

 Estd. 1962 "A ⁺⁺ " Accredited by NAAC (2021) With CGPA 3.52	SHIVAJI UNIVERSITY, KOLHAPUR 416 004, MAHARASHTRA PHONE : EPABX - 2609000, BOS Section - 0231-2609094, 2609487 Web : www.unishivaji.ac.in Email: bos@unishivaji.ac.in शिवाजी विद्यापीठ, कोल्हापूर, ४१६ ००४, महाराष्ट्र दूरध्वनी - इपीबीएक्स - २०६०९०००, अभ्यासमंडळे विभाग : ०२३१- २६०९०९४. २६०९४८७ वेबसाईट : www.unishivaji.ac.in ईमेल : bos@unishivaji.ac.in	 
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Ref.: SU/BOS/Voc./508

Date: 10- 09- 2024

To,

The Principals,
 All Concerned Affiliated Colleges /Institutions.
 Shivaji University, Kolhapur.

**Subject : Regarding syllabi of B. Voc. Part III Courses under the Faculty of
 Inter-Disciplinary Studies as per National Education Policy, 2020. (1.0)**

Sir/Madam,

With reference to the subject, mentioned above, I am directed to inform you that the university authorities have accepted and granted approval to the syllabi of B.Voc. Part III Courses under the Faculty of Inter-Disciplinary Studies. as per National Education Policy, 2020. (1.0)

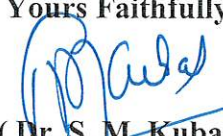
1	B.Voc. in Tourism and Service Industry
2	B.Voc. in Sustainable Agriculture Management
3	B.Voc. in Nutrition and Dietetics
4	B.Voc. in Nursing and Hospital Management
5	B.Voc. in Building Technology & Interior Design
6	B.Voc. in Agriculture
7	B.Voc. in Printing & Publishing
8	B.Voc. in Sustainable Agriculture
9	B.Voc. in Graphic Design
10	B.Voc. in Automobile

This syllabi shall be implemented from the academic year 2024-2025 onwards. A soft copy containing the syllabi is attached herewith and it is also available on university website www.unishivaji.ac.in. (NEP-2020@suk / Online Syllabus)

You are, therefore, requested to bring this to the notice of all students and teachers concerned.

Thanking you,

Yours Faithfully


 (Dr. S. M. Kubal)
 Dy Registrar

Copy to:

1	The Dean, Faculty of IDS	6	Affiliation T. 1 & T. 2 Section
2	Director, Board of Examination and Evaluation	7	P.G.Admission Section
3	The Chairman, Respective Board of Studies	8	Appointment A & B Section
4	All On Exam Section <i>O.E.I Section</i>	9	P.G.Seminar Section
5	Eligibility Section	10	Computer Centre /I.T.cell

SHIVAJI UNIVERSITY, KOLHAPUR



Scheme and Syllabus for
Bachelor of Vocation (B. Voc.)
Sustainable Agriculture

Part III- Sem. V & VI

(This Syllabus shall be implemented from the academic year 2024-25 onwards.)

SHIVAJI UNIVERSITY, KOLHAPUR

STRUCTURE AND SYLLABUS OF B.Voc.

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

TITLE	: B. Voc. (Sustainable Agriculture) Syllabus (Semester Pattern) Under Faculty of Science
YEAR OF IMPLEMENTATION	: Syllabus will be implemented from academic year 2024-25
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 1 st , 3 rd and 5 th 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 4 th and 6 th 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 One Project / Industry Visit/ Study Tour / Survey

SCHEME OF EXAMINATION

A) THEORY

- The theory examination shall be at the end of the each semester.
- All the general theory papers shall carry 40 marks and all vocational theory papers shall carry 50 marks.
- 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.

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.
Q. No. 1 : Short answer type question with internal choice (Two out of Three)
Q. No. 2 to Q. No. 6 : Long answer type questions
Q. No. 7 : Short Notes with internal choice (Two out of Three)

B) PRACTICAL

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)

Structure of the Course

B. Voc. – III (Degree) Semester – V & VI

National Education Policy (NEP-2020)

Third Year Bachelor of Vocation (B.Voc.- Degree) Course Structure for (Level-6)

**With Multiple Entry and Multiple Exit Option
(To be implemented from the Academic Year 2024-25)**

Semester V– Duration: 6 Months											
Sr. No	Course	Teaching Scheme				Evaluation Scheme					
		No. of Lectures		Hours (T+P)	Credits	Theory	Internal/ Practical	Total Marks	Min Marks (Separate passing)	Exam Duration (Hrs.)	
		T	P							T	P
1	AECC-CD	4	2	6	4	40	10	50	18	2	
2	GEC-C	4	2	6	4	40	10	50	18	2	
3	DSC-C-I	4	-	4	4	50	-	50	18	2	
4	DSC-C-II	4	-	4	4	50	-	50	18	2	
5	DSC-C-III	4	-	4	4	50	-	50	18	2	
6	SEC-C-I	-	4	4	2	-	50	50	18		3
7	SEC-C-II	-	4	4	2	-	50	50	18		3
8	SEC-C-III	-	4	4	2	-	50	50	18		3
9	SEC-C-IV	-	-	2	2	-	50	50	18		-
	Total	20	16	38	24	230	220	450	-	-	

Semester VI – Duration: 6 Months (Degree)											
Sr. No	Course	Teaching Scheme				Evaluation Scheme					
		No. of Lectures		Hours (T+P)	Credits	Theory	Internal/ Practical	Total Marks	Min Marks (Separate passing)	Exam Duration (Hrs.)	
		T	P							T	P
1	AECC-CD	4	2	6	4	40	10	50	18	2	
2	GEC-D	4	2	6	4	40	10	50	18	2	
3	DSC-D-I	4	-	4	4	50	-	50	18	2	
4	DSC-D-II	4	-	4	4	50	-	50	18	2	
5	DSC-D-III	4	-	4	4	50	-	50	18	2	
6	SEC-D-I	-	4	4	2	-	50	50	18		3
7	SEC-D-II	-	4	4	2	-	50	50	18		3
8	SEC-D-III	-	4	4	2	-	50	50	18		3
9	SEC-D-IV	-	-	2	2	-	50	50	18		3
	Total	20	16	38	28	230	220	450	-	-	
	Grand Total	40	32	76	52	460	440	900	-	-	

Scheme of Teaching: B. Voc. – Part III (Degree) Semester – V

Sr. No.	Title	Distribution of Workload (Per Week)		
		Theory	Practical	Total
1	Principle of Agribusiness Management – (AECC-CD)	4	2	6
2	Tissue Culture (GEC-C)	4	2	6
3	Fundamentals of Organic Farming (DSC-C-I)	4	-	4
4	Fundamental of Soil Science, Soil Water, Plant Fertilizer Analysis (DSC-C-II)	4	-	4
5	Commercial Enterprises (DSC-C-III)	4	-	4
6	Laboratory Work : Fundamentals of Organic Farming (SEC-C-I)	-	4	4
7	Laboratory Work: Fundamental of Soil Science, Soil Water, Plant Fertilizer Analysis (SEC-C-II)	-	4	4
8	Laboratory Work : Commercial Enterprises (SEC-C-III)	-	4	4
9	Project Work / Study Tour (SEC-C-IV)	-	-	2
	Total --	20	16	38

