

॥ शीलं परं भूषणम् ॥

Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur

Mahavir Mahavidyalaya, Kolhapur

(Autonomous)

Affiliated to Shivaji University, Kolhapur



Syllabus for Choice Based Credit System (CBCS)

Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	--
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies

(To be introduced from Academic Year 2022 – 23 onwards)

Subject to the revisions & modifications made from time to time

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Syllabus for Choice Based Credit System (CBCS)

Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AECC EVS
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies

(To be introduced from Academic Year 2022 – 23 onwards)

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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Environmental Studies	Course Code	AECC EVS
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022– 23
Total Credits	02	Contact Hours	04 / Week
Course Title			
B) Course Objectives:			
i)	Study Nature of Environmental.		
ii)	To Understanding natural resources and associated problems.		
iii)	To Learn Ecosystems		
Iv)	To Understanding of biodiversity and its conservation.		

C) Course Syllabus: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Nature of Environmental Studies.		
1.1 Definition, scope and importance.	0.50	2.30
1.2 Multidisciplinary nature of environmental studies		
1.3 Need for public awareness.		
Unit II : Natural Resources and Associated Problems.		
2.1 Forest resources: Use and over-exploitation, deforestation, dams and their effects on forests and tribal people.	0.50	2.30
2.2 Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.		
2.3 Mineral resources: Usage and exploitation. Environmental effects of extracting and using mineral resources.		
2.4 Food resources: World food problem, changes caused by agriculture effect of modern agriculture, fertilizer-pesticide problems.		
2.5 Energy resources: Growing energy needs, renewable and nonrenewable energy resources, use of alternate energy sources. Solar energy, Biomass energy, Nuclear energy.		
2.6 Land resources: Solar energy , Biomass energy, Nuclear energy, Land as a resource, land degradation, man induced landslides, soil erosion and desertification.		

Role of an individuals in conservation of natural resources.		
Unit III : Ecosystems		
3.1 Concept of an ecosystem.	0.50	2.30
3.2 Structure and function of an ecosystem.		
3.3 Producers, consumers and decomposers		
3.4 Energy flow in the ecosystem.		
3.5 Ecological succession.		
3.6 Food chains, food webs and ecological pyramids.		
3.7 Introduction, types, characteristics features, structure and function of the following ecosystem :- a) Forest ecosystem, b) Grassland ecosystem, c) Desert ecosystem, d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).	0.50	2.30
Unit IV : Biodiversity and its conservation		
4.1 Introduction- Definition: genetic, species and ecosystem diversity.		
4.2 Bio-geographical classification of India.		
4.3 Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.		
4.4 India as a mega- diversity nation.		
4.5 Western Ghat as a biodiversity region.		
4.6 Hot-spot of biodiversity.		
4.7 Threats to biodiversity habitat loss, poaching of wildlife, man- wildlife conflicts.		
4.8 Endangered and endemic species of India.		
4.9 Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.		

D) Reference Materials	
D1) Text Books for Reading	
1.	A Textbook of Energy Environment and Ecology by <u>Smriti Srivastava</u>
2.	Textbook of Biodiversity by K V Krishnamurthy
3.	Textbook of Biodiversity by <u>Jason Hendon</u>
D2) Books for Reference	
1.	Environmental Biology: Agarwal, K.C.2001Nidi Pub. Ltd., Bikaner.
2.	The Biodiversity of India : Bharucha Erach Mapin Publishing Pvt. Ltd. Ahmedabad 380013, India, Email:mapin@icenet.net (R)
3.	Hazardous Waste Incineration: Brunner R.C.,1989: McGraw Hill Inc. 480p
4.	Marine Pollution : Clank R.S. Clanderson Press Oxford (TB)
5.	Cunningham : W.P. Cooper, T.H.Gorhani, E. & Hepworth, M.T.2001, Environmental Encyclopedia, Jaico Pub. Mumbai, 1196p

E) Suggested methods of Teaching:	
i)	Offline / Online teaching
ii)	Power Point Presentation
iii)	Group Discussion

F) Course Outcomes:		Blooms Taxonomy
CO1	Understand Nature of Environmental.	
CO2	Understood the natural resources and associated problems.	
CO3	To gain information Ecosystems	
CO4	Understanding of biodiversity and its conservation.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home Assignment	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQs	10
2.	Short Answer	10
3.	Long Answer	10
4.	Short Note	10
Total Marks		40

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D31
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
(To be introduced from Academic Year 2022 – 23 onwards)
Subject to the revisions & modifications made from time to time

Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Crop Production Technology - I	Course Code	AD D31
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	Knowledge and concept of different techniques of crop production
ii)	Knowledge of tillage
iii)	To acquire knowledge of practices of different Kharif crops.
iv)	To know the importance of crops as per its category.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Cultivation of Cereal Crops	0.75	12
1.1 Introduction, Soil and Climate for various cereals crops. (Rice, Maize, Sorghum, Bajara)		
1.2 Seeds and Sowing, Irrigation and water management for cereals crops		
1.3 Pest and diseases of cereals crops.		
1.4 Harvesting and Threshing & Yield of (Rice, Maize, Sorghum, Bajara)		
Unit II : Cultivation of Pulse Crops	0.75	12
2.1 Introduction, Soil and Climate for various pulse crops (Tur, Green Gram, Black gram)		
2.2 Seeds and Sowing, Irrigation and water management for pulse crops		
2.3 Pest and diseases of pulse crops.		
2.4 Harvesting and Threshing & Yield of Tur, Green Gram, Black gram		
Unit III : – Cultivation of Oil Seed Crops	0.75	12
3.1 Introduction, Soil and Climate for various oil seed crops (Groundnut and Soybean, Sunflower)		
3.2 Seeds and Sowing, Irrigation and water management for oil seed crops		
3.3 Pest and diseases of oil seed crops.		
3.4 Harvesting and Threshing & Yield of Groundnut and Soybean, Sunflower		
Unit IV : Cultivation of Cash Crops	0.75	12
4.1 Introduction, Soil and Climate for various cash crops (Cotton, Sugarcane)		
4.2 Seeds and Sowing, Irrigation and water management for cash crops		
4.3 Pest and diseases of cash crops.		
4.4 Harvesting and Threshing & Yield of Cotton, Sugarcane		

