

Credits 1

Teaching Hours 2

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

5 Model Question Paper (Sem-end, Exam)

**ADIKAVI NANNAYA UNIVERSITY
2020-2021 Admitted Batch
I Year Semester – I
B VOC (AGRICULTURE & ENTREPRENEURSHIP)**

**MODEL QUESTION PAPER
INTRODUCTION TO AGRONOMY**

Time: 3 Hours

Maximum: 75 Marks

SECTION – A

Answer any FIVE questions. Each question carries equal marks. (5*5 = 25)

1. Define Agronomy? Discuss about its scope & importance briefly.
2. Write a note on Agro Climatic Zones of Andhra Pradesh.
3. What do you mean by sustainable Agriculture & Entrepreneurship?
Mention the Features of Sustainable Agriculture & Entrepreneurship.
4. Write a note on tillage and list out the importance of tillage.
5. Discuss about zero tillage and Stubble nuclear tillage.
6. Differentiate between manures and fertilizers.
7. What do you mean by cropping system and cropping pattern?
8. What is a Crop? Classify the crops.

SECTION – B

Answer All the questions. Each question carries TEN marks (5*10 = 50)

1. a) Write a detailed note on Integrated Farming System (IFS).
(OR)
b) Discuss about Organic Farming.
2. a) What do you mean by fertilizers? Write a note on methods of fertilizer application.
(OR)
b) Future Scope of Organic Agriculture & Entrepreneurship.
3. a) What is a Weed? Describe the methods of Weed control.
(OR)
b) What do you mean by manures? List out the most Familiar manures.
4. a) Write a detailed note on modern concepts of tillage.
(OR)
b) Write an essay on Crop establishment methods.
5. a) What is irrigation? List out the methods or types of irrigation.
(OR)
b) Mention the objectives and importance of tillage.

ADIKAVI NANNAYA UNIVERISTY
B.VOC. AGRICULTURE & ENTREPRENEURSHIP
I YEAR, I SEMESTER 2020-2021
PRACTICAL PAPER TITLE: INTRODUCTION TO AGRONOMY

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – I

MODEL QUESTION PAPER
INTRODUCTION TO SOIL SCIENCE

Time: 3 Hours

Maximum: 75 Marks

SECTION – A

Answer any FIVE questions. Each question carries equal marks. (5*5 = 25)

1. Define Soil? Why it is called OS natural body?
2. Discuss about the profile of the Soil.
3. What do you mean by soil texture and soil structure?
4. Write a note on soil Air and Soil water.
5. What do you mean by soil color? What was the impact of soil color on crop growth.
6. Define Soil Science and mention the importance of soil science knowledge.
7. What is Soil survey and dismiss about soil survey reports.
8. Write a note on classification of soil.

SECTION – B

Answer All the questions. Each question carries TEN marks (5*10 = 50)

1. a) What do you mean the seep out of top soil? What were types of it.
(OR)
b) What is drainage? Write its types.
2. a) Write a detailed note on soil relations.
(OR)
b) What is ion? What do you mean by ionic exchanger? Discuss about cat ion exchange capacity.
3. a) Write an essay on soil organic matter? Its importance for flora & Fauna of soil.
(OR)
b) Write about the chemistry of soil? Discuss about bulk and practical density.
4. a) Write a note on Porosity of soil.
OR
b) Discuss about nitrogen transformation in detailed manner.
5. a) Scope and importance of soil sciences and how it helps for future Agriculture & Entrepreneurship.
(OR)
b) Write a note on sulfur transformation

ADIKAVI NANNAYA UNIVERISTY
B.VOC. AGRICULTURE & ENTREPRENEURSHIP
I YEAR, I SEMESTER 2020-2021
PRACTICAL PAPER TITLE: INTRODUCTION TO SOIL SCIENCE

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY

**Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – I**

MODEL QUESTION PAPER

PRINCIPLES OF PLANT BREEDING

Time: 3 Hours

Maximum: 75 Marks

SECTION –A

Answer any FIVE questions. Each carries equal marks. (5*5=25)

1. Merits and demerits of plant introduction.
2. Define multiline concept and Characters of good multiline.
3. What is major aim and objectives of plant breeding.
4. What is mutation breeding and procedures of mutation breeding?
5. Explain horizontal and vertical resistance.
6. Compare the difference between dominance and over dominance hypotheses.
7. Compare the difference between pedigree and bulk method.
8. Define hybridization and steps involved in hybridization.

