

# **SHIVAJI UNIVERSITY, KOLHAPUR**



“A” Re accredited by NAAC  
(2014) with CGPA 3.16

**Faculty of Interdisciplinary Studies**  
**Structure, Scheme and Syllabus for**  
**Bachelor of Vocation (B. Voc.)**

## **Sustainable Agriculture Management**

**Part I- Sem. I & II**

(Subject to the modifications that will be made from time to time)

Syllabus to be implemented from June 2018 onwards.

**SHIVAJI UNIVERSITY, KOLHAPUR**  
**STRUCTURE AND SYLLABUS OF B.VOC.**

**2019-2020**

**Bachelor of Vocation (B.Voc.) – Sustainable Agriculture  
Management.**

**TITLE** : **B.Voc. (Sustainable Agriculture  
Management)**

**Syllabus (Semester Pattern)**

**Under Faculty of Interdisciplinary Studies**

**YEAR OF IMPLEMENTATION:** Syllabus will be implemented from June, 2019-2020

**DURATION** B. Voc. Part I, II and III (Three Years)

B. Voc. Part I - Diploma (One Year)

B. Voc. Part II - Advanced Diploma (Second Year)

B. Voc. Part III-Degree (Third Year)

**PATTERN OF EXAMINATION:** Semester Pattern

Theory Examination - At the end of semester as per Shivaji University Rules

Practical Examination - i) In the 1st, 3rd and 5th semester of B.Voc. there will be internal assessment of practical record, related report submission and project reports at the end of semester

ii) In the second semester of B. Voc. I, there will be internal practical examination at the end of semester

iii) In the 4th and 6th semester of B. Voc. there will be external practical examination at the end of semester

**MEDIUM OF INSTRUCTION : English.**

**STRUCTURE OF COURSE** : B. Voc. Part – I, II and III

Two Semester per Year, Two General Papers per year / semester Three Vocational Papers per Year / Semester Three Practical papers per Year / Semester.

#### SCHEME OF EXAMINATION:

##### A) THEORY-

- The theory examination shall be at the end of the each semester.
- All the general theory papers shall carry 40marks and all vocational theory papers shall carry 50marks.
- Evaluation of the performance of the students in theory shall be on the basis of semester examination as mentioned above.
- Question paper will be set in the view of entire syllabus preferably covering each unit of the syllabus.
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- Nature of question paper for Theory examination (Excluding Business Communication Paper)
  - i) There will be seven questions carrying equal marks.
  - ii) Students will have to solve any five questions

Que. No. 1 : Short answer type question with internal choice (Two out of Three)

Que. No. 2 to Que. No. 6: Long answer type questions.

Que. No. 7 : Short Notes with internal choice (Two out of Three)

##### B) PRACTICALS:

Evaluation of the performance of the students in practical shall be on the basis of semester examination ( Internal assessment at the end of Semester I, II and III and V and external examination at the end of Semester IV and VI as mentioned separately in each paper

Standard of Passing:

As per the guidelines and rules for B. Voc. (Attached Separately – Annexure I)

Eligibility Criteria:

1. The Eligibility for admission is 10+2 or equivalent, in any stream (Arts/Commerce/Science) from any recognized board or University.

2. The candidates after with 10+2 year ITI course in any branch/trade also eligible for course.

3. The candidates graduate from any faculty or engineering degree/diploma holders are also eligible.

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**Structure of the Course:**

B. Voc. –II (Advanced Diploma) Semester – III

Sr. No.	Paper No.	Title	Theory/ Practica l	Marks	Distribution of Marks		Credits	
					Theory	Practical	Theory	Practical
<b>General Education Component :</b>								
1.	XIX	Fundamentals of Financial Accounting-I	T/P	50	40	10	3	2
2.	XX	Herbal Aromatic Medicinal Plants	T/P	50	40	10	3	2
<b>Skill Component:</b>								
3.	XXI	Introductory Plant Pathology	T	50	50		3	
4.	XXII	Entomology: Insect Morphology & Systematics.	T	50	50		3	
5.	XXIII	Water Management including Micro Irrigation	T	50	50		3	
6.	XXIV	Laboratory work- Herbal Aromatic Medicinal Plants	P	50		50		3
7.	XXV	Laboratory work- Introductory Plant Pathology	P	50		50		3
8.	XXVI	Laboratory work- Entomology: Insect Morphology	P	50		50		2
9.	XXVI I	Project/ Tour/ Industrial Visit		50		50		2