B. Voc. – Part III (Degree) Semester – VI

Sr. No.	Title	Distribution of Workload (Per Week)		
		Theory	Practical	Total
1	Govt. Policies and Programmes Related to Agriculture (AECC-CD)	4	2	6
2	Computer Hardware and Networking (GEC-D)	4	2	6
3	Agro Meteorology (DSC-D-I)	4	-	4
4	Farming System Approach for Sustainable Crop Production (DSC-D-II)	4	-	4
5	Landscape Designing and Indoor Gardening (DSC-D-III)	4	-	4
6	Laboratory Work : Agro Meteorology (SEC-D-I)	-	4	4
7	Laboratory Work: Farming System Approach for Sustainable Crop Production (SEC-D-II)	-	4	4
8	Laboratory Work : Landscape Designing and Indoor Gardening (SEC-D-III)	-	4	4
9	Project Work / RAW (SEC-D-IV)	-	-	2
	Total-	20	16	38

Environmental Science is compulsory for second year as per Shivaji University Guidelines.

Eligibility for Admission : 10 + 2 from any faculty or equivalent Diploma /Advanced Diploma in any related stream.

Eligibility for Faculty : 1) M. Sc.(Agri., Horti, Agri. Economics, Plant Pathology ,Agri. Engineering, Agri. Extension, Soil Science) with NET / SET/Ph.D.
2) M. A (English) with NET/SET/Ph.D. for Business Communication
3) M. Com. With NET/SET/Ph.D. for Fundamentals of Financial Accounting

Eligibility for Laboratory Assistant B.Sc.(Agri)/ Diploma in Agriculture

Staffing Pattern: Teaching:

- a) In 1st Year of B. Voc. - 1 Full Time and 1 Part Time Lecturer and 1 CHB Lecturer for Business Communication
- b) In 2nd Year of B. Voc.– Total requirement of faculty (Inclusive of 1st Year) will be 3 Full time and 1 CHB Lecturer for Financial Accounting 1 CHB Lecturer for Business Communication
- c) In 3rd Year of B.Voc.– Total requirement of faculty (Inclusive of 1st & 2nd Year) will be 4 Full time and 1 part time and 1 CHB Lecturer for Business Communication,

Lab Assistant: For 1st Year of B. Voc. - 1 Part time
 For 2nd and 3rd Year (Inclusive of 1st Year) of B. Voc. – 1 Full Time

1. Standard of passing

The maximum credits for B. Voc. Sustainable Agriculture Course (of six semesters) will be $30 \times 6 = 180$ credits. To pass in each paper students are required to obtain 4 grade points in each paper, it means 18 to 20 Marks for 50 Marks Theory / Practical papers, 14.08 to 16 for 40 Marks Theory papers and 04 marks for 10 Marks Practical papers.

2. Assessment of Project / Industrial visit /study tour /Internship Report

- i) The Project/Industrial visit/study tour/Internship report must be submitted by the prescribed date usually two weeks before the end of academic session of the semester.
- ii) It is desirable that the topics for Project/Industrial visit/study tour/Internship report shall be assigned by the end of previous semester.
- iii) The Project/Industrial visit/study tour/Internship report and its presentation shall be evaluated by the coordinator of the course and concerned faculty.

3. Grade point for Theory/Practical/ Project / Industrial visit /study tour /Internship Report
Table –I: for 50 Marks Theory or Practical

Grade Point	Marks out of	Marks obtained	Grade	Description of performance
0	50	0.0 to 2.5	D	Unsatisfactory
1	50	2.6 to 5.0		
1.5	50	5.1 to 7.5		
2	50	7.6 to 10.0		
2.5	50	10.1 to 12.5		
3	50	12.6 to 15.0		
3.5	50	15.1 to 17.5		
4	50	17.6 to 20.0	C	Fair
4.5	50	20.1 to 22.5		
5	50	22.6 to 25.0	B	Satisfactory
5.5	50	25.1 to 27.5		
6	50	27.6 to 30.0	B+	Good
6.5	50	30.1 to 32.5		
7	50	32.6 to 35.0	A	Very Good
7.5	50	35.1 to 37.5		
8	50	37.6 to 40.0	A+	Excellent
8.5	50	40.1 to 42.5		
9	50	42.6 to 45.0	O	Outstanding
9.5	50	45.1 to 47.0		
10	50	47.6 to 50.0		

Table No. II : For 40 Marks

Grade Point	Marks out of	Marks obtained	Grade	Description of performance
0	40	0.0 to 2.0	D	Unsatisfactory
1	40	2.08 to 4.0		
1.5	40	4.08 to 6.0		
2	40	6.08 to 8.0		
2.5	40	8.08 to 10.0		
3	40	10.8 to 12.0		
3.5	40	12.08 to 14.0		
4	40	14.08 to 16.0	C	Fair
4.5	40	16.08 to 18.0	B	Satisfactory
5	40	18.08 to 20.0		
5.5	40	20.08 to 22.0	B+	Good
6	40	22.08 to 24.0		
6.5	40	24.08 to 26.0	A	Very Good
7	40	26.08 to 28.0		
7.5	40	28.0 to 30.0	A+	Excellent
8	40	30.08 to 32.0		
8.5	40	32.08 to 34.0	O	Outstanding
9	40	34.08 to 36.0		
9.5	40	36.08 to 38.0		
10	40	38.08 to 40.0		

Table No. III : For 10 Marks Practical

Grade Point	Marks out of	Marks obtained	Grade	Description of performance
0	10	0.0 to 0.5	D	Unsatisfactory
1	10	0.52 to 1.0		
1.5	10	1.02 to 1.5		
2	10	1.52 to 2.0		
2.5	10	2.02 to 2.5		
3	10	2.52 to 3.0		
3.5	10	3.02 to 3.5		
4	10	3.52 to 4.0	C	Fair
4.5	10	4.02 to 4.5	B	Satisfactory
5	10	4.52 to 5.0		
5.5	10	5.02 to 5.5	B+	Good
6	10	5.52 to 6.0		
6.5	10	6.02 to 6.5	A	Very Good
7	10	6.52 to 7.0		
7.5	10	7.02 to 7.5	A+	Excellent
8	10	7.52 to 8.0		
8.5	10	8.02 to 8.5	O	Outstanding
9	10	8.52 to 9.0		
9.5	10	9.02 to 9.5		
10	10	9.52 to 10		