SECTION –B

Answer All the questions. Each question carries TEN marks (5*10= 50)

1. A) what is polyploidy breeding explain their origin and application in crop improvement
(Or)
B) Write about morphological and cytological features of allopolyploidy.
2. A) What are the merits and demerits of composite and synthetic varieties.
(Or)
B) What are the steps involved in production of single and double cross hybrids.
3. A) Explain mechanism of drought resistance and features associated with drought resistance. (Or)
B) Write the procedure of mutation breeding, what are the disadvantages and advantages of mutation breeding.
4. A) Define inbreeding depression. What are procedures involved in development of inbred lines. (Or)
B) Define self-incompatibility and its classification
5. A) What is male sterility, Write about genetic consequences of male sterility.
(OR)
B) What are the factors effecting Hardy- Weinberg law.

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-I, 2020-2021
OJT (ON JOB TRAINING)

MODEL PAPER

Total Marks : 50

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

ADIKAVI NANNAYA UNIVERSITY

Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – II

MODEL QUESTION PAPER
INTRODUCTION TO ENTOMOLOGY

Time : 3 Hours

Max Marks: 75

SECTION-A

ANSWER ANY FIVE QUESTIONS

[5x5=25]

- 1: Explain the characteristics of phylum arthropoda and its classes?
- 2: Write about the reasons for insect dominance?
- 3: What is moulting and what are steps involved in moulting?
- 4: Write about body regions of thorax with diagram?
- 5: What is taxonomy and systematics? Write about systematic position of Grasshopper?
- 6: Explain the differences between Apterygota and Pterygota with examples?
- 7: Write the differences between Exopterygota and Endopterygota with examples?
- 8: Explain the types of reproduction?

SECTION B

ANSWER ALL QUESTIONS

[5x10=50]

- 1: Write about history and its importance of entomology.

{OR}

Describe the relationship of insects with other arthropods.

- 2: Describe the insect body wall with diagram.

{OR}

Explain about body regions of insects with diagram.

- 3; Explain the digestive system of cockroach with neat labelled diagram.

{OR}

Explain respiratory system of insects with neat labelled diagram.

- 4: Write the differences between and hemipterahomopetra .{OR}

Write about the characteristics of odonatan and write the differences between Anisoptera and Zygoptera.

5. List out the apterygotan and ptergotan orders with examples.

{OR}

Write about coleopteron and lepidopteron orders characteristics with examples.

ADIKAVI NANNAYA UNIVERISTY
B.VOC. AGRICULTURE & ENTREPRENEURSHIP
I YEAR, II SEMESTER 2020-2021
PRACTICAL PAPER TITLE: INTRODUCTION TO ENTOMOLOGY

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – II

INTRODUCTION TO PLANT PATHOLOGY
MODEL QUESTION PAPER

Time: 3 Hours

SECTION-A

Max. Marks =75

- **Answer any FIVE questions.**

5x5=25

1. What is plant pathology & Write down the importance of plant pathogens.
2. Write about General characteristics of fungi and its somatic structure.
3. Explain General characteristics of plant pathogenic Bacteria.
4. List out any six important plant bacterial diseases.
5. Write about characteristics of phytoplasma.
6. Explain characteristics of plant viruses.
7. Explain the types of viruses with examples.
8. List out plant viral diseases and their vectors.

SECTION-B

Answer All Questions

5x10=50

1. a) Write the difference between phytoplasma and spiroplasma with examples.
(or)
b) Explain symptoms of plant viral diseases.
2. a) Write about the difference between viruses and viroids with examples. (or)
b) Write the classification of plant viruses.
3. a) Write the classification of plant pathogenic bacteria. (or)
b) Explain about general characteristics of plant parasitic nematodes.
4. a) Describe the types of fungal thalli and explain reproductive structures (or)
b) Explain about reproduction in fungi.
5. a) Write the classification of fungi (or)
b) Explain the methods of sexual reproduction.