B. Voc. –II (Advanced Diploma) Semester-IV

Sr. No.	Paper No.	Title	Theory/Practical	Marks	Distribution of Marks		Credits	
					Theory	Practical	Theory	Practical
<b>General Education Component :</b>								
1.	XXVIII	Fundamentals of Financial Accounting-II	T/P	50	40	10	3	2
2.	XXIX	Livestock Production & Management	T/P	50	40	10	3	2
<b>Skill Component:</b>								
3.	XXX	Agricultural Finance & Cooperation	T	50	50		3	
4.	XXXI	Plant Pathology: Diseases of field crops & management.	T	50	50		3	
5.	XXXII	Principles of Genetics	T	50	50		3	
6.	XXXIII	Laboratory work- Livestock Production & Management	P	50		50		3
7.	XXXIV	Laboratory work- Agricultural Finance & Cooperation	P	50		50		3
8.	XXXV	Laboratory work-Plant Pathology:Diseases of field crops & management	P	50		50		2
9.	XXXVI	Project/ Tour/ Industrial Visit		50		50		2

Scheme of Teaching:

B. Voc. – Part II(Advanced Diploma) Semester – III

Sr. No.	Paper	Title	Distribution of workload/week		
			Theory	Practical	Total
1.	XIX	Fundamentals of Financial Accounting-I	4	2	2
2.	XX	Herbal Aromatic Medicinal Plants	4	2	2
3.	XXI	Introductory Plant Pathology	4		4
4.	XXII	Entomology: Insect Morphology & Systematics.	4		4
5.	XXIII	Water Management including Micro Irrigation	4		4
6.	XXIV	Laboratory work- Herbal Aromatic Medicinal Plants		4	4
7.	XXV	Laboratory work- Introductory Plant Pathology		4	4
8.	XXVI	Laboratory work-Entomology: Insect Morphology		4	4
9.	XXVII	Project/ Tour/ Industrial Visit			
		Total	20	16	36

B. Voc. – Part II (Advanced Diploma) Semester-IV

Sr. No.	Paper	Title	Distribution of workload/week		
			Theory	Practical	Total
1	XXVIII	Fundamentals of Financial Accounting -II	4	2	2
2	XXIX	Livestock Production & Management	4	2	2
3	XXX	Agricultural Finance & Cooperation	4		4
4	XXXI	Plant Pathology: Diseases of field crops & management.	4		4
5	XXXII	Principles of Genetics	4		4
6	XXXIII	Laboratory work- Livestock Production & Management		4	4
7	XXXIV	Laboratory work- Agricultural Finance & Cooperation		4	4
8	XXXV	Laboratory work- Plant Pathology: Diseases of field crops & management		4	4
9	XXXVI	Project/ Tour/ Industrial Visit			
		Total	20	16	36

**As per guidelines of Shivaji University Environment Studies compulsory subject for second year**

Eligibility for Admission : 10 + 2 from any faculty or equivalent Diploma /Advanced

Diploma in any related stream

Eligibility for Faculty M. Sc. /M.B.A. (Agri., Horti, Agri. Economics, Agri-Business Management, Plant Pathology, Botany, Agri. Engineering, Agri. Extension) with NET / SET/Ph.D.

Eligibility for Laboratory Assistant: B.Sc. Agriculture, Botany, Chemistry/ Diploma in Agriculture.

Staffing Pattern : As per U.G.C. B.Voc. Guidelines.

Laboratory Assistant : As per U.G.C. B.Voc. Guidelines.

