

Maharashtra State Board of Vocational Examination, Mumbai 400 051

1	Name of Course	Diploma Course in Agricultural Technology									
2	Course Code	305403									
3	Max no. of Students	25									
4	Duration	2 year									
5	Course Type	Full Time									
6	No. of Days per week	6 days									
7	No. of hours per day	7 Hrs									
8	Space require	Theory Class Room – 200 sqft Practical Lab – 1000 sqft + 2 acre									
9	Entry qualification	S.S.C. Pass									
10	Objective of syllabus	To train the students to scientifically undertake dissemination of useful & practical information relating to agriculture, including improved seeds, fertilisers, implements, pesticides, improved cultural practices, dairying, poultry, nutrition,etc.;;(2) the practical application of useful knowledge to farm & home									
11	Employment opportunities	The student can get jobs in Agriculture Insecticide or Pesticide industries or with working experience will be in a position to start his own independent Business.									
12	Teachers Qualification	1) For Vocational subject - M.S.C. (Agri) 2) For Non Vocational Subject - Master Degree in Concern subject									
13	Teaching Scheme –										
	Sr.	Subject	Subject Code	Clock Hours / Week				Total			
				Theory	Practical						
	1	English (Communication Skill)	90000001	2 Hrs	1 Hrs			3 Hrs			
	2	Elective – I		2 Hrs	1 Hrs			3 Hrs			
	3	Elective – II		2 Hrs	1 Hrs			3 Hrs			
	4	Elements of Agriculture	30540001	3 Hrs	8 Hrs			11 Hrs			
	5	Agriculture Economics and Extension	30540014	3 Hrs	8 Hrs			11 Hrs			
	6	Cultivation of Agronomical Crops	30540035	3 Hrs	8 Hrs			11 Hrs			
	Total							42 Hrs			
14	Internship	Two Months Summer Internship from 1 st May to 30 th June is Compulsory.									
15	Examination Scheme – Final Examination will be based on syllabus of both years.										
	Paper	Subject	Subject Code	Theory			Practical		Total		
				Duration	Max	Min	Duration	Max	Min	Max	Min
	1	English (Communication Skill)	90000001	3 Hrs	70	25	3 Hrs	30	15	100	40
	2	Elective – I		3 Hrs	70	25	3 Hrs	30	15	100	40
	3	Elective – II		3 Hrs	70	25	3 Hrs	30	15	100	40
	4	Elements of Agriculture	30540001	3 Hrs	100	35	3 Hrs	100	50	200	85
	5	Agriculture Economics and Extension	30540014	3 Hrs	100	35	3 Hrs	100	50	200	85
	6	Cultivation of Agronomical Crops	30540035	3 Hrs	100	35	3 Hrs	100	50	200	85
										900	375
16	Teachers – Three Teachers per batch for vocational component. For English, Elective-I & II guest faculty on clock hour basis.										
17	a) For Elective I – Student can choose any one subject						b) For Elective II – Student can choose any one subject				
	Code	Subject Name					Code	Subject Name			
	90000011	Applied Mathematics					90000021	Applied Sciences (Physics & Chemistry)			
	90000012	Business Economics					90000022	Computer Application			
	90000013	Physical Biology (Botany & Zoology)					90000023	Business Mathematics			
	90000014	Entrepreneurship									
	90000015	Psychology									