D) Reference Materials	
D1) Text Books for Reading	
1.	Textbook of Field Crops Production by Rajendra Prasad.
2.	Principles of Agronomy by Reddy & Reddy.
3.	Manures and Fertilizers- K. S. Yawalkar, J. P. Agrawal and S. Bokde
4.	Principles of Agronomy by S. R. Reddy.
D2) Books for Reference	
1.	ICAR.2006. Handbook of Agriculture, ICAR, New Delhi.
2.	Balasubramaniyan, P and Palaniappan, S. P. 2001. Principle and Practices of Agronomy AgroBios (India) Ltd. Jodhpur
3.	De, G.C.1989. <i>Fundamentals of Agronomy</i> . Oxford & IBH Publishing Co., New Delhi.

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Knowledge about production technology of different cereal, pulses, oil and cash crops.	
CO2	Understand how the processes of growth and development of plants interact with management operations in a crop production system	
CO3	Knowledge about different pest and diseases of cereal, pulses, oil and cash crops.	
CO4	Knowledge about threshing & harvesting techniques of cereal, pulses, oil and cash crops.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D32
Course Name	--
Course Title	--
Paper No.	--

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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Olericulture (Vegetable Cultivation)	Course Code	AD D32
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To understand vegetables management and economic and nutritional importance of vegetables
ii)	To increase production and productivity of vegetable crops by various production technology
iii)	To study the major pest and diseases of vegetable crops
iv)	To study the concept of kitchen gardening.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Introduction	0.75	12
1.1 Economic Importance of Vegetables, & classification.		
1.2 Production of vegetable crops in Maharashtra and India		
1.3 Export import scenario of fruit crops in India		
1.4 Nutritional Importance of Vegetables, Importance of Vegetables in human diet		
Unit II : Kitchen Gardening	0.75	12
2.1 Meaning and Introduction of kitchen gardening		
2.2 Benefits of kitchen gardening		
2.3 Maintenance of kitchen gardening		
2.4 Kitchen gardening cultivation of Leafy vegetable (Palak, Fenugreek, coriander, Etc.)		
Unit III : Study of Fruit Vegetables	0.75	12
3.1 Cultivation, Soil and Climate for fruit vegetable crops		
3.2 Seeds and Sowing, Irrigation and Water Management of fruit vegetable crops		
3.3 Major pest and diseases of fruit vegetable crops		
3.4 Harvesting of Tomato, Brinjal, Chilli, Cucumber, Okra		
Unit IV : Study of Important Cole Crops, Bulb and Root Crops	0.75	12
4.1 Cultivation, Soil and Climate		
4.2 Seeds and Sowing, Irrigation and Water Management		
4.3 Major pest and diseases		

D) Reference Materials	
D1) Text Books for Reading	
1.	Handbook of Horticulture (2002) Chadha, K.L. ICAR, New Delhi
2.	Textbook of Olericulture (English) R Selvakumar
3.	Fundamentals of Horticulture 2014 Kausal Kumar Misra and Rajesh Kumar Biotech Books
4.	Hartmann, HT. and Kester, DE.1986. <i>Plant propagation - Principles and practices</i> .Prentice-Hall, New Delhi.
D2) Books for Reference	
1.	Denixon, RI. 1979. <i>Principles of Horticulture</i> . Mac Millan, New York.
2.	Olericulture In India ,M. K. Rana , Kalyani Publishers
3.	Chadha, K.L. 2003. Handbook of Horticulture, ICAR, New Delhi. Choudhary, B. 1983. Vegetable National Trust, New Delhi.
E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify plant vegetative structure	
CO2	The student will be able to understand different cultivation techniques of vegetable crops	
CO3	Students will understand how to propagate vegetable plant, manage and harvest a variety of vegetable plant.	
CO4	Students will learn how olericulture relates to the economy and environments, both currently and in the future	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D33
Course Name	--
Course Title	--
Paper No.	--

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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture CBCS		
Part	II	Semester	III
Course	Animal Science and Dairy Technology	Course Code	AD D33
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To provide recent knowledge of dairy farming.
ii)	To familiarize with fundamentals of livestock farming.
iii)	To acquaint with a management of various farm animals.
iv)	To study about value added milk products.

C) Course Syllabi:			
(CR = Credits / IH: Instructional Hours)			
Units		CR	IH
Unit I : Introduction		0.75	12
1.1 Meaning, scope and importance of Animal Science, dairy technology			
1.2 Composition of milk, physio-chemical properties of milk constituents			
1.3 Pasteurization of milk			
1.4 Homogenization of milk			
Unit II : General Study of Livestock's		0.75	12
2.1 General Characteristics and features of livestock			
2.2 Cattle – Gir, Khilar, Deoni, Jeausry, Holstein Frisen			
2.3 Buffalo – Murha and Pandharpuri, jafrabadi etc.			
2.4 Goat – Osmanabadi, African boar etc.			
Unit III : Care and Management of Livestock		0.75	12
3.1 Housing of cattle, calf, bull, bullock, sheep and goat, buffalo			
3.2 Care and Management of Pregnant and lactating cow and buffalos, cross breed cow, breeding bull.			
3.3 Care and Management of sheep and goat			
3.4 Feeding and General Management of livestock			
Unit IV : Production & Processing of Dairy Products		0.75	12
4.1 Preparation of milk products-			
4.2 Concentrated whole milk products- Basundi, Khoa, Mava, Rabri,barfi			
4.3 Coagulated milk products- Curd, Shrikhand, Panner, Flavored milk			
4.4 Products of clarified butter for industry- Ghee, Lassi, Butter, Butter milk etc.			