**SHIVAJI UNIVERSITY, KOLAPUR**

## **B. Voc. Part – II, Semester - III**

### **Sustainable Agriculture Management**

#### **Paper-XIX FUNDAMENTALS OF FINANCIAL ACCOUNTING-I**

Work Load - 6 Total Marks – 50 Theory – 4 Lectures / Week Theory- 40

Practical- 2 Lectures / Week Practical- 10

**Objective :** To impart basic accounting knowledge as applicable to business.

#### **Course contents:**

##### **Unit I : Introduction to Accounting**

Meaning, Nature and Advantages of Accounting, Branches of Accounting, Accounting Concepts and Conventions, Types of Accounts, Rules of journalizing, Source Documents – Cash Voucher, Petty Cash Voucher, Cash Memo – Receipts, Debit Notes, Credit Note, Paying Slips, Withdrawals, Cheque

##### **Unit II : Journal and Ledger**

Preparation of Journal entries and Ledger accounts – Subsidiary Books - Purchase Book, Purchase Return Book, Sales Book, Sales Return Book, Cash Book, Bills Receivable Book, Bills Payable Book, Journal Proper

##### **Unit III : Depreciation**

Meaning, Methods – Straight Line Method – Reducing Balance Method, Change in Depreciation Method.

##### **Unit IV: Final Accounts**

Preparation of Trial Balance, Preparation of Final Accounts of Sole Traders and partnership firms

#### **Practical:**

- 1) Preparation of Journal entries and Ledger accounts
- 2) Preparation of subsidiary books
- 3) Preparation of Trial Balance
- 4) Practical problems on Final Accounts of sole traders and partnership firms
- 5) Practical problems on methods of depreciation

#### **Scheme of Internal Practical Evaluation 10 Marks**

- 1) Submission of Record Book 5 Marks
- 2) Viva – Voce 5 Marks

#### **References:**

- 1) Advanced Accountancy – M.C. Shukla and T.S. Garewal.
- 2) Advanced Accountancy – S.C. Jain and K. L. Narang
- 3) Advanced Accountancy – S.M. Shukla.
- 4) Advanced Accountancy – S. N. Maheshwari.
- 5) Advanced Accountancy – R. L. Gupta.



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**B. Voc. Part – II, Semester - III**

**Sustainable Agriculture Management**

**Paper -XX: Herbal Aromatic Medicinal Plants**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of 20 students

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:

- To study the various herbal aromatic & medicinal plants.
- To understand cultivation practises of herbal & medicinal plants.

**UNIT –I Introduction to Herbal.**

- Introduction of herbal plants.
- Classification of herbal plants on the basis of parts utilized.
- Properties of herbal plants.

**UNIT-II Classification of Medicinal plants**

- Introduction of medicinal plants.
- Classification of Medicinal Plants on basis of parts used.
- Cultivation practices of medicinal plants.

**UNIT-III Introduction of Aromatic plants**

- Introduction of aromatic plants.
- Their classification, uses & aromatic properties and economic importance.
- Essential oil & its production.

**UNIT-IV Economic importance of Plants**

- Importance of Aromatic plants.
- Economic importance of plants.
- Demand for essential oils, aroma chemicals drugs and pharmaceuticals in the world market since two decades.

1. Practical:

1. To study identification of medicinal & aromatic plants.

2. To know uses of parts of medicinal & aromatic plants.
3. To understand harvesting of medicinal & aromatic plants.
4. To study Processing & packaging.

Books:

1. Denixon, RI. 1979. Principles of Horticulture. Mac Millan, New York.
2. Hartmann, HT. and Kester, DE.1986.Plant propagation - Principles andpractices.Prentice-Hall, New Delhi.
3. Chadha, K. L. 2003. Handbook of Horticulture, ICAR, New Delhi.Choudhury, B.1983. Vegetables. National Book Trust, New Delhi.