Calculation of SGPA and CGPA –

1. Semester Grade Point Average (SGPA) =
$$\Sigma (\text{Course Credits in passed Courses} \times \text{earned grade points}) \div \Sigma (\text{Course credits registered course})$$
2. Calculative Grade Point Average (CGPA) =
$$\Sigma (\text{Course credits in passed courses} \times \text{earned grade points}) \text{ of all Semesters} \div \Sigma (\text{Course credits in registered courses}) \text{ of all Semesters}$$
3. At the end of each year of B. Voc. Program, student will be placed in any one of the division as detailed below:

SGPA and CGPA Table

Grade Point	Grade	Description of performance
0.00 to 3.49	D	Unsatisfactory
3.5 to 4.49	C	Fair
4.5 to 5.49	B	Satisfactory
5.5 to 5.99	B +	Good
6.0 to 6.99	A	Very Good
7.0 to 8.49	A +	Excellent
8.5 to 10.00	O	Outstanding

- 1st Class with distinction : CGPA > 7.0 and Above
 - 1st Class : CGPA > 6.0 and < 7.0
 - 2nd Class : CGPA > 5.0 and < 6.0
 - Pass Class : CGPA > 4.0 and < 5.0
 - Fail : CGPA < 4.0
-

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : V Paper No. XXXVII

(AECC-CD) PRINCIPLES OF AGRIBUSINESS MANAGEMENT

Work Load - 6	Total – 50 M
Theory – 4 Lectures / Week	Theory - 40 M
Practical- 2 Lectures / Week	Practical- 10 M

Objective : To understand entrepreneurship strategies.

Course contents:

Unit I : Introduction to Information and Communication

Different channel of Information: Communication TV, Video, E-mail, Network Connecting Devices- Internet, Photography

Unit II : Geographical Information System (GIS)

Remote Sensing - Geographical data and maps, Geographical Information System (GIS), Drones- its Uses, Application Principles and Installation

Unit III : Marketing Management

Concept of marketing management - Marketing - new concept - business marketing - , holistic marketing - scope- marketing management process, Marketing mix- Market structure and Consumer buying behavior. Marketing environment- Responding to market environment. Marketing opportunities analysis - marketing management tasks, Marketing Planning Process. New product development process - Challenges in new product development, Organizational arrangements, managing the development process, consumer adoption process. Marketing segmentation, Product, Brand, Selection of Market and product, Source of Information, Global Sourcing, Marketing intelligence. Basic principles of international trade, foreign exchange and export.

Unit IV: Agricultural Projects

Project concept- definitions- project approach to development, Agricultural projects. Characteristics- relationship of projects with plans and programmes. Phases of project cycle- identification- formulation, appraisal implementation- monitoring and evaluation- Risk in agricultural projects- methods of handling risk projects. Preparation of a model agricultural project.

Practical

Principles of Agribusiness Management

1. Solving agricultural problems with information system.
2. Agricultural databases - Definition and objectives, Decision Support system, Expert system, Remote Sensing -Geographic data and maps, Geographical information system.
3. Agribusiness development, steps in setting up a small enterprise analysis
4. Marketing management, Marketing Planning Process & Networking for entrepreneurs.

Scheme of Internal Practical Evaluation

10 Marks

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

References:

1. Drilon, Dr.J.D, 1971, Introduction to Agri-Business Management (Asian Productivity Organization, Tokyo).
2. Developing Entrepreneurship, Asia pacific Theories and practices ASEED, New Delhi.
3. Alagumani ,T , Chinnaiyan, P and Elangovan, S . 1998. Agricultural Management .Publishers K9 International, Madurai
4. Reddy,S., Raghuram,P., Neelakantan,T.V and Bhavani Devi I.2004.Agricultural Economics. Oxford and IBH Publishers, New Delhi.
5. Reddy,Subba,S. and Raghu Ram.P. 1996. Agricultural Finance and Management. Oxford IBH, New Delhi.
6. Book Keeping and Accountancy.Choudhari, Chopde
7. Dahama.O.P. and O.P. Bhatnagar, 1980.Education and Communication for development, Oxford and IBH, New Delhi.
8. Fuller.R, 2000.Special Edition using MS Power point, McMillan Publishing Company, USA.
9. Boctor.B.S., 2000. MS Office 2000-Microsoft Press Release, USA.
10. Chandrakanthan.K and Palanichamy.S., 2002. Advances in Communication Technology, Indian publishers and distributor, New Delhi.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : V Paper No. XXXVIII

(GEC-C) TISSUE CULTURE

Work Load - 6

Theory – 4 Lectures / Week

Practical- 2 Lectures / Week

Total Marks – 50

Theory- 40

Practical- 10

Objectives

- To get Practiced with various aspects of tissue culture.
- To learn application of tissue culture in crop improvement

UNIT 1 : Fundamentals of Tissue Culture

History, Definition, Scope, Importance of Tissue Culture in India, Basic Requirement for tissue culture lab

UNIT 2 : Tissue Culture Techniques

Techniques of In-vitro cultures: Micro propagation, Anther Culture, Pollen Culture, Ovule Culture, Embryo Culture, Test tube fertilization, Endosperm Culture, Factors Affecting above in-vitro culture; Applications and Achievements. Principles of Totipotency and Morphogenesis, Nutritional requirements of in-vitro cultures. Advantages and Disadvantages of Totipotency and Morphogenesis. Types of different growth media its Composition, Roles , Uses and limitations , expenditure

UNIT 3 : Embryogenesis

Somaclonal variation, Types, Reasons: Somatic embryogenesis and synthetic seed production technology; Protoplast isolation, Culture, Manipulation and Fusion; Products of somatic hybrids and cybrids.

UNIT 4 : Plant Metabolites

Secondary plant metabolites-definition-their value as medicinal, aromatic and industrial materials-plant cell and tissue culture as an alternative source of secondary and natural products. Tissue culture as a tool in genetic engineering. Applications in crop improvement.

Practical TISSUE CULTURE

1. Requirements for Plant Tissue Culture Laboratory.
2. Media components and preparations.
3. Preparation and sterilization of media.
4. Inoculation of explants on Culture Media.
5. Study of BT Brinjal and BT Cotton .
6. Study of Golden Rice.
7. Demonstration of Anther culture.
8. Demonstration of embryo culture.
9. Hardening/ acclimatization of regenerated plants.

Scheme of Internal Practical Evaluation

10 Marks

1) Submission of Record Book

5 Marks

2) Viva – Voce

5 Marks

References:

1. Chawla H S. 2003. Oxford & IBH Publishing Co. Pvt. Ltd. Chawla H. S. Introduction to Plant Biotechnology.
2. Brown, T.A. 1995. Gene cloning an Introduction (3rd edition). Chapman Hill, U.K.
3. Lehninger. 1993. Principles of Biochemistry. CBS Publications, New Delhi. Lewin, B. Genes VII. Oxford University Press, Inc., New York.
4. Watson, J.D., N.H. Hopkins, J.W. Roberts, J.A. Steits and A.M. Weiner. 1987. Molecular
5. Biology of the Gene. The Benjamin/Cummings Publishing Co. Inc. Menlo Park
6. Singh, B.D. 1998. Biotechnology. Kalyani Publications, New Delhi
7. Bhojwani, S.S. and Razdan, M.K. 1993. Plant Tissue Culture. Theory and Practice. Elsevier Science Publications, Netherlands

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : V Paper No. XXXIX

(DSC-C-I) FUNDAMENTAL OF ORGANIC FARMING

Work load - 4

Theory – 4 Lectures / Week

Theory- 50

Objectives :

1. To familiarize with the concept of sustainability and sustainable development.
2. To acquaint with the fundamentals of organic farming.
3. To have the knowledge about the organic certification procedures.