Subject :- Elements of Agriculture – 1st Year**(Subject Code - 30540001)**

Theory	Practicals
<p>1. Introduction to Agriculture- Definition, branches, importance, scope, constraints, Classification of plants by various methods. Dry land, sustainable agriculture, cropping schemes. general practices like intercropping, mix cropping, crop rotation relay crop, multiple cropping, tier cropping, etc.</p> <p>2. Meteorology- Study of climate, weather, atmosphere, factors of climate, optimum, minimum and maximum range of factors their impact on crops. Assessment of climatic factors. Forecasting weather. Agro climatic zones of India and Maharashtra. Adverse climate, prevention and control, wind breaks planting, importance, smoking etc.</p> <p>3. Soil and its properties- Soil definition, development of soil, soil genesis, properties of soil (chemical, physical & Biological) productivity of soil, problems and correction of soil. Types of soil, soils of Maharashtra and India. Soil pollution, impact of soil pollution, study of pollutants.</p> <p>4. Plant nutrients- Definition, importance, classification, types (organic, inorganic, bio-fertilizer) Types of inorganic nutrients. Deficiency symptoms, application methods, organic farming, natural farming, difference between two, application of bio-fertilizers. Organic farming and environment.</p> <p>5. Agricultural botany- plant cell, study of plant parts and their modifications. Reproduction in plants, pollination, fertilization, seed formation. Definition of plant breeding, importance, improvement of crops. Hybridization, crossing, Mendel's laws, principles of plant breeding.</p> <p>6. Agricultural engineering- Tractors, type, parts, working, two stroke engine, four stroke engine, land surveying and leveling, land utilisation, land resource management, drainage soil erosion, soil conservation, watershed management types, development, and structures.</p>	<ol style="list-style-type: none">1. Identification and Study of meteorological instruments specially rain gauges, wet and dry bulb thermometer, anemometer, Stevenson screen, hygrometer, etc.2. Study of soil profile3. Soil Sampling and testing for fertility and chemical properties.4. Calculating fertilizer requirement with available fertilizers and required standard.5. Study preparation of compost by various methods.6. Study methods of preparation of bio-fertilizers.7. Study preparation of vermiculture.8. Study of floral parts9. Practicing emasculation and pollination.10. Measurement of soil moisture content by tensiometer and oven method11. Study of water conservation methods (check bund, brushwood, loose boulder, agri. ponds, etc.).12. Drawing contour lining.13. Measurement of agricultural land.14. Study of parts of tractor and their function with minor repairing.15. Operating and repairing of farm implements like rotavator, plough, harrow, hoes etc.16. Study of drip and sprinkler irrigation system, Assembly and maintenance.17. Identification and study of farm implements and machinery used for agricultural operations18. Installation, working and study of electric motor, pump and starter19. Preparation of various drinks from fruits and vegetables.20. Preparation of processed (jam, jelly, Marmalade, ketchup, candy, sauce) products from agricultural produce.21. Processing seeds for pulses and oil.

<p>7. Cultural operations and implements- Tillage, ploughing, harrowing, leveling, hoeing, sowing, planting, staking, training, pruning, irrigation, weeding, manuring, spraying, harvesting, packing. Importance of these operations and tools and study of equipment used for it, rotovator, tillers, motor pump, etc.</p> <p>8. Processing of agricultural produce- Importance, Principles of preservation, spoilage of processed products, preservatives used, factors affecting preservation, packing of processed products (bottling, canning), introduction of processed products (jam, jelly, marmalade, syrup, squashes, juice, cordials, candies, chips, etc.) of fruits, vegetables and other agronomical crops.</p>	
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VTH-1 Second year XII**1. Plant growth regulators and herbicides-**

Definition, importance, classification, application, hazards, herbicides, importance.

2. Plant protection- Definition of pests, principles of pest control. Dissemination and spread of pest. Economically important Disease and insect pest of major crops like cereals, pulses, cash crops, oilseed, important fruits, vegetables and flowering crops. Pesticides, classification. Integrated Pest Management. Important weeds and their control. Principles of weed control.

3. Nursery Management and Green house technology- Definition, importance, scope, selection of site, raising of seedlings, root stocks, scion, mother plants, Methods of plant propagation in important crops. Propagation media, structure (cold frame, hot frame, glass house, poly house, etc.) pots, irrigation system in nursery. Precaution and aftercare of nursery plants. Poly house-importance, types, construction, cultivation of some important crops in polyhouse like, rose, daisy, orchids, chrysanthemum, pepper.

4. Seed production- definition, importance, purity, qualities and types of seed. Methods/steps in seed production, intercultural operations like, isolation, rouging, emasculation, method of emasculation. Production of hybrid seeds. Harvesting and processing of seeds crop improvements in various important crops like cereals, pulses, vegetables, fruits, oilseeds and cash crops.

5. Animal husbandry- Farming and rearing of animals (cow, bull, Buffaloes, goat, pig, sheep), poultry birds, insects (silkworm, bees) fishes, mushroom. Importance, vaccinations, domestic and exotic breeds, balanced diet management, reproduction, first aid, disease management, Farm products like milk, flesh, eggs, honey, birds, silk, manures etc.