Scheme of Internal Practical Evaluation 10 marks

- 1) Submission of Record book 5marks
- 2) Viva-Voce 5marks

**SHIVAJI UNIVERSITY, KOLAPUR**

**B. Voc. Part – II, Semester -III**

**Sustainable Agriculture Management**

**Paper - XXI: Introduction to Plant Pathology.**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week.

Total Marks: 50 Marks.

Objectives:

- To know & study Plant Pathology and diseases.
- To study causal organisms & control methods of the plant diseases.

**UNIT –I Introduction to Plant Pathology**

- History of Plant Pathology.
- Introduction to plant pathology in agriculture.

**UNIT- II Diseases, definition, introduction & classification**

- Meaning of Disease.
- Plants diseases.
- Basic classification of plant diseases.

**UNIT-III Classification of Fungi & Bacteria**

- Classification of Fungi, Myxomycota & Eumycota (Absence of Plasmodium or Pseudoplasmodium).
- Classification of Obligate Parasites; Albuginaceae and Fernosporaceae.
- Classification of Bacteria or Prokaryotes, Gram Positive Cocci; Bacillus, Sporosarcina Clostridium, Desulfatomaculum.

**UNIT-IV Soil Microorganisms in Biodegradation of Pesticides and Herbicides**

- Soil microorganisms; beneficial organisms & harmful organisms.
- Biodegradation of soil microbes.
- Pesticide, its classification, uses.
- Herbicides; its classification bio pesticides.

Books:

1. Plant Pathology, 5<sup>th</sup> Edition Jan 2005 By, Geogre N. Agricos.
2. Introduction To Principles Of Plant Pathology Paperback – 10 Jul 2017 By, R.S. Singh
3. Plant Bacteriology Clarence I. Kado
4. Fundamentals of Bacterial Plant Pathology By, Masao Goto

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**B. Voc. Part – II, Semester -III**

**Sustainable Agriculture Management**

**Paper XXII–Entomology:Insect Morphology & Systematics.**

Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week.

Total Marks: 50 Marks.

Objectives:

- 1) To understand basic plant Entomology.
- 2) To know the various insects their morphology & systematics.

**UNIT –I Insect Introduction &Classification**

- Definition of Taxonomy, Systematics Classification of Insects, Taxonomy.
- Taxonomy.
- Systematics.
- Classification: Ordering of organisms into a hierarchy of categories.

**UNIT-II Insect Classification**

- Classification of Insects Based On Morphological Characters.
- A) Sub Class – Apterygota (Primarily Wingless).
- B) Sub Class – Pterygota (Winged/Secondarily wingless)  
Exopterygota&Endopterygota

**UNIT-III ETL Economic Threshold Level**

Economic Classification of Insects:

- A) Possessing Economic Importance
- B) No Economic Importance (Harmless insects)

**UNIT-IV Nomenclature in Entomology**

- Binomial Nomenclature.
- Scientific Name.

Books:

1. Handbook of Agricultural Entomology, By Helmut F. van Emden
2. A Textbook of Agricultural Entomology By, Kenneth M. Smith
3. Agricultural Entomology By, Dennis S. Hill
4. Agricultural entomology By, Shiva Shanker Khanna

**SHIVAJI UNIVERSITY, KOLAPUR**

**B. Voc. Part – II, Semester -III**

## **Sustainable Agriculture Management**

### **Paper XXIII Water Management including Micro irrigation.**

Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week.

Total Marks: 50 Marks.

Objectives:

1. To understand Water Management.
2. To know types of Irrigation Methods.
3. To study Importance of Modern techniques of irrigation.

#### **UNIT –I Importance of Irrigation**

- Water & its Importance in the field of sustainable agriculture.
- Water, translocation of nutrient and dissipation of heat.

#### **UNIT-II Properties of Water**

- Properties of water.
- Water molecule; hydrogen ions and one oxygen ions.
- **UNIT- III Irrigation introduction & classification**
- Irrigation Definition.
- Drip irrigation; Fertigation.
- Supplied supplementary water.
- Types of irrigation – Food, Surface, Sub surface, Sprinkle, Drip irrigation.