D) Reference Materials	
D1) Text Books for Reading	
1.	Animal Husbandry & Dairy Science by. Jagdish Prasad
2.	Farm Animal management and feeding practices in India by Thomas & Shashtri
3.	A Text Book of Animal Husbandry by G.C. Banarjee
4.	A Text Book of Animal Science by. Dr. A.U. Bhikane and Dr. S.B. Kawitkar
D2) Books for Reference	
1.	Handbook of animal Husbandry, The I.C.A.R. publication
2.	Handbook of Veterinary Physician by V.A. Sapre
3.	Dairy India Yearbook - 2007 by. P.R. Gupta

E) Suggested methods of Teaching:	
i)	Online teaching / Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Dairy Farm visit / Dairy Visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will gain knowledge on concepts and principles of Animal and Dairy Science.	
CO2	Comprehensive knowledge on types of Farm Animals, varieties of animals.	
CO3	Apply knowledge of animal husbandry, behavior and handling techniques to effectively interact with animals in a safe and humane manner	
CO4	Students will gain practical knowledge on milk products and methods of making various types of milk products.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D34
Course Name	--
Course Title	--
Paper No.	--

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A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture CBCS		
Part	II	Semester	III
Course	Entomology and Pathology	Course Code	AD D34
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To study the insect pest and their control.
ii)	To study the insecticide and their formulations.
iii)	To study the causes of diseases.
iv)	To study the diseases and their controlling methods.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Fundamental of Entomology	0.75	12
1.1 Introduction		
1.2 History of entomology in India.		
1.3 Insect Morphology (structure of head, thorax and abdomen, mouth parts.)		
1.4 Types of larvae and pupae.		
Unit II : IPM	0.75	12
2.1 Categories of pests.concept of IPM.		
2.2 practices, scope and limitations of IPM		
2.3 classification of insecticides, toxicity of insecticides		
2.4 formulations of insecticides. chemical control importance. Recent methods of pest control, repellents, anti feed ants hormones		
Unit III : Fundamental of Plant Pathology	0.75	12
3.1 Introduction, meaning		
3.2 Importance of plant diseases, scope and objectives of plant pathology		
3.3 pathogenesis		
3.4 Causes/ factors affecting disease development.Classification of plant diseases.		
Unit IV : Causes of Diseases	0.75	12
4.1 Important plant pathogenic organisms		
4.2 diffrent groups : fungi, bacteria, fastidious vesicular bacteria, phytoplasmas, spiroplasms, viruses, virioids, algae, protozoa, phanerogamic, parasites and nematodes with examples of diseases caused by them		

4.3 Diseases and symptoms due to a biotic causes. Fungi: general characters, definition of fungus, somatriic structures types of fungal thalli, fungal tissue, reproduction (asexual, sexual) Bacteria and mollicutes: general morphological characters, basic methods of classification and reproduction.		
4.4 viruses: nature structure, replication and transmission, study of phanerogamic plant parasitites. Nematodes: symptoms and nature of damage caused by plant nematodes.		
4.5 Disease control management.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Mani, M. S. 1968. General Entomology. Oxford and IBH Publishing Company, New Delhi.
2.	Dhaliwal, G. S. and Ramesh Arora. 1998. Principles of Insect Pest Management. Kalyani Publishers, New Delhi
3.	A Textbook of Plant Pathology by A.V.S.S. Sambamurty
4.	Principles of Plant Pathology – R.S. Singh

D2) Books for Reference	
1.	Encyclopedia of entomology 3rd rev. ed. Edited by J. L. Capinera
2.	ICAR.2006. <i>Hand book of Agriculture</i> , ICAR, New Delhi
3.	Plant Pathology in India S.S. Chahal, R.K. Khetarpal, T.S. Thind Scientific Publishers

E) Suggested methods of Teaching:	
i)	Online teaching / Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Imparts knowledge on Insect Pest, and their functions	
CO2	Insect & Pest control management through various approaches	
CO3	Student can identify and know abut plant diseases	
CO4	Disease control management	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D31
Course Name	--
Course Title	--
Paper No.	--

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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Crop Production Technology - I	Course Code	AD D31 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	05	Contact Hours	06 / Week
Course Title	--		

B) Course Objectives:	
i)	Knowledge of different sowing method of kharif crops
ii)	To acquire knowledge of cultivation practices of different Kharif crops.
iii)	Application and identify the weed and management of weed
iv)	Application of seed and seed treatment

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical	CR	IH
1. Identification of important kharif season crops	5	75
2. Methods of sowing of kharif crops		
3. Effect of sowing time, sowing depth on yield and germination crops.		
4. Identification of kharif season weeds		
5. Top dressing and foliar feeding of nutrients		
6. Application of different methods of seed treatments to sugarcane		

D) Reference Materials	
D1) Text Books for Reading	
1.	Textbook of Field Crops Production by Rajendra Prasad.
2.	Principles of Agronomy by Reddy & Reddy.
3.	Manures and Fertilizers- K. S. Yawalkar, J. P. Agrawal and S. Bokde
4.	Principles of Agronomy by S. R. Reddy.
D2) Books for Reference	
1.	ICAR.2006. Handbook of Agriculture, ICAR, New Delhi.
2.	Balasubramanian, P and Palaniappan, S. P. 2001. Principle and Practices of Agronomy AgroBios (India) Ltd. Jodhpur
3.	De, G.C.1989. <i>Fundamentals of Agronomy</i> . Oxford & IBH Publishing Co., New Delhi.