ADIKAVI NANNAYA UNIVERISTY
B.VOC. AGRICULTURE & ENTREPRENEURSHIP
I YEAR, II SEMESTER 2020-2021
PRACTICAL PAPER TITLE: INTRODUCTION TO PLANT PATHOLOGY

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-21 Admitted Batch
I Year Semester – II

MODEL QUESTION PAPER
FUNDAMENTALS OF CROP PHYSIOLOGY

Time: 3 Hours

Maximum: 75 Marks

SECTION – A

I. Answer any five questions

5 x 5 = 25 M

1. What is Water use efficiency and describe Factors affecting WUE.
2. What are the essential mineral elements and explain the Criteria of essentiality of mineral elements
3. Describe the Biological nitrogen fixation and the Free-living and symbiotic bacteria
4. Differentiate Growth respiration and maintenance respiration
5. What are flowering hormones and explain the terms Vernalization and mention importance of vernalization in Agriculture & Entrepreneurship.
6. Define Senescence and abscission . Explain Classification of senescence
7. Describe the physiological and biochemical changes that occur during senescence
8. What are the hormones used for Ripening induction and ripening inhibition – Use of hormones in increasing vase life of flowers.

II. Answer all the questions All questions carry equal marks

5 x 10 = 50 M

1. a) Explain the different metabolic changes during seed development and also explain seed viability and seed vigor, Physiological maturity, harvestable maturity and Metabolic changes during seed germination **OR**
b) What is Transpiration? Explain about Water use efficiency of C₃, C₄ and CAM plants –What is Water requirement / Transpiration ratio
2. a) Explain functional roles of N, P, K, S Ca and Mg Fe and Na, and also explain Deficiency symptoms of macro and micro nutrients. **OR**
b) Explain the Reactions of photosynthesis and Cyclic and non cyclic photophosphorylation
3. a) Explain about C₃, C₄ pathways and CAM pathway and their significance . **OR**
b) Define Respiration and Energy balance .write about significance of respiration – Oxidative Pentose Phosphate Pathway (OPPP)
4. a) Explain the physiology of flowering , Photoperiodism and flowering and Importance of photoperiodism .**OR**
b) Also explain Classification of plants based on photoperiodic responses
5. a) Explain the role of Plant growth regulators , Auxins and Gibberellins their mode of action and physiological roles and Commercial uses **OR**
b) Explain the role of ABA ,Its Occurrence, transport, biosynthesis, mode of action and physiological roles and Commercial uses

Describe metabolic changes during fruit ripening and Hormonal regulation of fruit ripening

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-II, 2020-2021
OJT (ON JOB TRAINING)

MODEL PAPER

Total Marks : 50

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

ADIKAVI NANNAYA UNIVERSITY

**Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester - III**

MODEL PAPER

AGRONOMY OF FIELD CROPS

Time: 3 Hours

Maximum: 75 Marks

SECTION – A

Answer any FIVE questions. Each question carries equal marks. (5*5 = 25)

1. Differentiate between *Corchorus capsularis* & *Corchorus Olitorius*.

1. Explain about Sorghum effect.
2. Write about Retting process of Jute.
3. Write down the Nutritional values of Bajra & finger millet
4. Classification of wheat with scientific names
5. Write briefly about different types of nurseries practiced in Rice.
6. Write down some varieties of Wheat, Maize, Sunflower, Cotton & Sorghum.
7. Write down common names, scientific names and their origins of all major & minor millets.

SECTION – B

Answer All the questions. Each question carries TEN marks (5*10 = 50)

1. a) Write down the importance of pulses in india. OR
b) Write down the importance of oilseeds in india.
2. a) Write about SRI Method of rice cultivation. OR
b) Write about all planting methods of sugarcane.
3. a) Write general package of practices of millets. (OR)
b) Write general package of practices of oilseeds.
4. a) Write about nutrient management of Rice, wheat & Maize. OR
b) Write about nutrient management of Groundnut, Cotton & Sunflower.
5. a) Write Seed rate, sowing, nutrient management, water Management, Weed Management, harvesting & yield of groundnut. OR
b) Write seed rate, sowing, nutrient Management, Water Management, Weed Management, harvesting & yield of Rice.