#### **UNIT-IV Micro irrigation**

- Micro irrigation, definition.
- Types & Classification.

Books:

1. Water Management in India By, P. C. Bansil
2. Water Resources, Conservation and Management By, S.N. Chatterjee
3. Waste Water Treatment and Water Management By, Anamika Srivastava

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**B. Voc. Part – II, Semester -III**

**Sustainable Agriculture Management**  
**Paper XXIV Herbal Aromatic Medicinal Plants (Practical)**

Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week.

Total Marks: 50 Marks.

Objectives:

- To make students study about herbal & aromatic crops.
  - To understand tillage operations.
- 
1. Identification & classification.
  2. Cultivation practises of various aromatic, medicinal plants.
  3. PHT of major plants.
  4. Processing of Aromatic plants to get essential oils.

**SHIVAJI UNIVERSITY, KOLAPUR**

**B. Voc. Part – II, Semester -III**



**Sustainable Agriculture Management**  
**Paper XXV Introductory Plant Pathology (Practical)**

Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week.

Total Marks: 50 Marks.

Objectives:

- To know Fundamentals of plant pathology.
- To study control measures for better crop production.

1. Disease collection & prepare album.
2. Identification & symptoms of diseases on plant crop.
3. Role of chemicals as preventive & curative.
4. Spraying techniques & safety measures.

**SHIVAJI UNIVERSITY, KOLAPUR**

**B. Voc. Part – II, Semester -III**

## **Sustainable Agriculture Management**

### **Paper XXVI Entomology: Insect morphology & systematics. (Practical)**

Total Workload: 04 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week.

Total Marks: 50 Marks.

Objectives:

- To understand basic agricultural entomology.
  - To study insect morphology & systematics.
- 
1. Collection of insects in Insect box.
  2. Introduction to morphology of insects.
  3. Beneficial insects, & harmful insects.
  4. Control measures & safety precautions for spraying of insecticides.

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**B. Voc. Part – II, Semester -III**

**Sustainable Agriculture Management**

**Paper XXVII Project/ Field Visit.**

**Total Marks: 50 Marks**

**SHIVAJI UNIVERSITY, KOLAPUR**

**B. Voc. Part – II, Semester - IV**

## **Sustainable Agriculture Management**

### **Paper: XXVIII FUNDAMENTALS OF FIANACIAL ACCOUNTING- II**

Work Load - 6 Lectures / Week Total Marks – 50 Theory – 4 Theory- 40

Practical- 2 Lectures / Week Practical- 10

**Objectives:** To impart basic accounting knowledge as applicable to business.

#### **Course contents:**

##### **Unit I Computerized Accounting System**

Introduction – Concept – Components –Features - Importance and Utilization of Computerized Accounting System.

##### **Unit II Computer Application through Accounting Package Tally**

Creation of Company, Group, Ledger Accounts, Feeding of Accounting Data Receipts, Payments, Purchase, Sale, Contra, Journal, Credit Note and Debit Note  
Inventory Information – Groups, Items and Valuation  
Generation of various Accounting Reports

##### **Unit III Accounts of Professionals**

Preparation of Receipts and Payment Account – Income and Expenditure Account and Balance Sheets of Non-Profit Organization.

##### **Unit IV Single Entry System**

Conversion of Single Entry System into Double Entry System.

#### **Practical:**

1. Understanding computerized accounting practices applied in different retail malls in and Around Kolhapur city
2. Practical problems based on computerized accounting using Tally
3. Practical problems on preparation of Receipts and Payment Account
4. Preparation of Income and Expenditure account and Balance Sheet of Non-profit making Organizations
5. Solving the problems on conversion of Single Entry system into Double entry system. 6.

Oral / Seminar

#### **References:**

- 1) Advanced Accountancy, M. C. Shukla and T. S. Garewal.
- 2) Advanced Accountancy, S.C. Jain and K. L. Narang.
- 3) Advanced Accountancy, S.N. Maheshwari.
- 4) Theory and practice of Computer Accounting, Rajan Chougule and Dhaval Chougule.