UNIT 1 – Organic Farming

Need, Scope, Benefits, Advantages over Chemical based Agriculture. FYM, Oil Cakes, Animal Waste, Green Manure Biofertilizers, Coir Compost, use of Liquid Fertilizers (Panchagavya, Jeevamrut application of Pyrethrum, Neem.) Biodynamic farming, Crop rotation, Multiple Cropping.

UNIT 2 -Crop Disease Management

Biological agents -Mass multiplication and familiarization with field application, Different traps and pheromones for pest control. Biocontrol of weeds, diseases and insect pests, Sanitation, Tillage and cultivation, Mulching, Supplemental fertilization, Biorational pesticides, Foliar fertilization.

UNIT 3 - Biological pest control

Biological agents -Mass multiplication and familiarization with field application, Different traps and pheromones for pest control.

UNIT 4- Socio-Economic Impacts

Marketing and export potential - Current status of organic farming - Initiatives in India and Maharashtra- National Programme for Organic Production National Standards for Organic Products(NSOP)-inspection and certification procedure

References:

1. Ananthakrishnan, T.N. (ed.) 1992. Emerging Trends in Biological Control of Phytophagous insects. Oxford & IBH, New Delhi.
2. Chhonkar, P.K. and Dwivedi, B.S. 2004. Organic farming and its implications on India's food security. *Fertil. News* 49(11): 15-18,21-28,31&38.
3. Gaur, A.C. 1982. A Manual of Rural Composting. FAO/UNDP Regional Project Document, FAO, Rome.
4. Howard, A. 1940. An Agricultural Testament. Oxford University, London. Lampin, N. 1990. Organic Farming. Farming Press Books, Ipswich, U.K.
5. Palaniappan, S.P and Anandurai, K. 1999. Organic Farming- Theory and Practice, Scientific Pub., Jodhpur.
6. Reddy, M.V. (ed.) 1995. Soil organism and Litter decomposition in the Tropics. Oxford & IBH, New Delhi.
7. Singh, S.P. (ed.) 1994. Technology for Production of Natural Enemies, Project Directorate of Biological Control, Bangalore.
8. Trewavas, A. 2004. A critical assessment of organic farming and food assertions with
9. Trivedi, R.N. 1993. A Text Book of Environmental Sciences, Anmol Pub., New Delhi.
10. Veeresh, G.K., Shivashankar, K. and Singlachar, M.A. 1997. Organic Farming and Sustainable Agriculture, Association for Promotion of Organic Farming, Bangalore.
11. Woormer, P.L. and Swift, M.J. 1994. The Biological Management of Tropical Soil Fertility, S.B.F. & Wile

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : V Paper No. XXXX

**(DSC-C-II) FUNDAMENTAL OF SOIL SCIENCE, SOIL WATER AND PLANT
FERTILIZER ANALYSIS**

Work load - 4

Theory – 4 Lectures / Week

Theory- 50

Objectives

- To Examine Soil Fertility status and Plant Nutrition
- To Study fertilizers and its classification

Unit 1– Soil Fertility and Plant Nutrition

History of soil fertility and plant nutrition. Soil as a source of plant nutrients, essential and beneficial nutrients and their role. Criteria of essentiality, forms of nutrients in soil. Introduction and importance of organic manures. Sources of organic matter, recycling, composition and C:N ratio. Definition, properties and classification of bulky and concentrated organic manures, their composition and nutrient availability. Preparation of FYM, composts, different methods of composting, decomposition process and nutrient losses during handling and storage.

Unit 2 – Organic Resources

Vermi-composting, types, advantages and disadvantages and nutrient availability. Sewage and sludge, Biogas plant slurry; their composition and effect on soil and plant growth. Integrated nutrient management; concept, components and importance.

Unit 3 – Fertilizers Classification

Fertilizers, classification and properties, , their fate and reaction in soils. Potassic fertilizers: classification, properties, their fate and reaction in soils. Complex fertilizers their fate and reaction in the soil. Nano fertilizers. Secondary & micronutrient fertilizers: Types, composition, reaction in soil and effect on crop growth. Soil amendments. Handling and storage of fertilizers: Fertilizer control order. Mechanism of nutrient transport to plants: Factors affecting nutrient availability to plants.

Unit 4 – Nutrient Classification

Measures to overcome deficiencies and toxicities. Chemistry of soil N,P, K, calcium, magnesium, sulphur and micronutrients.. Soil Testing (Available nutrients) :Chemical methods and critical levels of different nutrients in soil. Plant analysis methods : Critical levels of nutrients, DRIS approach, ,indicator plants. Soil test based fertilizer

recommendations to crops. Methods and scheduling of nutrient applications for different soils and crops grown under rain fed and irrigated conditions. Factors influencing nutrients use efficiency (NUE) in respect of N, P, K, S, Fe and Zn fertilizers

Suggested Readings:

- 1) Foja Singh., 1997. Advances in Floriculture. Media Today Pvt. Ltd., New Delhi-17.
- 2) Prasad, S. and U.Kumar. 1998. Commercial floriculture. Agro Botanica. Bikaner - 334 004.
- 3) Roy. A. Larson., 1992. Introduction of Floriculture. International Book Distributing Co., Lucknow.
- 4) Vishnu Swarup., 1997. Ornamental Horticulture. Macmillan India Ltd., New Delhi-2. Wltez,
- 5) S., 1972. The world gladiolus, NAGG, USA.
- 6) Yadav, L.P. and Bose, T.K., 1986. Biology, conservation and culture of orchids. East-West Press Private Limited, New Delhi. E.
- 7) Yadav. I.S. and M.L. Choudhary., 1997. Progressive floriculture. The House of Sarpan, (Media), Bangalore.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : V Paper No. XXXXI

(DSC-C-III) COMMERCIAL ENTERPRISES

Work load - 4

Theory – 4 Lectures / Week

Theory- 50

Objectives -

To understand various commercial enterprises in agricultural sector through observation, field visits and presentation.