ADIKAVI NANNAYA UNIVERISTY
B.VOC. AGRICULTURE & ENTREPRENEURSHIP
II YEAR, III SEMESTER 2020-2021
PRACTICAL PAPER TITLE: AGRONOMY OF FIELD CROPS

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 admitted Batch onwards
II Year Semester - III
MODEL PAPER

MANURES, FERTILIZERS & SOIL FERTILITY MANAGEMENT

Time: 3 Hours

Maximum: 75 Marks

SECTION – A

Answer any **FIVE** questions. Each question carries equal marks.

(5*5 = 25)

1. Give formula for Nutrient use efficiency (NUE) & Nutrient requirement (NR).
2. Write about FCO with specifications of urca.
3. Explain the factors affecting for ammonification of Nitrozen.
4. Explain Sulphur cycle with suitable diagram.
5. Explain briefly about DRIS.
6. What is meant by INM & STCR and explain it briefly.
7. Write about soil application, foliar spray of fertilizers and explain about fertigation
8. Write transformations & fixation of phosphorus & Pottassium.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks

(5*10 = 50)

1. a) Write functions of all essential nutrients. OR
b) Write definition of toxicity symptoms of all essential.
2. a) Differentiate between manures & (OR)
b) Differentiate between Bulky & Conc. Organic manure.
3. a) Define manures & Write down the classification of manures. (OR)
b) Define composting & Write about different methods of composting.
4. a) Explain different methods of fertilizer applications with suitable tree diagram. OR
b) Write about classification of nitrogenous, Phosphorus & Potassium with suitable examples.
5. a) Write about soil health and the parameters responsible for assessment of soil health. OR
b) Write about sources, forms, mobility, transformations, fixation availability of nitrogen.

ADIKAVI NANNAYA UNIVERISTY

B.VOC. AGRICULTURE & ENTREPRENEURSHIP

II YEAR, III SEMESTER 2020-2021

**PRACTICAL PAPER TITLE: MANURES, FERTILIZERS & SOIL FERTILITY
MANAGEMENT**

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of vocation: AGRICULTURE & ENTREPRENEURSHIP
2020 -21 ADMITTED BATCH
II Year Semester – III
MODEL QUESTION PAPER
AGRICULTURE ECONOMICS & FARM MANAGEMENT

SECTION – A

Maximum Time :3 Hours

Maximum Marks: 75 M

Answer any FIVE Questions .Each carries equal Marks

5X5=25

1. Define Economics, Macro Economics and Micro Economics?
2. What is Demand? Explain about The Types of Demand?
3. What is Elastic and Inelastic Demand? Explain The Types of Elasticity of Demand?
4. Explain Increasing ,Decreasing, constant Law of Return ?With Examples ?
5. Write the definitions of Monopoly, Duopoly, Monopoly Duopoly and oligopoly With Examples?
6. Define inflation and deflation? Explain Demand pull and cost push Inflation?
7. What is the Meaning of Economic system? Explain about the types of Economic systems
8. What is Economic Planning? Discuss the Importance and Elements of economic planning?

SECTION – B

Answer the all questions . Each carries ten marks

5X10=50

1. a)Write a detailed note on Law of Diminishing Marginal and statement ,assumption and limitation OR
(b)Explain Law of Equi Marginal utility, importance, assumption and limitation ?
2. (a)Explain the different kinds of elasticity of demand ?and their affecting factors ?OR
(b)What is the Prediction Process? Explain factor of Production, and input-output put relationship of production process
3. (a)What is Elasticity of supply? Explain kinds of Elasticity of supply ?OR
(b) Explain differences between public finance and private finance?
4. (a)What is canon of taxation? And explain Adam Smith s and other canons of taxation ?
(b)What is per Capital Income ?And Explain the different compacts included in the National Income
5. (a). Write the Meaning of capitalism ,Socialism and Mixed Economics ?And its Characteristic features OR
(b) Explain the Annual Plans and Five Year Plans and Its Objectives and explain NITI Aayog?