Web sites:

- 1) [www.nos.org](http://www.nos.org) 2) [www.wiki.answers.com](http://www.wiki.answers.com) 3) [Chow.com](http://Chow.com)

#### **Scheme of External Practical Examination 10 marks**

- 1) Submission of Record book 5 marks
- 2) Viva – Voce 5 marks

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**B. Voc. Part – II, Semester –IV**

## **Sustainable Agriculture Management**

### **Paper -XXIX: Livestock Production & Management.**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of students

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:

To study & understand importance of livestock production & management.

#### **UNIT-I Scope & importance of Livestock industry**

- Scope of Livestock in Indian Economy Livestock Census.
- Trends in Livestock Production.
- Opportunities in Livestock Industry.

#### **UNIT-II Definitions in Livestock**

- Terminology Used in Livestock Production.
- Type.
- Breed; introduction, types, classification.

#### **UNIT-III Health Care in Livestock**

- Animal Health Cover, Herd health programme.
- Basic Treatment.
- Control over mortality.

#### **UNIT-IV. Housing Systems in Livestock**

- Housing Systems of Poultry.
- Types of systems of housing poultry units.

Books:

1. A Textbook Of Animal Husbandry By, G. C. Banerjee
2. Animal Husbandry And Dairy Science By, Jagdish Prasad

3. Glimpses of Indian Veterinary Science By, Rishendra Verma

**SHIVAJI UNIVERSITY, KOLAPUR**

**B. Voc. Part – II, Semester - IV**

## **Sustainable Agriculture Management**

### **Paper -XXX: Agricultural Finance & Cooperation.**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of students

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:

To understand Agricultural Finance & Cooperation.

To study role of public & private financing agencies.

#### **UNIT-I Importance of Finance**

- Importance of Public Finance.
- Education to agricultural development are been provided by government.

#### **UNIT-II Public & Private Finance**

- Public and Private Finance; introduction, types.
- Advantages & Disadvantages.

#### **UNIT-III Public Finance & its operation**

- Public Finance; Introduction.
- Types.
- Advantages of public finance in farm management.

#### **UNIT-IV Importance of Farm Budgeting**

- Advantages of Farm Budgeting
- Evaluation of old plan with guidance to the farmers to adopt a new farm plan with advantage.
- Study of receipts, expenses and net earnings on different farms in the same locality national agricultural policies.
- Efficient and economical use of resources; improvements in farm management practices.

Books:

1. A Textbook of Agricultural Economics - Dr. C.B. Singh, Dr. R.K. Singh
2. Agricultural Economy of India: Current Status and Issues- Malvika Singh
3. Agricultural Marketing In India- S. S. Acharya- Agricultural Economics
4. Principles of Agricultural Economics- Andrew Barkley, Paul W. Barkley



## **B. Voc. Part – II, Semester - IV**

### **Sustainable Agriculture Management**

#### **Paper -XXXI: Plant Pathology: Diseases of field crops & management.**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory: 04 lectures per week

Practical: 02 lectures per week per batch of students

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:

To study, identify & control measures of Plant Pathology field crops & their management.

#### **UNIT-I Disease Transmission**

- Transmission (Dissemination) of Bacteria.
- Modes of disseminated; agency of seed, air and water.
- Air borne transmission through insects and mites.
- Soil borne transmission through nematodes and fungus.

#### **UNIT-II Field Crops Diseases (Kharif crops)**

- Diseases of field crops cereals & pulses in kharif crops.
- Identification, symptoms & control measures.

#### **UNIT-III Field Crops Diseases (Major cash crops)**

- Diseases of field crops including major crops, & horticultural in kharif crops.
- Identification, symptoms & control measures.

#### **UNIT-IV Control Management of Diseases**

- Biological control
- Cultural control.
- Chemical control of diseases
- Organic approach towards control of diseases.