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify different crop seed and weed	
CO2	Knowledge of methods of manures and fertilizer application	
CO3	Knowledge about different pest and diseases of cereal, pulses, oil and cash crops.	
CO4	Knowledge about harvesting techniques and technologies of cereal, pulses, oil and cash crops.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical	25
2.	Submission Practical record book and project report	15
3.	Viva-voce	10
4.		
5.	Total Marks	50

॥ शीलं परं भूषणम् ॥

Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur
Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur



Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D32
Course Name	--
Course Title	--
Paper No.	--

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(To be introduced from Academic Year 2022 – 23 onwards)
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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Olericulture (Vegetable Cultivation)	Course Code	AD D32 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To understand vegetables management
ii)	Study the morphological characteristics of different vegetable crops in field
iii)	To study the major pest and diseases of vegetable crops in field
iv)	Application the concept of kitchen gardening.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical's	CR	IH
1. Identification of seed and plants of vegetables crops	5	75
2. Preparation of raised beds and raising of seedlings of vegetables		
3. Application and Study of morphological characteristics of different vegetable crops		
4. Harvesting and preparation of vegetables for market		
5. Application of Seed treatment to vegetable seeds		

D) Reference Materials	
D1) Text Books for Reading	
1.	Handbook of Horticulture (2002) Chadha, K.L. ICAR, New Delhi
2.	Textbook of Glaustas Olericulture (English) R Selvakumar
3.	Fundamentals of Horticulture 2014 Kausal Kumar Misra and Rajesh Kumar Biotech Books
4.	Hartmann, HT. and Kester, DE.1986. <i>Plant propagation - Principles andpractices</i> .Prentice-Hall, New Delhi.
D2) Books for Reference	
1.	Denixon, RI. 1979. <i>Principles of Horticulture</i> . Mac Millan, New York.
2.	OLERICULTURE IN INDIA ,M. K. RANA , Kalyani Publishers
3.	Chadha, K.L. 2003. Handbook of Horticulture, ICAR, New Delhi. Choudhary, B. 1983. Vegetable National Trust, New Delhi.

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify plant vegetative structure	
CO2	Knowledge about special horticultural practice for vegetable crops production	
CO3	The student will be able to understand different cultivation techniques of vegetable crops	
CO4	Students will understand how to propagate vegetable plant, manage and harvest a variety of vegetable plant.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical	25
2.	Submission Practical record book and project report	15
3.	Viva-voce	10
4.		
5.	Total Marks	50

॥ शीलं परं भूषणम् ॥

Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur
Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur



Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D33
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Animal Science and Dairy Technology	Course Code	AD D33 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	05	Contact Hours	06/ Week
Course Title	--		

B) Course Objectives:	
i)	To provide recent knowledge of dairy farming.
ii)	To learn the testing of adulteration of milk.
iii)	To acquaint with a management of various farm animals and study the characteristics of animals.
iv)	Application about preparation of value added milk products.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical	CR	IH
1. Study of different characteristics of cattle, buffalo and goat.	5	75
2. Study of Determination of age of animals.		
3. Study of Determination of body weight of animals		
4. Study of Detection of adulteration of milk.		
5. Study of Preparation value-added products – Shrikhand, basundi, flavored milk, curd, ghee, lassi etc.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Animal Husbandry & Dairy Science by. Jagdish Prasad
2.	Farm Animal management and feeding practices in India by Thomas & Shashtri
3.	A Text Book of Animal Husbandry by G.C. Banarjee
4.	A Text Book of Animal Science by. Dr. A.U. Bhikane and Dr. S.B. Kawitkar
D2) Books for Reference	
1.	Handbook of animal Husbandry, The I.C.A.R. publication
2.	Handbook of Veterinary Physician by V.A. Sapre
3.	Dairy India Yearbook - 2007 by. P.R. Gupta

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	To learn the testing of adulteration of milk.	
CO2	Comprehensive knowledge on types of Farm Animals, varieties of animals.	
CO3	Apply knowledge of animal husbandry, behavior and handling techniques to effectively interact with animals in a safe and humane manner	
CO4	Students will gain practical knowledge on milk products and methods of making various types of milk products.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical	25
2.	Submission Practical record book and project report	15
3.	Viva-voce	10
4.		
5.	Total Marks	50

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Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur
Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur



Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	III
Course Code	AD D34
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	III
Course	Entomology and Pathology	Course Code	AD D34 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	05	Contact Hours	06/ Week
Course Title	--		

B) Course Objectives:	
i)	Application and study of the insect pest and their control.
ii)	Application and study of the insecticide and their formulations.
iii)	To study the causes of diseases.
iv)	Application and study of the diseases and their controlling methods.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical	CR	IH
1. Methods of collection and preservation of insects including immature stages.	5	75
2. External features of grasshoppers/blister beetle.		
3.Types of insect larvae and pupae.		
4. Dissection of insects (Grasshopper).		
5. Insecticides and their formulations.		
6. Collection and preservation of disease specimen.		
7. General study of different structure of fungi.		
8. Application and identify the symptoms of various plant disease & their control.		
9. Application and Study of fungicides and their formulations.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Mani, M. S. 1968. General Entomology. Oxford and IBH Publishing Company, New Delhi.
2.	Dhaliwal, G. S. and Ramesh Arora. 1998. Principles of Insect Pest Management. Kalyani Publishers, New Delhi
3.	A Textbook of Plant Pathology by A.V.S.S. Sambamurty
4.	Principles of Plant Pathology – R.S. Singh
D2) Books for Reference	
1.	Encyclopedia of entomology 3rd rev. ed. Edited by J. L. Capinera
2.	ICAR.2006. <i>Hand book of Agriculture</i> , ICAR, New Delhi
3.	Plant Pathology in India S.S. Chahal, R.K. Khetarpal, T.S. Thind Scientific Publishers

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Imparts knowledge on Insect Pest, and their functions	
CO2	Insect & Pest control management through various approaches	
CO3	Student can identify and know about plant diseases	
CO4	Disease control management	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical (Lab work)	25
2.	Submission Practical record book and project report	15
3.	Viva-voce	10
4.		
5.	Total Marks	50

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AECC EVS
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
(To be introduced from Academic Year 2022 – 23 onwards)
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Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.)		
Part	II	Semester	IV
Course	Environmental Studies	Course Code	AECC EVS
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022– 23
Total Credits	02	Contact Hours	04 / Week
Course Title			

B) Course Objectives:	
i)	To Understanding Environmental Pollution
ii)	To give information Social Issues and the Environment
iii)	To Need Environmental Protection
iv)	To get Experiential knowledge about local environment.