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-III, 2020-2021
OJT (ON JOB TRAINING)

MODEL PAPER

Total Marks : 50

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

MODEL QUESTION PAPER
PEST OF FIELD CROPS & THEIR MANAGEMENT

Time: 3 Hours

Maximum: 75 Marks

SECTION – A

Answer any **FIVE** questions. Each question carries equal marks. (5*5 = 25)

1. Write down symptoms and management for Brown Plant Hopper and Green Leaf Hopper of paddy.
2. Write down symptoms and management for Stem borer and Corn worm or ear worm of maize.
3. Write down symptoms and management for Red hairy caterpillar and leaf hopper.
4. Write down symptoms and management for Leaf eating caterpillar and Diamond back moth.
5. Write down symptoms and management for Root grub and Leaf miner of groundnut.
6. Write down symptoms and management for Pink bollworm and American boll worm of cotton.
7. Write down symptoms and management for Sugarcane scales and sugarcane pyrilla
8. List out the Internal and External feeders with their scientific names of stored grain pest.

SECTION – B

Answer **All** the questions. Each question carries **TEN** marks (5*10 = 50)

1. a) Write down IPM practices of Paddy. OR
b.) Write down symptoms and management for Mustard saw fly, Groundnut aphid and sorghum gall fly.
2. a) Write down IPM practices of Pulses. (OR)
b) Write down symptoms and management for termites, castor shoot borer, and castor, jassids.
3. a) Write down IPM practices of Cotton. (OR)
b.) Write down symptoms and management for spotted boll worm, Red cotton bug, and cotton thrips.
4. a) Write down IPM practices of Stored grain pest. (OR)
b) Write down symptoms and management for Ragi pink borer, sorghum ear head bug, and sorghum midge.
5. a) Write down the management practices for Rodents (OR)
b) List out the pests of birds and locusts with their scientific names and their management.

ADIKAVI NANNAYA UNIVERISTY

**B.VOC. AGRICULTURE & ENTREPRENEURSHIP
II YEAR, IV SEMESTER 2020-2021**

PRACTICAL PAPER TITLE: PEST OF FIELD CROPS & THEIR MANAGEMENT

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

WATER MANAGEMENT
MODEL QUESTION PAPER

MAX TIME :3 HOURS

MAXIMUM MARKS 75

Section A

I. ANSWER ANY FIVE QUESTIONS

5 X 5 = 25 M

1. Write about Soil-water relations and factors effecting the water retention.
2. Explain Evapotranspiration and factors influencing evapotranspiration
3. How can we calculate crop water requirement –or irrigation requirement
4. Give a brief account of canopy temperature, indicator plants and critical growth stages.
5. What are the crops suitable for sprinkler irrigation? Explain about rain guns
6. How can you include - fertigation in micro irrigation systems.
7. Explain the terms water storage efficiency, water distribution efficiency and project efficiency.
8. Explain the drainage, surface and sub-surface drainage systems and relative merits
FGH

II. Write all the questions

1. a) Write classification of water and their importance in crop production and also write about field capacity (FC) – Permanent Wilting Point (PWP) – Available Soil Moisture (ASM) – hygroscopic coefficient OR
b) Write plant water relations and moisture sensitive periods of crops – Soil Plant Atmospheric Continuum (SPAC).
2. a) What are the different methods, criteria of Scheduling of irrigation? OR
b) Describe different methods of irrigation.
3. a) Explain sprinkler irrigation ,its merits and demerits and system components and layout
b) Describe about Drip irrigation (surface and sub surface), its merits and demerits system components and layout and suitable crops
4. a) Explain Water Use Efficiency (WUE), crop and field water use efficiency and Factors influencing WUE –
b) How do you determine the Quality of irrigation water and also explain salinity hazard, sodium hazard, residual sodium carbonate and boron toxicity
5. a) What are the management practices for using poor quality water?OR
b) What are the causes for Water logging?