Books:

1. Plant Pathology, 5th Edition Jan 2005 By, Geogre N. Agricos.
2. Introduction to Principles of Plant Pathology Paperback – 10 Jul 2017 By, R.S. Singh
3. Plant Bacteriology Clarence I. Kado

4. Fundamentals of Bacterial Plant Pathology By, Masao Goto

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**B. Voc. Part – II, Semester - IV**  
**Sustainable Agriculture Management**  
**Paper -XXXII: Principles of Genetics.**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Theory:        04 lectures per week

Practical:     02 lectures per week per batch of students

Total Marks: 50 Marks (Theory 40 + Practical 10)

Objectives:

To study role of plant genetics in sustainable agriculture management.

**UNIT-I Scope and importance of Plant Genetics.**

- Scope of plant genetics.
- Importance of plant biotechnology.
- Opportunities & Economic importance.

**UNIT-II Introduction to Plant Breeding**

- Plant Breeding, introduction.
- Improvement of agricultural crops.
- Plant Breeding enhance food production.

**UNIT-III Modes of Reproduction in Plants**

- Genetic constitution of crop plant mechanism of heredity, required for handling the desired characters during breeding work.
- Modes of reproduction in crop plants; asexual and sexual.

**UNIT-IV Relation of Biotechnology with other Branches of Sciences**

- Tissue Culture Techniques.
- Hybridization and Monoclonal Antibodies.
- Biotechnology in Agriculture.
- Biotechnology and Environment.

Books:

1. Plant breeding and genetics in India - Volume 1- Radhelal Herlal Richharia, S. Govindaswami
2. PLANT BREEDING METHODS- MAHABAL RAM
3. Plant Breeding And Genetics At A Glance- I.D. Tyagi
4. Key Notes on Genetics and Plant Breeding- Dr. Venkata R. Prakash Reddy Venkata R. Prakash Reddy

**B. Voc. Part – II, Semester - IV**

**Sustainable Agriculture Management**

**Paper -XXXIII: : Livestock Production & Management ( Practical)**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Practical: 06 lectures per week per batch of students

Total Marks: 50 Marks (Practical 50)

Objectives:

- To make students study about Livestock Production & Management.
- To understand operations in Dairy unit & Poultry industry.

1. Identification of Domestic Livestock animals.
2. Visit to a Dairy Unit
3. Types of cattle farms.
4. Visit Poultry farm & care.

**B. Voc. Part – II, Semester - IV**  
**Sustainable Agriculture Management**

**Paper -XXXIV: Agricultural Finance & Cooperation. (Practical)**

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Practical: 06 lectures per week per batch of students

Total Marks: 50 Marks (Practical 50)

Objectives:

- To know Agricultural Finance & Cooperation.
- To role of public & private agency in Agricultural Sector.

1. Importance of Finance in Agriculture.
2. NABARD.
3. Role of Nationalized Banks for Indian Agriculture.
4. StudyPACS.
5. Visit to Credit Cooperative Society.

**B. Voc. Part – II, Semester - IV**

**Sustainable Agriculture Management**

**Paper –XXXV: Plant Pathology Diseases of field crops & management.**

(Practical)

Total Workload: 06 lectures per week of 60 min.

Distribution of Workload:

Practical: 06 lectures per week per batch of students

Total Marks: 50 Marks (Practical 50)

Objectives:

- To understand basic Plant Pathology.
  - To study symptoms & control measures to enhance crop production.
- 
1. Introduction to basic laboratory equipment's need for plant pathology
  2. Collection of fungal, bacterial & viral affected plant specimens.
  3. Equipment needed to prevent & control disease
  4. Preparation of slides to identify fungus & bacterial growth.

**B. Voc. Part – II, Semester - IV**  
**Sustainable Agriculture Management**  
**Paper -XXXVI: Project/ Field Work.**

Total Marks: 50 Marks

Soil testing lab project, Green houses, Drip irrigation installation.