C) Course Syllabus: (CR = Credits / IH: Instructional Hours)		
Module	CR	IH
Module I : Environmental Pollution		
1.1. Definition: Causes, effects and control measures of: Air pollution, Water pollution, soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards.	0.50	2.30
1.2 Solid waste Management: Causes, effects and control measures of urban and industrial wastes. Role of a individual in prevention of pollution.		
Module II : Social Issues and the Environment		
2.1 Disaster management: floods, earthquake, cyclone, tsunami and landslides.	0.50	2.30
2.2 Urban problems related to energy Water conservation, rain water harvesting, watershed management Resettlement and rehabilitation of people; its problems and concerns.		
2.3 Environmental ethics: Issue and possible solutions.		
2.4 Global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.		
2.5 Wasteland reclamation.		
2.6 Consumerism and waste products.		
Unit III : Environmental Protection		
3.1 From Unsustainable to Sustainable development.	0.50	2.30
3.2 Environmental Protection Act.		
3.3 Air (Prevention and Control of Pollution) Act.		

3.4 Water (Prevention and control of Pollution) Act.		
3.5 Wildlife Protection Act.		
3.6 Forest Conservation Act.		
3.7 Population Growth and Human Health, Human Rights.		
Unit IV : Field Work	0.50	2.30
4.1 Visit to a local area to document environmental assets- River/Forest/Grassland/Hill/Mountain. or Visit to a local polluted site - Urban / Rural / Industrial /Agricultural. or Study of common plants, insects, birds. or Study of simple ecosystems - ponds, river, hill slopes, etc.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Water Pollution: Its Impact on Environment and Societyby <u>Misra R N</u>
2.	A Concise Textbook of Environmental Pollution Paperback – Import, 8 April 2020 by <u>Praveen Kumar S</u> (<u>Muthirulan P</u> (Author), <u>Archana S</u> (Author)
3.	Environmental Pollution & Control by J. Jeffrey Peirce, P Aarne Vesilind, Ruth Weiner
D2) Books for Reference	
1.	Environmental Biology: Agarwal, K.C.2001Nidi Pub. Ltd., Bikaner.
2.	The Biodiversity of India : Bharucha Erach Mapin Publishing Pvt. Ltd. Ahmedabad 380013, India, Email:mapin@icenet.net (R)
3.	Hazardous Waste Incineration: Brunner R.C.,1989: McGraw Hill Inc. 480p
4.	Marine Pollution : Clank R.S. Clanderson Press Oxford (TB)
5.	Cunningham : W.P. Cooper, T.H.Gorhani, E. & Hepworth, M.T.2001, Environmental Encyclopedia, Jaico Pub. Mumbai, 1196p

E) Suggested methods of Teaching:	
i)	Offline / Online teaching
ii)	Power Point Presentation
iii)	Group Discussion

F) Course Outcomes:		Blooms Taxonomy
CO1	Understanding Environmental Pollution	
CO2	To gain information Social Issues and the Environment	
CO3	Understanding Need Environmental Protection	
CO4	Student able to Understand local environment.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home Assignment	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQs	10
2.	Short Answer	10
3.	Long Answer	10
4.	Short Note	10
Total Marks		40

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D41
Course Name	--
Course Title	--
Paper No.	--

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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Crop Production Technology - II	Course Code	AD D41
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To acquire knowledge of practices of different rabi crops
ii)	Knowledge and concept of different techniques of crop production
iii)	To know the importance of crops as per its category
iv)	Study about intercultural operations and its cause and impacts on crop growth

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Cultivation Practices of Cereal Crops	0.75	12
1.1 Introduction, Soil and Climate (Wheat and Barley)		
1.2 Seeds and Sowing, Irrigation and water management		
1.3 Major pest and diseases.		
1.4 Harvesting and Threshing & Yield of Wheat and Barley		
Unit II : Cultivation Practices of Pulse Crops	0.75	12
2.1 Introduction, Soil and Climate (Gram, Pea)		
2.2 Seeds and Sowing, Irrigation and Nutrient management		
2.3 Major pest and diseases.		
2.4 Harvesting and Threshing & Yield of Gram, Pea		
Unit III : Cultivation Practices of Oil Seed Crops	0.75	12
3.1 Introduction, Soil and Climate (Safflower, Sunflower, Linseed)		
3.2 Seeds and Sowing, Irrigation and water management		
3.3 Major pest and diseases.		
3.4 Harvesting and Threshing & Yield of Safflower, Sunflower, Linseed		
Unit IV : Cultivation Practices of Medicinal and Aromatic Crops	0.75	12
4.1 Introduction, Soil and Climate (Lemon Grass, Citronella)		
4.2 Seeds and Sowing, Irrigation and water management		
4.3 Major pest and diseases.		
4.4 Harvesting and Threshing & Yield of Lemon Grass, Citronella		

D) Reference Materials	
D1) Text Books for Reading	
1.	Principles of Agronomy by S. R. Reddy.
2.	Reddy.T.Y and Reddy, G.H.S.1995. <i>Principles of Agronomy</i> , Kalyani Publishers, Ludhiana..
3.	De, G.C.1989. <i>Fundamentals of Agronomy</i> . Oxford & IBH Publishing Co., New Delhi.
4.	Manures and Fertilizers- K. S. Yawalkar, J. P. Agrawal and S. Bokde
D2) Books for Reference	
1.	ICAR.2006. <i>Hand book of Agriculture</i> , ICAR, New Delhi.
2.	Cox, G.W and Atkins, M.D. 1979. <i>Agricultural Ecology: An Analysis of World Food Production Systems</i> . W.H. Freeman and Company, San Francisco
3.	Grigg, D.B. 1974. <i>The Agricultural Systems of the World: An Evolutionary Approach</i> . Cambridge University Press, Cambridge.