UNIT 1– Bee keeping

History and development. Honey bees- kinds of bees, biology-Hiving and domestication. Seasonal management of bees. Bee pasturage. Bee products extraction, uses, composition and preservation. Diseases and enemies of honey bees and their control. Bee poisoning. Scope of apiculture in Maharashtra. Recent advances in apiculture research. Larval host of bees and plants in bee keeping

UNIT 2– Sericulture

History and development. Types of silkworms in India - morphology, biology, rearing of silkworms. Host plants and their cultivation. Diseases and enemies of silkworm and their control. Use of biotechnology in sericulture. Scope of sericulture in Maharashtra. Recent advances in sericulture research. Lac culture -behavior and development of lac insects. Different strains and their host plants. Inoculation, harvesting and processing of lac. Lac and its uses. Enemies of lac insect and their control. Scope for cultivating lac in Maharashtra. Recent advances in lac culture research.

UNIT 3– Mushroom cultivation

Vegetative character of edible & poisonous Mushroom, Common edible mushrooms i.e. Button mushroom , Oyster mushroom , Shitake mushroom, Paddy straw mushroom, Spawn culturing, disease management, Nutritional benefits, value added products\recipes

UNIT 4 –Commercial Floriculture

Water, Nutrient , Fertigation, weed and disease management under protected cultivation of Orchid, tuberose, gladiolus, gerbera, rose post harvest handling, export potential and marketing

References:

1. David, B. V. and Kumarawami, T. 1978. Elements of Economic Entomology Popular Book Depot, Madras.
2. Ganga, G. and Sulochanachetty. 1999. An Introduction to Sericulture Second edition. IB Mand Oxford Publishing Company, New Delhi.
3. Groul, R.A. 1963.The Hive and the Honeybee.Dadani and Sons. Inc. Illinois.
4. Krishnaswami, S., Narasimhanna, Suryanarayana and Kumararaj. 1991. FAO Manuals on Mulberry Cultivation, silkworm rearing and silk reeling. IBM and Oxford Publishing Company, New Delhi.
5. Mishra, R. C. 1998.Perspectives in Indian Apiculture. Agro botanica, Bikaner, Rajasthan
6. Sardar Singh. 1962. Bee Keeping in India. ICAR, New Delhi.
7. Chang, S. T. Miles, P. G. and Hays, W. A. 1978.The Biology and Cultivation of Edible Mushrooms. Academic Press, London.
8. Lulu Das. 2002. Mushroom Recipes. (Released in the VIII Biennial meeting of AICMIP).
9. Nair, M. C. 1995.Beneficial Fungi and Their Utilization. Scientific publishers, New Pali Road, Jodhpur.
10. Randhawa, G.S. and Mukhopadhyay, A. 1986.Floriculture in India. Allied publishers New Delhi.
11. Rogers,J.1974.Flowerarranging.Hamlyn,London

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : V Paper No. XXXXII

(SEC-C-I) FUNDAMENTALS OF ORGANIC FARMING

Work load - 4

Practical- 4 Lectures / Week

Practical- 50

Practical :

Objectives:

- To familiarize with the production and utilization of biofertilizers and biocontrol
 - 1) Preparation of enriched farm yard manure.
 - 2) Coir pith composting.
 - 3) Preparation of Vermicompost.
 - 4) Study and field application of biofertilizers.
 - 5) Raising green manure crops and cover crops.
 - 6) Plant protection through bio-agents and traps.
 - 7) Plant protection using pheromones.
 - 8) Visit to urban waste recycling unit.
 - 9) Study of profitable utilization of agricultural wastes.
 - 10) Visit to poultry and dairy units to study resource allocation, utilization and economics.
 - 11) Visit to an organic farm to study various components and utilization.

Raising of crops and Ornamental Nursery Raising Organically through Nutrient, diseases and pest management.

Scheme of Internal Practical Evaluation

50 Marks

1) Spotting	20 Marks
2) Theory	20 Marks
3) Submission of Record Book	5 Marks
4) Viva - Voce	5 Marks

(SEC-C-II) FUNDAMENTAL OF SOIL SCIENCE, SOIL WATER AND PLANT
FERTILIZER ANALYSIS

Work load - 4

Practical- 4 Lectures / Week

Practical- 50

Practical :

1. Principle and application of spectro-photometry / Colorimetry .
2. Principle and application of flame photometry and atomic absorption spectrophotometer (AAS).
3. Determination of moisture from organic manures and its preparation for nutrient analysis.
4. Determination of organic carbon from organic manures by ignition method.
5. Estimation of available nitrogen in soil (Alkaline permanganate method)
6. Estimation of available phosphorus in soil.
7. Determination of available potassium in soil using flame photometer.
8. Determination of exchangeable Ca& Mg in soil by EDTA method.
9. Estimation of available sulphur in soil (Turbidity method).
10. Estimation of DTPA extractable micronutrients from soil using AAS.
11. Estimation of total N from plant sample by Micro Kjeldahl's method.
12. Plant analysis for P,K, secondary and micronutrients.
13. Determination of nitrate nitrogen content of potassium nitrate.
14. Determination of total potassium content of muriate of potash (flame photometer).
15. Determination of zinc content from micronutrient fertilizer (EDTA Method).

Scheme of Internal Practical Evaluation

50 Marks

1) Spotting	20 Marks
2) Theory	20 Marks
3) Submission of Record Book	5 Marks
4) Viva - Voce	5 Marks

(SEC-C-III) COMMERCIAL ENTERPRISES

Work load - 4

Practical – 4 Lectures / Week

Practical- 50

Practical

Commercial Enterprises (Module)

Objectives

1. To develop awareness on Bee keeping, Sericulture and Lac culture through observation, field visit and reporting.
2. To develop skill in cultivation of edible Mushrooms and to develop skill in Dry Flower production and Bouquet making.

1. Different types of bees and bee equipments.
2. Handling of bee colonies.
3. Extraction and processing of honey.
4. Visit to apiaries.
5. Identification of silkworms
6. Laboratory rearing of mulberry silkworms and visit to rearing units.
7. Protected cultivation of vegetable crops.
8. Value addition milk products
9. Identification of common edible and poisonous mushrooms.
10. Preparation of substrates for mushroom cultivation.
11. Mushroom cultivation (Oyster, Paddy straw, Button, etc.)
12. Visit to a commercial mushroom production unit.
13. Methods of harvesting mushrooms.
14. Poultry farming .
15. Green house / Poly house technology

Scheme of Internal Practical Evaluation

50 Marks

- | | |
|------------------------------|----------|
| 1) Spotting | 20 Marks |
| 2) Theory | 20 Marks |
| 3) Submission of Record Book | 5 Marks |
| 4) Viva - Voce | 5 Marks |

SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – III

(Sustainable Agriculture)

Semester V Paper –XXXXV

(SEC-C-IV) PROJECT/ FIELD WORK/STUDY TOUR

Objectives :

To acquaint with organic cultivation of vegetables Main field preparation, transplanting, nutrient management, water management, and plant protection aspects by allotting each student 5 cent land for setting up of a organically grown vegetable field in a sustainable way.