Practicals XII

1. Identification and control of weeds.
2. Preparation of bio-pesticides like HNPV, neem seed extract.
3. Preparation of Neem extract, Bordeaux mixture, Bordeaux paste, lime sulphur solution.
4. Preparation of pesticides and hormonal solution of required concentrations for plant application.
5. Identification and control measure of economically important insect and diseases of crops.
6. Planning and layout of nursery.
7. Identification of propagation media.
8. Practicing methods of vegetative propagation.
9. Planning and layout of poly house.
10. Preparation and sterilization of nursery beds and ridges and furrows.
11. Study media used in poly house for planting
12. Production of seeds of some cereals, pulses, oilseed or cash crop Or vegetables.
13. Study of various seed treatment.
14. Seed testing for germination, vigour and health.
15. Selection of milking animals.
16. First aid and vaccination to farm animals.
17. Milking and regulation of lactation in animals.
18. Milk testing for fats, gravity, acidity and TSS.
19. Identification of milk adulteration.
20. Preparation of various milk products.
21. Methods of preservation of milk.
22. Planning and layout of Poultry .
23. Planting mulberry for sericulture.
24. Study of life cycle of silkworm

<p>6. Dairy Technology- Definition, importance, scope, limitation, nutritive importance of milk, properties of milk, preservation of milk and milk products. Causes of spoilage. Milk testing for ingredients (water, sugar, fats, total soluble solids, etc.). Various milk products like mawa, butter, paneer, cheese, cream, curd, yoghurt, kulfi, soft and cold drinks of milk. Adulteration of milk and various test of adulteration.</p>	
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Subject :- Agricultural Economics and Extension – 1st Year

(Subject Code - 30540014)

<p>1-Economics- Definitions, importance, scope, principles and methods, Concepts of economics, GDP, Inflation, outsourcing, role of foreign exchange.</p> <p>2- Agricultural Farm management – Inputs, records, planning, layout, types of farming, profit loss calculation, production expenditures. Forecasting income, aanewari. Economics of Agricultural system registration, control, standards, export.</p> <p>3-AGRICULTURAL MARKETING AND STORAGE- Market functions, functionaries, improvements, govt. regulatory programme, regulation of market, market survey, contract term, Types of market, Regulated market, Co-operative market, Village market, Wholesale market, Retail market, Terminal market, Grading, processing and packing of field produce, Transportation, Quality control, Storage, regulation of cold storage, consumer protection, co-operative marketing, co-operative export, Market extension, Marketing research and investigation</p> <p>3- Rural sociology- Definition, scope, development, importance, study of rural sociology, urbanization, difference between rural and urban sociology, rural groups, types, properties of group. Rural education, importance of rural education. Changes in rural society.</p> <p>4-Lokshahi and leadership- background, definition, properties, benefits and limitation, definition of leadership, types of leadership, qualities of leaders, role of leadership in rural development. Panchayatraj, background, recommendations of Mohta samiti, properties of panchayatraj of Maharashtra, Five year plan. Administrative power of gram panchayat, functions, grants, recovery, honorium and allowances.</p>	<p>1- Economical study of farming system.</p> <p>2-Study of various farm records.</p> <p>3- Study of land record (7/12; 8A, E).</p> <p>4- Planning of annual cropping scheme.</p> <p>5- Study of agricultural produce marketing committee (APMC).</p> <p>6- Study of agricultural co-operative credit society.</p> <p>7-Study of warehouse, Food Corporation of India and cold storages</p> <p>8- Present import and export status of agricultural produce of India.</p> <p>9- Rural Awareness regarding health programmes like DOTS, AIDS.</p> <p>10-Awareness regarding education, child labour act, family planning.</p> <p>11- Saving group of Ladies (Mahila bachat gut).</p> <p>12- Study of gram panchayat Elections, structure and functioning.</p> <p>13- Study of Panchayat samiti: election, structure and functioning.</p> <p>14- Visit: Panchayat samiti</p> <p>15- Visit: Gram Panchayat</p> <p>16- Visit: Primary Health Centre</p>
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<p>5- Religion- Definition, importance, type, family organization, function, qualities, types. Unified family, advantages, limitation, division of family. Divided family, advantages and limitation.</p> <p>6- Environment- Definition, forest of India, pollution, type of pollutant, principles of pollution control, advantages.</p> <p>7- Schemes related to Agriculture, objectives, beneficiaries, government, limitation and advantages, DPAP, beneficiary development programme, IHDP, Hort. Dev. Scheme, multiple cropping system, IPDP, Oilseed DP, Fodder development programme, National adult education programme, Social forestry programme, employment guarantee scheme, Jawahar rozgar yojna, Indira awas yojna, watershed development programme of India. Rural water supply scheme, jaldhara, nursery dev. Programme, NHM.</p>	<p>17- Study of forest of India.</p> <p>18-Propagation of some forest species.</p> <p>19- Study of Global Warming Causes and remedies.</p> <p>20- Pollution: types, causes and control.</p>
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Subject :- Agricultural Economics and Extension – 2nd Year