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Knowledge about production technology of different cereal, pulses, oil and medicinal crops.	
CO2	Understand how the processes of growth and development of plants interact with management operations in a crop production system	
CO3	Knowledge about different pest and diseases of cereal, pulses, oil and medicinal crops.	
CO4	Knowledge about harvesting & Threshing techniques of cereal, pulses, oil and medicinal crops.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur
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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D42
Course Name	--
Course Title	--
Paper No.	--

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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Floriculture & Special Crops	Course Code	AD D42
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To study the production technology of various flower crops.
ii)	To increase production and productivity of flower crops by different propagating method
iii)	To acquire the knowledge about grading and packaging flowers.
iv)	To study the production technology of medicinal crops.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Introduction	0.75	12
1.1 Introduction, Classification		
1.2 scope and Importance: Ornamental Plants		
1.3 scope and Importance: Aromatic Plants		
1.4 scope and Importance: Medicinal Plants		
Unit II : Production Techniques of Important Cut Flowers	0.75	12
2.1 Plantation Techniques		
2.2 Production of : Marigold, Carnation		
2.3 Production of : Rose, Gerbera		
2.4 Pest and diseases and their management		
Unit III : Grading and Packaging of Flowers	0.75	12
3.1 Process of grading		
3.2 Types of packaging and packaging materials		
3.3 Commercial uses of : Loose flowers like Marigold and Jasmine		
3.4 Exporting of flowers, Concept and economic importance of exporting		
Unit IV : Production Technology of Medicinal Plants	0.75	12
4.1 Introduction		
4.2 Plantation, Harvesting and uses of Ashwagandha		
4.3 Plantation, Harvesting and uses of aloe and neem		
4.4 Plantation, Harvesting and uses of Turmeric		

D) Reference Materials	
D1) Text Books for Reading	
1.	Handbook of Horticulture (2002) Chadha, K.L. ICAR, New Delhi
2.	Hartmann, HT. and Kester, DE.1986. <i>Plant propagation - Principles and practices</i> .Prentice-Hall, New Delhi.
3.	Fundamentals of Horticulture 2014 Kausal Kumar Misra and Rajesh Kumar Biotech Books
4.	Bose, TK., Mitra, SK. and Sadhu, K. 1986. <i>Propagation of tropical and subtropical horticultural crops</i> . Naya Prokash, Calcutta.
D2) Books for Reference	
1.	Denixon, RI. 1979. <i>Principles of Horticulture</i> . Mac Millan, New York
2.	Hartman, HT. and Kester, DE. 1986. Plant propagation - Principles and Pratices. Prentice - Hall, New Delhi
3.	Chadha, K.L. 2003. Handbook of Horticulture, ICAR, New Delhi. Choudhary, B. 1983. Vegetable National Trust, New Delhi.

	E) Suggested methods of Teaching:
i)	Online teaching / Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify plant vegetative structure	
CO2	The student will be able to understand different branches of horticulture	
CO3	Students will understand how to propagate flower and medicinal plants, manage and harvest a variety of flower and medicinal plants.	
CO4	Students will get the knowledge about grading and packaging flowers.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D43
Course Name	--
Course Title	--
Paper No.	--

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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Plant Genetics	Course Code	AD D43
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	Introduction to genetics and historical perspective of genetics.
ii)	To study the concept of heredity
iii)	To study the cell division
iv)	To impart the knowledge of induction, detection and mechanism of mutation.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Introduction	0.75	12
1.1 Meaning , Scope And Importance Of Genetics.		
1.2 Pre And Post Mendelian Concept Of Heredity, Mendelian Principles Of Heredity.		
1.3 Chromosome- Architecture Of Chromosome, Chromonemata.		
1.4 Chromosome Matrics, Chromomeres, Centeromeres , Secondary Constriction And Telomere.		
Unit II : Cell cycle and cell division	0.75	12
2.1 Indtroduction , Meaning And Concept.		
2.2 Cell Division- Mitosis And Meosis.		
2.3 Probability And Chi-Square, Dominance Relationship.		
2.4 DNA and RNA and Its Structure.		
Unit III : Multiple Alleles	0.75	12
3.1 Introduction, Multiple Alleles.		
3.2 Piotropism And Pseudoalleles, Sex Determination And Sex Linkage.		
3.3 Blood Group Genetics, Linkage And Its Estimation.		
3.4 Crossing Over Mechanism, Chromosome Mapping.		
Unit IV : Mutation	0.75	12
4.1 Introduction, Meaning & Concept.		
4.2 Mutation, Classification Of Mutation.		
4.3 Methods Of Inducing Mutation And CIB Techniques.		
4.4 Mutagenic Agents And Induction Of Mutation.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Peter K.V 1998, Genetics and breeding of vegetables, ICAR New Delhi, Singh,
2.	B. D 2001- Fundamentals of genetics, kalyani publishers, New Delhi.
3.	Plants, Genes, and Crop Biotechnology - 2nd edition by Maarten J. Chrispeels and David E. Sadava
4.	Breeding Field Crops (Hardback) - 5th edition by David Allen Sleper
D2) Books for Reference	
1.	Principles of Plant Genetics and Breeding - 2nd edition by George Acquaah
2.	B. D 2001- Fundamentals of genetics, kalyani publishers, New Delhi
3.	Peter K.V 1998, Genetics and breeding of vegetables, ICAR New Delhi, Singh

E) Suggested methods of Teaching:	
i)	Online teaching / Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will know the concept of genetics and historical perspective of genetics.	
CO2	Students will get concept of heredity	
CO3	Students will get the knowledge and concept of cell division	
CO4	Students will get the knowledge about detection and mechanism of mutation.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

॥ शीलं परं भूषणम् ॥

Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur
Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur



Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D44
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
(To be introduced from Academic Year 2022 – 23 onwards)
Subject to the revisions & modifications made from time to time

Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Plant Protection	Course Code	AD D44
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To acquire knowledge of insect pest & Diseases of vegetable and fruit crops..
ii)	To acquire knowledge of insect pest & Diseases of cereals, pulses and cash crops.
iii)	To study the methods of pest control
iv)	To study the methods of Disease control