Scheme of Internal Practical Evaluation**50 Marks**

- 1) Prepare Project Related Topics
- 2) Viva - Voce

40 Marks

10 Marks

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXVI

(AECC-CD) GOVERNMENT POLICIES AND PROGRAMMES RELATED TO
AGRICULTURE

Objectives :

- 1) To acquaint with various Government Policies related to Agriculture in Maharashtra and India.
- 2) To familiarise with five year plans and Panchayathiraj system in India.

UNIT 1 - Introduction to agricultural policies

Introduction to agricultural policies of Maharashtra and of India -need and importance - National Agricultural Policy in brief.

UNIT 2 – Agricultural policies

Land and labour Agricultural policies regarding land - need and scope for land reforms - Abolition of intermediaries - problem of subdivision and fragmentation of holdings. Agricultural policies regarding labour - present position of agricultural labour - minimum wages - marketing - infrastructure facilities - transgenic plant varieties

UNIT 3 - Agricultural policies regarding Credit

Co-operatives and rural credit - Commercial banks and rural credit - Regional Rural Banks - Lead Bank Scheme - NABARD. Agricultural policies of Maharashtra and of India- regarding agricultural products and their marketing, export and prices - food security.

UNIT 4 - Five Year plans and Panchayathiraj

Concept of planned growth- Five Year Plans-Government policies and programs in agriculture and rural development. IADP - IAAP- IWDP- Watershed development Programmes- IRDP-NREGP- SGSY - etc. Peoples' Plan

Practical :

1. To Prepare Agriculture Loan Proposal
2. To Understand Agriculture Credit Societies
3. Implementation of Different Agriculture Schemes

References:

1. Government of India. Five year Plan Documents.

2. Government of India. Economic Survey. Published by Planning Commission (various issues)
3. Government of India. Economic Review. Published by State Planning Board (various issues)

Scheme of Internal Practical Evaluation

10 Marks

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

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXVII

(GEC-D) COMPUTER HARDWARE AND NETWORKING

Work Load - 6	Total Marks – 50
Theory – 4 Lectures / Week	Theory - 40
Practical- 2 Lectures / Week	Practical- 10

Objectives :

1. Understand the hardware components of a system.

2. Understand basic issues in installing and using software.
3. Understand how a network functions and the issues of network security.

UNIT 1- Basics of Computer and Hardware Input & Output Devices

Types and specifications, CPU, Memory devices types primary and secondary, BIOS/CMOS setting. Study of Motherboard RAM,ROM,CMOS,POST, BUS, (Address, Data, SYSTEM), Connections of various devices such as Display Adapter, Ports (Serial, Parallel) , Modem on the Mother Board, Importance of CPU cooling, Motherboard troubleshooting.

UNIT 2 - Storage Devices HDD

HDD types, integrated, SCSI, Magnetic recording, Formatting (Track, Sector) Cluster, Bad Sector, Jumper Setting, Common Problem and its trouble Shooting, External Drive (HDD), Optical Drives. FDD: FDD types and working and its related problem, CD and DVD drives- ROM and Writer, USB Devices, Hub, Pen Drives.

UNIT 3 - Serial Devices & Parallel Devices

Key Board Switches, Keyboard organization, Key board type, Wireless Keyboard Trouble shooting. Mouse: Mouse type- Scroll & Optical Mouse, Function Connecting Mouse, Trouble shooting Mouse. FILE SYSTEM: Types of file Sequential, index, direct access, creation and updates of file and access method. Printers: Working of DMP, Ink Jet, Laser Printer, line printer, MFP (Multi Functional Printer and its Trouble shooting, Scanners, BOOT PROCESS, POWER SUPPLY, TYPES OF PC'S : Desktop, Laptop, Palmtop.

UNIT 4 - Introduction to LAN and WAN networking Emergence

History of network, What is network, Need of network or benefits of network, Types of networks -LAN and WAN, How to assign IP address mask and gateway, Familiar with ping, ip config/all net stat and tracert commands, Types of wan technologies, Explain about structure of intranet and internet.

References:

1. The Indispensable PC Hardware Book (4th Edition) by Hans-Peter Messmer.
2. USB Mass Storage by Jan Axelson.
3. Bigelow's PC Hardware Desk Reference – 2002 by Stephen J. Bigelow Shivaji University, Kolhapur.

4. PC Architecture. An online book in by Michael Karbo.

Scheme of Internal Practical Evaluation	10 Marks
1) Submission of Record Book	5 Marks
2) Viva – Voce	5 Marks

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXVIII
(DSC-D-I) AGRO METEOROLOGY

Work Load - 6
Theory – 4 Lectures / Week

Total Marks – 50

Objectives:

To study various Meteorological aspects in relation with Crop Production.

UNIT 1- Introduction to Meteorology and Agricultural Meteorology

Scope and importance of Agricultural Meteorology - Composition of Atmosphere - Role of greenhouse gases in global cooling and warming - Concept of weather and climate - Micro-meso-macro and phyto climates soil temperature and its variations.

UNIT 2- Electromagnetic Spectrum

Nature and properties of solar radiation - shortwave radiation and long wave radiation -

Radiation balance - Response of plants to solar radiation and photosynthetically active radiation - Thermal structure of atmosphere - vertical profiles - factors affecting surface air temperature - spatial and temporal variations in surface air temperature - soil temperature and its variations - Atmospheric pressure and its variation with height - Global distribution of pressure and wind - Atmospheric humidity - saturation and actual vapour pressure - relative humidity and dew point temperature.

UNIT 3- Cloud classification and measurements cloud seeding

Rainfall and its mechanisms - forms and types of rainfall - Indian monsoons - southwest monsoon - northeast monsoon - monsoon variability across Maharashtra and India - Rainfall over India and Maharashtra Rainfall and its mechanisms - forms and types of rainfall - Indian monsoons – southwest monsoon - northeast monsoon - monsoon variability across Maharashtra and India – Rainfall over India and Maharashtra Role of weather on insect pest and diseases. Importance of weather forecasting in Agriculture - weather service to farmers - agricultural seasons - crop weather diagrams and calendars - crop weather relationships – Role of weather on insect pest and diseases.

UNIT 4- Meteorological and Agro meteorological Stations

Types of agro meteorological Stations. Crop weather diagrams and calendars Preparation of crop weather calendars – weather and climate related natural disasters, risk and management - Climate change and global warming - weather modification - Introduction to Remote Sensing.