(Subject Code - 30540014)

<p>1- Education, Definition, types, importance, formal and informal education. Extension education, objectives, development, elements of extension education relationship in extension education and rural sociology.</p> <p>2- Communication- Definition, importance, development, routes of communication, limitation.</p> <p>3- Methods of extension education, importance and classification. Verbal contact, visits, telecom, letter, official visit. Group contact, shetkari melawa, shivar feri, exhibition, radio, television, meeting, agricultural literature, hand wheels, palm file, journals, circulars, posters, graphs, news, photographs. Audio visual aids, extension worker. Planning of extension programme, valuation</p> <p>4- Agricultural extension system in India- Rural development ministry of India, state agricultural departments, state rural development departments, council of agricultural research. Volunteering organizations.</p> <p>5- Agricultural legislation- Acts and legislation regarding seed, nursery, fertilizers, pesticides, forest, ceiling act, lease act. Ek khidki yojna- transparency programme.</p> <p>6- Social survey and training- PRA, definition, importance, objectives, methods. Training methods, importance.</p> <p>7- Information technology- Introduction to computers, structure, classification, software, multimedia technology, Internet education system, definition, importance, objectives, advantages, disadvantages, limitation, comparison.</p>	<p>1- Extension education system.</p> <p>2- Group contact- exhibition, seminar, audio video, posters.</p> <p>3- Study of loan schemes- short, medium and long term loans.</p> <p>4- Registration of co-operative society.</p> <p>6- Study of various loan schemes of agriculture.</p> <p>7- Study of Right to information (RTI).</p> <p>8- Study of Right to Education (RTE).</p> <p>9- Preparation of hand wheels, writing news column, agricultural report, Agricultural articles.</p> <p>10- Preparation of power point presentation.</p> <p>11- Installation of various computer programme and software.</p> <p>12- Internet: surfing and down loading agricultural related information.</p>
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Subject :- Cultivation of Agronomical Crops – 1st Year

(Subject Code - 30540035)

Importance, history, distribution and production, taxonomy and physiology, growth, and critical stages , soil and climatic requirement, varieties, seed and sowing, nutritional requirement, manures and fertilizer application schedules, water and irrigation need, management of weeds and plant protection measures, crop rotations and cropping systems , harvesting, yield and production potential , quality aspects and preparation of marketing.

1. **Cereals and Millets** – Rice, sorghum, pearl millet, maize, hill millet, bajra etc.
2. **Pulses crop**- Red gram, greengram, blackgram, cowpea, kidneybean, etc.
3. **Oilseeds crop**- groundnut, sesamum, soybean, castor, sunflower, niger etc.
4. **Fibre crop**- cotton, sunhemp, deccanhemp, agave and jute, etc.
5. **Commercial crop**- tobacco, Turmeric, ginger, tea, coffee etc.

Subject :- Cultivation of Agronomical Crops – 2nd Year

(Subject Code - 30540035)

Importance, history, distribution and production, taxonomy and physiology, growth, and critical stages , soil and climatic requirement, varieties, seed and sowing, nutritional requirement, manures and fertilizer application schedules, water and irrigation need, management of weeds and plant protection measures, crop rotations and cropping systems , harvesting, yield and production potential , quality aspects and preparation of marketing.

1. **Cereals and Millets** – Wheat, kharif sorghum, barley, oat etc.
2. **Pulses crop**- gram, lentil , pea, French bean, etc.
3. **Oilseeds crop**- linseed, rapeseed, mustard, safflower, sunflower, kharif castor, kharif sesamum etc.
4. **Summer crop**- groundnut, greengram , paddy etc..
5. **Commercial crop**- sugarcane , sugarbeet , potato etc.