ADIKAVI NANNAYA UNIVERISTY

**B.VOC. AGRICULTURE & ENTREPRENEURSHIP
II YEAR, IV SEMESTER 2020-2021
PRACTICAL PAPER TITLE: WATER MANAGEMENT**

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
B Voc AGRICULTURE & ENTREPRENEURSHIP & ENTREPRENEURSHIP
II Year Semester – IV

AGRIBUSINESS MANAGEMENT

MODEL QUESTION PAPER

MAX TIME : 3 HOURS

MAX MARKS 75

I. Answer any five of the following :

5 x5 25 M

1. Define Agribusiness and explain the scope, structure and dimensions
2. What are the salient features of agribusiness management? explain the wheel diagram
3. What are the functions of HR department Explain the role of HR managers
4. How to develop marketing strategies –write about Four P's of marketing and planning,
5. What is capital management in agribusiness ?
6. Write about branding of agricultural products.
7. What is - SWOT analysis of agribusiness enterprise.
8. What is the process of analyzing financial statements

II. Answer all questions

1. A) What are different types of agribusiness plans based on- Goals or objectives - Strategies, policies, procedures
OR
B) What is motivation and explain Ordering – Leading – Supervision, and coordination, communication and control – Meaning and definitions, purpose.
2. a) Describe the role of Marketing management in agribusiness
OR
b) Write about human resource training and development and what are the Participative management, labour management relations, conflict management.
3. A) Describe the features of capital management in agribusiness
OR
b) Describe the features of market segmentation
4. a) what is Strategic management write about External and internal environmental factors influencing strategy –
B) Agro based industries – Importance, need – Institutional arrangements for the promotion of agro-based industries –
- 5 Explain any three of the following
 - a. PBP ROR,
 - b. NPW,
 - c. BCR,
 - d. IRR,
 - e. N/K ratio,
 - f. Sensitivity analysis.

ADIKAVI NANNAYA UNIVERISTY
B.VOC. AGRICULTURE & ENTREPRENEURSHIP
II YEAR, IV SEMESTER 2020-2021
PRACTICAL PAPER TITLE: AGRIBUSINESS MANAGEMENT

MODEL PAPER

Time : 3 Hrs

MAX.MARKS: 50

I.	Major experiment	1x15 = 15M
II.	Minor experiment	1x10 = 10 M
III.	Identification	3x05 = 15 M
IV.	Record	1x 05 = 05 M
V.	Viva Voce	5 M

ADIKAVI NANNAYA UNIVERSITY
Bachelor of Vocation: AGRICULTURE & ENTREPRENEURSHIP
2020-2021 Admitted Batch onwards
II Year Semester – IV

FARM POWER AND MACHENERY
MODEL QUESTION PAPER

MAX MARKS 75
HOURS

TIME: 3

SECTION A

- I. Answer any five questions** **5x5=25 M**
1. What are the different Source of different farm power, advantages and disadvantages.
 2. Explain about Fuel supply and cooling system of I.C. engine
 3. What are the different types of tractors and points to be considered in selection of tractors?
 4. Describe the Seed cum fertilizer drill and its advantages
 5. Describe the mechanism or functioning of Paddy transplanters
 6. Explain briefly about the functioning and advantages of combine harvesters of different crops
 7. What are power tillers and what is the difference between tractor and power tiller?
 8. What are the advantages of battery operated sprayers over traditional sprayers

SECTION B

- II. Answer all the questions** **5x10 = 50 M**
1. A) Explain the principle of four stroke and two stroke cycle engine and Compare between diesel and petrol engine **OR**
B) Explain about Ignition and power transmission system of I.C engine
 2. a) Explain briefly about Tillage - Primary and secondary tillage **OR**

b) Explain about the differences between functions of M.B. plough and Disc plough
 3. a) Write about different types of Harrows and operation of disc harrows **OR**

b) write about Puddlers, cage wheel, and rotovators - Hoes and weeders for dry and wetland cultivation.
 4. a) describe about different Plant protection equipment – **OR**
b) Describe about power sprayer, care and maintenance of sprayers.
 5. a) Briefly describe Functions of bund former, ridger, and leveling blade. **OR**
b) Briefly describe Threshing equipment and principles of combine harvester.

ADIKAVI NANNAYA UNIVERSITY
B.VOC: Agriculture & Entrepreneurship
Semester-IV, 2020-2021
OJT (ON JOB TRAINING)

MODEL PAPER

Total Marks : 50

CONTENT	EVALUATION	MARKS
FIELD TRIPS	3X5	15
PROJECT REPOT/ INDUSTRIAL OR INSTITUTE TRAINING& SEMINAR	15+5	20
FIELD COMPONENTS	10X1	10
VIVA VOCE	-	05
TOTAL		50