References :

1. Das.P.K. 1968.The Monsoons. NBT, New Delhi.
2. Khadekar, S.R. 2001.Meteorology.Agromet publishers, Nagpur. Mavi, H.S. 1986.
3. Introduction of Agrometeorology. Oxford & IBH Publishing Co. New Delhi. Menon, P.A. and Rajan, C.K. 1989.
4. Climate of Maharashtra. Classic publishing house, Kochi. PrasadaRao, G.S.L.H.V. 2005. Agricultural Meteorology. Second Edition.
5. Maharashtra agricultural University, Thrissur. Sachati, A.K. 1985. Agricultural Meteorology - Instruction-cum-practical manual, NCERT, New Delhi Varshneya,M.C.andBalakrishnaPillai,B.2003.
6. Textbook of Agricultural Meteorology. ICAR, New Delhi. Venketaraman, S. and Krishnan, A. 1992.Crops and weather. ICAR, New Delhi. Wilsie, P.C. 1961.
7. Crop Adaptation and distribution. Eurasia Publishing House (P) ltd., New Delhi.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXIX

**(DSC-D-II) FARMING SYSTEM APPROACH FOR SUSTAINABLE CROP
PRODUCTION**

Work Load - 6

Total Marks – 50

Theory – 4 Lectures / Week

Objectives:

1. Familiarising with the Farming System Approach for Sustainable Crop Production.
2. To make idea about different non-traditional practices in organic farming.

UNIT 1- Introduction

Importance of system approach in crop production, different cropping systems-Terms and definition- Cropping pattern - Multiple cropping and various forms advantages and disadvantages- Intercropping- ecological basis of intercropping systems types- sequential cropping and crop rotation-planned crop rotation- Mixed farming and farming systems of Maharashtra.

UNIT 2- Crop planning

Crop Calendar and Cropping Scheme Preparation factors affecting cropping schemes. Plant interactions- Allelopathy, Competition- Measures to minimize competition-Criteria for assessment of yield advantage, land use efficiency and monitory advantage.

UNIT 3 - Cropping Systems

Coconut based multi-tier cropping system- crop cafeteria for multiple cropping- Tapioca based cropping system-Homestead farming in Maharashtra, Agro forestry – Silvi-culture, Agri-silvi culture, Agri-horticulture, Agri- silvopastoral system, Alley cropping, and Social forestry definitions and -Organic recycling in cropping systems. Important cropping systems in India.

UNIT 4- Farming Systems

Scope, concept, importance, type of farming system, IFS model for different Agro-climatic zones, HEIA, LEIA, LEISA techniques, LEISA techniques livestock (Poultry) , Hydroponics, Permaculture, Aquaculture, Agro forestry

SHIVAJI UNIVERSITY, KOLHAPUR

B. Voc. Part – III

Sustainable Agriculture

Semester : VI Paper No. XXXXX

(DSC-D-III) LANDSCAPE DESIGNING AND INDOOR GARDENING

Work Load - 6

Total Marks – 50

Theory – 4 Lectures / Week

Objectives :

To get awareness on designing and laying out of a landscape.

To familiarise with different types and features of garden.

UNIT 1- Designing of landscape

Principle of landscape design. Selection and use of plants in the landscape. Preparation of landscape plan. Various software used in garden designing. Digitalization in designing. Computer aided landscape designing - GIS. Maintenance of plants in landscape: Planting and maintenance of plants in the landscape. Methods of irrigation – sprinkler and drip irrigation-pot irrigation, wick irrigation etc. Methods of application of fertilizers to garden plants.

UNIT 2- Garden tools

Use of tools and implements. Use of different types of sprayers, lawn mowers, hedge cutters, tree cutters, leveling methods.

UNIT 3- Garden Structures and Garden Types

Garden structures, roads and paths, enclosures, paving, garden lights, furniture. Different types of garden and features. Establishment and maintenance of lawn. Bottle garden terrarium, rock garden hanging garden, Nakshatra garden

UNIT 4- Indoor gardening

Selection of indoor plants, types of containers, media composition, manuring, irrigation. Bonsai, dish garden holiday care of indoor plants.

References:

1. Edmond, JB., Sen, TD, Andrews, TS and Halfacre, RG. 1977.
- 2 Fundamentals of Horticulture. Tata McGraw Hill, New Delhi.
3. Janick, J. 1963.Horticultural Science. W.H. Freeman, Sanfrancisco.
4. Kumar, N. 1990.Introduction to Horticulture, Rajalekshmi Publication, Nagercoil.
5. Carpenter, P.L., Walker, T.D and Lanphear, F.O. 1975.Plants in the Landscape.W.H. Feeman and Co., San Francisco.
6. Desai, B.L. 1979. Planning and Planting of Home Gardens. Indian Council of Agricultural Research, New Delhi. 6. Joiner, J.N. 1981.Foliage Plant Production. Prentice Hall Inc. London.

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXXI
(SEC-D-I) AGRO METEOROLOGY

Work Load - 6
Practical – 4 Lectures / Week

Total Marks – 50

Objectives :

To study the practical meteorological aspects in relation with crop production.

1. Selection of site and layout of agro meteorological stations and meteorological instruments.
2. Installation of soil thermometers and measurement and recording of soil temperature.
3. Measurement of Relative humidity and vapour pressure and Measurement of Air temperature.
4. Measurement of open pan evaporation.
5. Sunshine Recorder and measurement of sunshine.
6. Preparation of crop weather calendars.

References:

1. Das. P.K. 1968. The Monsoons. NBT, New Delhi
2. Khadekar, S.R. 2001. Meteorology. Agromet publishers, Nagpur
3. Mavi, H.S. 1986. Introduction of Agrometeorology. Oxford & IBH Publishing Co. New Delhi
4. Menon, P.A. and Rajan, C.K. 1989. Climate of Maharashtra. Classic publishing house, Kochi
5. Prasada Rao, G.S.L.H.V. 2005. Agricultural Meteorology. Second Edition. Maharashtra agricultural University, Thrissur.
6. Sachati, A.K. 1985. Agricultural Meteorology - Instruction-cum-practical manual, NCERT, New Delhi

Scheme of Internal Practical Evaluation**50 Marks**

- | | |
|------------------------------|----------|
| 1) Spotting | 20 Marks |
| 2) Theory | 20 Marks |
| 3) Submission of Record Book | 5 Marks |
| 4) Viva - Voce | 5 Marks |

SHIVAJI UNIVERSITY, KOLHAPUR**B. Voc. Part – III****Sustainable Agriculture****Semester : VI Paper No. XXXXXII****(SEC-D-II) FARMING SYSTEM APPROACH FOR SUSTAINABLE CROP****PRODUCTION**

Work Load - 6

Total Marks – 50

Practical – 4 Lectures / Week

Practical :

1. Preparation of cropping scheme for irrigated situations.
2. Preparation of cropping scheme for dry land situations.
3. Study of existing farming systems in nearby villages.
4. Preparation of integrated farming system models for wet lands.
5. Preparation of integrated farming system models for dry lands.
6. Visit to research station and farmers field to familiarize with various cropping and farming systems.

Scheme of Internal Practical Evaluation**50 Marks**

- | | |
|------------------------------|----------|
| 1) Spotting | 20 Marks |
| 2) Theory | 20 Marks |
| 3) Submission of Record Book | 5 Marks |
| 4) Viva - Voce | 5 Marks |

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXXIII

(SEC-D-III) LANDSCAPE DESIGNING FOR INDOOR GARDENING

Work Load - 6

Total Marks – 50

Practical – 4 Lectures / Week

Objectives :

To develop skill in planning and planting of garden lawn.