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Units	CR	IH
Unit I : Study of Insects Pest of Vegetable Crops & Cereal Crops	0.75	12
1.1 Introduction		
1.2 Nature of damage, symptoms		
1.3 control majors of pest in Jowar, Wheat, Maize, Bajra,		
1.4 control majors of pest in Cucumber, Cabbage, Okra, Tomato, Brinjal, Chilli		
Unit II : Study of Insects Pest of Pulse and Cash Crops & Fruit Crops	0.75	12
2.1 Introduction		
2.2 Nature of damage, symptoms		
2.3 control majors of pest in Cotton, Sugarcane, Gram, Tur,		
2.4 control majors of pest in Mango, Pomegranate, Citrus Crops Ber, Grapes		
Unit III : Diseases of Major Cereal & Fruit and Other Crops	0.75	12
3.1 Introduction & Causal Organisms.		
3.2 Nature of damage, symptoms		
3.3 control majors of diseases in Paddy, Jowar, Bajra, Maize		
3.4 control majors of diseases in Mango, Pomegranate, Citrus Crops Ber, Grapes Groundnut, Cotton, Sugarcane		

Unit IV : Methods of Disease Control		0.75	12
4.1	Introduction		
4.2	Management methods of diseases		
4.3	Chemical Formulation		
4.4	Methods of application of fungicide		

D) Reference Materials	
D1) Text Books for Reading	
1.	Mani M. S. 1968 General Entomology. Oxford and IBH Publishing Company, New Delhi
2.	Pedigo, L. P. 1999. Entomology and Pest Management. Third Edition. Prentice Hall, New Jersey, USA.
3.	Dhaliwal, G. S. and Ramesh Arora 1998. Principal of insect pest management , kalyani publishers, new delhi
4.	Principles of Plant Pathology – R.S. Singh
D2) Books for Reference	
1.	Handbook of Agricultural Entomology - Helmut F. van Emden
2.	Principles of Plant Pathology – R.S. Singh
3.	Plant Pathology - George N. Agrios

E) Suggested methods of Teaching:	
i)	Online teaching / Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify the various crops diseases	
CO2	The student will be able to understand different management techniques of various diseases of crops	
CO3	Students will be able to identify the pest of various crops .	
CO4	The student will be able to understand different management techniques of various pest and diseases of crops.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

H) Suggested techniques for Continuous Internal Evaluation (10 Marks)		
1.	Home assignments	
2.		
3.		
4.		
5.	Total Marks	10

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	MCQ	10
2.	Short Answer	10
3.	Short Note	10
4.	Long Answer	10
5.	Total Marks	40

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D41
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
(To be introduced from Academic Year 2022 – 23 onwards)
Subject to the revisions & modifications made from time to time

Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Crop production Technology - II	Course Code	AD D41 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	05	Contact Hours	06 / Week
Course Title	--		

B) Course Objectives:	
i)	To acquire knowledge of practices of different rabi crops
ii)	Knowledge and concept of different techniques of crop production
iii)	To know the importance of crops as per its category
iv)	Study about intercultural operations and its cause and impacts on crop growth

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical	CR	IH
1. Identification of important rabi crops	5	75
2. Identify and Study of yield contributing characters of rabi season crops		
3. Identify and Study of morphological characteristics of rabi crops		
4. Application of oil extraction of medicinal crops		
5. Visit to research stations of rabi crops		
6. Field practical		

D) Reference Materials	
D1) Text Books for Reading	
1.	Principles of Agronomy by S. R. Reddy.
2.	Reddy.T.Y and Reddy, G.H.S.1995. <i>Principles of Agronomy</i> , Kalyani Publishers, Ludhiana..
3.	De, G.C.1989. <i>Fundamentals of Agronomy</i> . Oxford & IBH Publishing Co., New Delhi.
4.	Manures and Fertilizers- K. S. Yawalkar, J. P. Agrawal and S. Bokde
D2) Books for Reference	
1.	ICAR.2006. <i>Hand book of Agriculture</i> , ICAR, New Delhi.
2.	Cox, G.W and Atkins, M.D. 1979. <i>Agricultural Ecology: An Analysis of World Food Production Systems</i> . W.H. Freeman and Company, San Francisco
3.	Grigg, D.B. 1974. <i>The Agricultural Systems of the World: An Evolutionary Approach</i> . Cambridge University Press, Cambridge.

E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Knowledge about production technology of different cereal, pulses, oil and medicinal crops.	
CO2	Understand how the processes of growth and development of plants interact with management operations in a crop production system	
CO3	Knowledge about different pest and diseases of cereal, pulses, oil and medicinal crops.	
CO4	Knowledge about harvesting techniques and technologies of cereal, pulses, oil and medicinal crops.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical (Lab work)	25
2.	Submission Practical record book and project report	15
3.	Viva - Voce	10
4.		
5.	Total Marks	50

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D42
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
(To be introduced from Academic Year 2022 – 23 onwards)
Subject to the revisions & modifications made from time to time

Mahavir Mahavidyalaya, Kolhapur (Autonomous)
Affiliated to Shivaji University, Kolhapur
(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Floriculture & Special Crops	Course Code	AD D42 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To application and study the production technology of various flower crops.
ii)	To increase production and productivity of flower crops by different propagating method.
iii)	To acquire the knowledge about grading and packaging flowers.
iv)	To application study the production technology of medicinal crops.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical's	CR	IH
1. Identification of ornamental and aromatic plants	5	75
2. Identification of medicinal plants		
3. Identification of different flowering plants		
4. Planning and layout of garden		
5. Cultivation of common flower crops.		
6. Harvesting and postharvest handling of cut and loose flowers		
7. Visit to commercial flower garden		
8. Visit to medicinal garden or farm		
9. Field Practical		
10. Practical on Flower Decoration & Arrangement.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Handbook of Horticulture (2002) Chadha, K.L. ICAR, New Delhi
2.	Hartmann, HT. and Kester, DE. 1986. <i>Plant propagation - Principles and practices</i> . Prentice-Hall, New Delhi.
3.	Fundamentals of Horticulture 2014 Kausal Kumar Misra and Rajesh Kumar Biotech Books
4.	Bose, TK., Mitra, SK. and Sadhu, K. 1986. <i>Propagation of tropical and subtropical horticultural crops</i> . Naya Prokash, Calcutta.
D2) Books for Reference	
1.	Denixon, RI. 1979. <i>Principles of Horticulture</i> . Mac Millan, New York
2.	Hartman, HT. and Kester, DE. 1986. <i>Plant propagation - Principles and Pratices</i> . Prentice - Hall, New Delhi
3.	Chadha, K.L. 2003. <i>Handbook of Horticulture</i> , ICAR, New Delhi. Choudhary, B. 1983.