To develop skill in preparation of different types of gardens.

1. Preparation of landscape plan, identification of plants.
2. Use of software in landscape designing, computer aided landscape designs.
3. Planting of lawn.
4. Rolling and mowing of lawn - use of different types of lawn mowers.
5. Planting of trees and shrubs, preparation of flower beds, pruning of shrubs, hedges and trees.
6. Application of manures and fertilizers to garden plants. Practice in different methods of irrigation in landscapes.
7. Practice in application of plant protection chemicals, use of different types of sprayers.
8. Selection and establishment of enclosures and paving.
9. Layout of roads, paths and walks.
10. Preparation of rock garden.
11. Designing indoor garden.
12. Preparation of miniature garden and vertical garden. Preparation of terrarium

Scheme of Internal Practical Evaluation

50 Marks

1) Spotting	20 Marks
2) Theory	20 Marks
3) Submission of Record Book	5 Marks
4) Viva - Voce	5 Marks

SHIVAJI UNIVERSITY, KOLHAPUR
B. Voc. Part – III
Sustainable Agriculture
Semester : VI Paper No. XXXXXIV

(SEC-D-IV) Skill Development Internship/ Training

Student Ready Programme

(Rural & Entrepreneurship Awareness Development Programme)

Credit – 6

108 Hrs

RAWE & AIA Programme

Rural Agricultural Work Experience and Agro-Industrial Attachment

Details of Project & Dissertation Work

- 1) General orientation and on campus training by different faculties
- 2) Village attachment / Unit attachment / KVK / Research Station
- 3) Agro Industrial Attachment : In this programme, a group of students (5-6 number) will be allotted to work with host farmers and related agro-industrial premises.
- 4) A project report of the RAWE Programme shall be submitted at the end of sixth semester and a viva-voce will be conducted by a panel of subject experts

Bachelor of Vocation (B. Voc.) Part III - Sem. V
(AECC-ED)
Paper – I: Business Communication in English -III

Paper No:.....

Theory: 4 lectures/week

Credits: 04

Total Marks: 50 (Theory 40 + Internal 10)

Units Prescribed for Theory: 40 Marks.

Course Outcomes: The students will acquire knowledge of

1. To develop awareness of the complexity of the communication process
2. To develop effective listening skills in students so as to enable them to comprehend instructions and become a critical listener
3. To develop effective oral skills so as to enable students to speak confidently interpersonally as well as in large groups
4. To develop effective writing skills so as enable students to write in a clear, concise, persuasive and audience centered manner
5. To develop ability to communicate effectively with the help of electronic media

Content of syllabus:

Unit-I: Concept of Communication

(15 Hrs.)

Meaning, Definition, Process, Need, Feedback, Emergence of Communication as a key concept in the Corporate and Global world

Unit – II Impact of technological advancements on Communication

(15 Hrs.)

Types- Internet, Blogs, E-mails, Moodle, Social media (Facebook, Tweeter &WhatsApp) Advantages and Disadvantages

Unit – III Problems in Communication

(15 Hrs.)

Physical/ Semantic/Language / Socio-Cultural / Psychological / Barriers Ways to Overcome these Barriers

Unit – IV Listening Skills

(15 Hrs.)

Importance of Listening Skills, Obstacles to listening, cultivating good Listening Skills

Practical: Based on the theory units:

Marks: 10

Books Recommended: (List of Minimum 5 Books)

1. Agarwal, Anju D (1989) A Practical Handbook for Consumers, IBH.
2. Alien, R.K. (1970) Organizational Management through Communication.
3. Ashley, A (1992) A Handbook of Commercial Correspondence, Oxford University Press.
4. Aswal thapa, K (1991) Organizational Behavior, Himalayan Publication, Mumbai.
5. Atreya N and Guha (1994) Effective Credit Management, MMC School of Management, Mumbai.

Note: (If any - such as

- (1. In theory examination, the weightage to numerical problems should not exceed 30%.
- (2. Students can use scientific calculators in theory examination.)

Pattern of a Question Paper
B. Voc. Part-III Semester –V
Business Communication in English -III(AECC-E)

Paper No:

Time: 2 hours

Total Marks: 40

Q.1 Do as directed questions items on unit 1 to be asked **10 (10 out of 12)**

Q.2 Write a letter of application **10**

OR

Draft a CV / Resume for a particular post **10**

Q.3 Present a given information or a data using a table/ chart/pie diagram, etc. **10**

(any one diagram to be drawn)

Q.4 Fill in the blanks in the given interview **10**

Practical Evaluation:

Oral and presentation based on units prescribed **10 Marks**

Pattern of a Question Paper
B. Voc. Part-III Semester –VI
Business Communication in English -IV(AECC-F)

Time: 2 hours

Total Marks: 40

Units Prescribed for Theory: 40 Marks.

Course Outcomes: The students will acquire knowledge of

1. To understand and demonstrate writing and speaking processes through invention, organization, drafting, revision, editing, and presentation.
2. To understand the importance of specifying audience and purpose and to select appropriate communication choices.
3. To understand and appropriately apply modes of expression, i.e., descriptive, expositive, narrative, scientific, and self-expressive, in written, visual, and oral communication.
4. To participate effectively in groups with emphasis on listening, reflective thinking, and responding.
5. To develop the ability to research and write a documented paper and/or to give an oral presentation.

Content of syllabus:

Unit–I: Theory of Business Letter Writing

(15 Hrs.)

Parts, Structure, Layouts—Full Block, Modified Block, Semi - Block
Principles of Effective Letter Writing, Principles of effective Email Writing

Unit – II Personnel Correspondence
Hrs.)

(15

Statement of Purpose

Job Application Letter and Resume, Letter of Acceptance of Job Offer, Letter of Resignation

Unit – III Language and Writing Skills
Hrs.)

(15

Paragraph Writing -Developing an idea, using appropriate linking devices, etc. Cohesion and Coherence, self-editing, etc. [Interpretation of technical data, Composition on a given situation, a short informal report etc.]

Unit – IV Interviews

(15

Hrs.)

Preparing for an Interview

Types of Interviews – Selection, Appraisal, Grievance, Exit, Group Discussion

Practical: Based on the theory

units:

: 10

Marks

Books Recommended: (List of Minimum 5 Books)

1. Bahl, J. C. and Nagamia, S.M. (1974) Modern Business Correspondence and Minute Writing.
2. Balan, K.R. and Rayudu C.S. (1996) Effective Communication, Beacon New Delhi.
3. Basu, C.R. (1998) Business Organisation and Management, T.M.H. New Delhi.
4. Banerjee, Bani P (2005) Foundation of Ethics in Management Excel Books
5. Businessworld Special Collector's Issue: Ethics and the Manager

Note: (If any - such as

- (1. In theory examination, the weightage to numerical problems should not exceed 30%. (2. Students can use scientific calculators in theory examination.)