	Vegetable National Trust, New Delhi.
E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify plant vegetative structure	
CO2	The student will be able to understand method of manuring and fertilizer application	
CO3	Students will understand how to propagate flower and medicinal plants, manage and harvest a variety of flower and medicinal plants.	
CO4	Students will get the knowledge about grading and packaging flowers.	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical	25
2.	Submission practical record book and project report	15
3.	Viva -voce	10
4.		
5.	Total Marks	50

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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D43
Course Name	--
Course Title	--
Paper No.	--

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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Plants Genetics	Course Code	AD D 43 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	Introduction to genetics and historical perspective of genetics.
ii)	To study the concept of heredity
iii)	To study the cell division
iv)	To impart the knowledge of induction, detection and mechanism of mutation.

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical's	CR	IH
1. Identify and Study of microscope and their components	4	75
2. Practical of Study of cell structure		
3. Mitosis and Meiosis cell division		
4. Experiments on monohybrid ratio		
5. Experiments on di-hybrid ratio		
6. Experiments on tri-hybrid ratio		
7. Experiments on test cross and backcross		

D) Reference Materials	
D1) Text Books for Reading	
1.	Peter K.V 1998, Genetics and breeding of vegetables, ICAR New Delhi, Singh,
2.	B. D 2001- Fundamentals of genetics, kalyani publishers, New Delhi.
3.	Plants, Genes, and Crop Biotechnology - 2nd edition by Maarten J. Chrispeels and David E. Sadava
4.	Breeding Field Crops (Hardback) - 5th edition by David Allen Sleper
D2) Books for Reference	
1.	Principles of Plant Genetics and Breeding - 2nd edition by George Acquaah
2.	B. D 2001- Fundamentals of genetics, kalyani publishers, New Delhi
3.	Peter K.V 1998, Genetics and breeding of vegetables, ICAR New Delhi, Singh
E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will get the knowledge about microscope .	
CO2	Students will get knowledge about cell structure.	
CO3	Students will get the knowledge and concept of cell division	
CO4	Students will get the knowledge about test cross and back cross	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical	25
2.	Submission practical record book and project report	15
3.	Viva -voce	10
4.		
5.	Total Marks	50

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Shri Acharyaratna Deshbhooshan Shikshan Prasarak Mandal, Kolhapur
Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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Syllabus for Choice Based Credit System (CBCS)
Advance Diploma (B. Voc.) Programme

Programme	Advance Diploma in Agriculture
Part	II
Semester	IV
Course Code	AD D44
Course Name	--
Course Title	--
Paper No.	--

Under the Faculty of Interdisciplinary Studies
(To be introduced from Academic Year 2022 – 23 onwards)
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Mahavir Mahavidyalaya, Kolhapur (Autonomous)
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(New syllabus under Autonomy to be introduced from June, 2022 onwards)

A) Primary Information:			
Programme	Advance Diploma (B. Voc.) Agriculture		
Part	II	Semester	IV
Course	Plant Protections	Course Code	AD D44 (Practical)
Paper No.	--	Course Type	Semester
Total Marks	50 Marks	Implementation	2022 – 23
Total Credits	03	Contact Hours	04 / Week
Course Title	--		

B) Course Objectives:	
i)	To acquire knowledge of insect pest of cereals, pulses and cash crops.
ii)	To Identify and study the diseases of various crops
iii)	To application of the different disease control methods
iv)	To application the different pest control methods

C) Course Syllabi: (CR = Credits / IH: Instructional Hours)		
Practical's	CR	IH
1. Identification of important pests on different crops	5	75
2. Identification and study of lifecycle of various insect pests		
3. Identify and Study of nature of damage and control measure of vegetable crops pests		
4. Application and Study of nature of damage and control measure of fruit crops pests		
5. Application and identification of symptoms and control measure of fruit crops diseases		
6. Application of preparation of Bordeaux mixture		
7. Identification of diseases of field crops		
8. Collection and preservation of plant diseased specimens		
10. Cares taken while application of pesticides and fungicides		
11. Collection & Preservation of Insect and pest album.		

D) Reference Materials	
D1) Text Books for Reading	
1.	Principles of Plant Pathology – R.S. Singh
2.	Dhaliwal, G. S. and Ramesh Arora. 1998. Principles of Insect Pest Management. Kalyani Publishers, New Delhi.
3.	Mani, M. S. 1968. General Entomology. Oxford and IBH Publishing Company, New Delhi.
4.	Practical Workbook Of Introductory Entomology, Mr. Shiva Shankar Bhattarai
D2) Books for Reference	
1.	Pedigo, L. P. 1999. Entomology and Pest Management. Third Edition. Prentice Hall, New Jersey, USA.

2.	Principle of applied entomology by Raghumurti et al.
3.	Handbook of Agricultural Entomology, H. F. van Emden
E) Suggested methods of Teaching:	
i)	Online teaching/ Offline
ii)	Power point presentation
iii)	Group discussion
iv)	Field visit

F) Course Outcomes:		Blooms Taxonomy
CO1	Students will be able to identify the various crops diseases	
CO2	The student will be able to understand different management techniques of various diseases of crops	
CO3	Students will be able to identify the pest of various crops .	
CO4	The student will be able to understand different management techniques of various pest of crops	

G) Scheme of Course Evaluation		
1.	End Semester Examination (ESE)	40
2.	Continuous Internal Evaluation (CIE)	10
3.	Total Marks	50

I) Question Paper Pattern (40 Marks)		
Q. No.	Nature / Type of Question	Marks
1.	Practical	25
2.	Submission Practical record book and project report	15
3.	Viva-voce	10
4.		
5.	Total Marks	50