Maharashtra State Board of Vocational Examination, Mumbai 400 051

1	**Name of Course**	**Diploma Course in Dairy Farming** **(Revise W. E. F. 2017-18)**
2	**Course Code**	**305432**
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**	1.To train the students scientifically to undertake all operations of Animal husbandry and dairy technology. 2. To create employment potential and man power for dairy development. 3. To train the personel for the improvement of Dairy farming.
11	**Employment opportunities**	The student can get jobs in Veterinary Assistant/Livestock assistant/Dairy farm supervisor or with working experience will be in a position to start his own independent Dairy Business.
12	**Teachers Qualification**	1) For Vocational subject - M.Sc (Agri) or B.V.Sc. 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	**Fundamental of Animal Husbandry**	**30540010**	3 Hrs	8 Hrs	11 Hrs
5	**Live stock Nutrition & Management**	**30540028**	3 Hrs	8 Hrs	11 Hrs
6	**Fundamental of Dairy Science**	**30540063**	3 Hrs	8 Hrs	11 Hrs
Total					**42 Hrs**

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14	**Internship**	Two Months Summer Internship from 1st May to 30th 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	**Fundamental of Animal Husbandry**	**30540010**	3 Hrs	**100**	**35**	3 Hrs	**100**	**50**	**200**	**85**
5	**Live stock Nutrition & Management**	**30540028**	3 Hrs	**100**	**35**	3 Hrs	**100**	**50**	**200**	**85**
6	**Fundamental of Dairy Science**	**30540063**	3 Hrs	**100**	**35**	3 Hrs	**100**	**50**	**200**	**85**
									900	**375**

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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**

Code	Subject Name
90000011	Applied Mathematics
90000012	Business Economics
90000013	Physical Biology (Botany & Zoology)
90000014	Entrepreneurship
90000015	Psychology

b) For Elective II – Student can choose any one subject

Code	Subject Name
90000021	Applied Sciences (Physics & Chemistry)
90000022	Computer Application
90000023	Business Mathematics

Theory - I - Fundamental of Animal Husbandry – 1st Year

Subject Code : 30540010

1. **Introducation of Animal husbandry :** Present position of livestock, scope & limitations Nutritive value of animal product, integrated livestock farming.
2. **Breeds of Livestock : a) Cow breeds :** Indian cow breeds their classification milch purpose, draft purpose dual purpose, exotic cow breeds, crossbreeds of Maharashtra.
   b) Buffalo breeds : Murrah, Surti, Mhasana ,Jaffarabadi, Nagpuri, Pandharpuri
3. Animal breeding & selection : a) Systems of animal breeding inbreeding & out breeding.
   b) Selection methods
4. Study of male & female reproductive system
5. Oestrus cycle, stages of oestrus, fertilsation in cattle, pregnancy parturition.
6. Study of udder & milk secreation.

Practical - I - Fundamental of Animal Husbandry – 1st Year

Subject Code : 30540010

1. Study of extranal body parts of cow / buffalo
2. Study of cow breeds.
3. Study of buffalo breeds.
4. Study of male reproductive system.
5. Study of female reproductive system
6. Signs of heat in cow.
7. Signs of pregnancy in cow.
8. Methods of pregnancy diagnosis.
9. Anatomy & Physiology of udder.
10. Milking of Animal.

Theory - I - Fundamental of Animal Husbandry – 2nd Year

Subject Code : 30540010

1. **Artificial Insemination :** Defination, advantages & disadvantages methods of semen collection, composition of semen & its properties, preservation of semen, insemination techniques, embryo transfer technology.
2. **Animal Health** : Signs of healthy animals
   Diseases of cattle - cause, spread, symptoms & their control.
   Viral diseases - foot and mouth disease, rabies ephemeral fever.
   Bacterial diseases - Anthrax, Black quarter Brucellosis, Mastitis.
   Protozoan diseases - Theileirosis, Surra, Babesiosis.
   Parasitic disease - Endo parasite, Ecto parasite.
   Systemic diseases - Indigestion, Tympany, diahorrea, anaemia
   Reproductive disorders - Dystokia, metritis, prolapsed. Metabolic disorders - Milk fever & ketosis.

Practical - I - Fundamental of Animal Husbandry – 2nd Year

Subject Code : 30540010

1. Study of Artifical vagina.
2. Inesemination in cow / buffalo.
3. Study & care of A.I. set & container.
4. Signs of healthy & diseases Animal.
5. Vaccination schedule for cattle and Buffalo.
6. Deworming schedule for cattle and Buffalo.
7. Study of preventive control measures for contagious diseases.
8. Control of ecto parasites by spraying.
9. Visit to a dairy farm.

Theory - II - Live stock Nutrition & Management – 1st Year

Subject Code : 30540028

Feed nutrients: water, Protein, Carbohydrates lipids, Vitamins & minerals**.**

2. **Feeds & Feeding :** Classification of feed stuff - roughages, concentrates, feed supplements feed additives.
3. preservation of fodder : silage making & hay making processing of feed stuff.
4. feeding standards : Ration, Thumb rules of cattle feeding, watering of animals.
5. Cultivation of fodder crops Maize, Lucerne, Berseem, Jowar, hybrid napier, cow pea.
6. Housing of cattle : objectives, selection of site, systems of housing, components of farm building.

Practical - II - Live stock Nutrition & Management – 1st Year

Subject Code : 30540028

1. Study & collection of different feeds & fodder samples.
2. Study of silage making.
3. Study of hay making.
4. Methods of feed processing Chaffing, Soaking, Grinding, Crushing, Pelleting,
5. Thumb rules of cattle feeding.
6. Cultivation practices for fodder crop Maize, Jawar, Lucerene, Berseem, Napier, Grass.

Theory - II - Live stock Nutrition & Management – 2nd Year

Subject Code : 30540028

1. **Dairy cattle & buffalo management** : Raising of calves, raising of heifers care & management of pregnant cows & buffalo, care & management of freshly calved cows & buffalo, care & management of lactating cows & buffalo, care & management of breeding bull.
2. Routine management practices: Identification of animals, Dehorning, Castration, Grooming, Milking, Drying off , Culling, Hoof trimming, Ringing of the bulls, Deworming, Spraying & dipping, Vaccination, Record Keeping.

Practical - II - Live stock Nutrition & Management – 2nd Year

Subject Code : 30540028

1. Housing systems of cattle.
2. Methods of feeding calves.
3. Dehorning of cattle.
4. Castration of Bulls.
5. Identification marks in cattle.
6. Milking of cattle.
7. Ringing, Grooming, Culling, Trimming of hooves in cattle.
8. Study of dairy farm records.
9. Handling, approaching & casting of animals.
10. Visit of feed processing plant.

Theory - III - Fundamental of Dairy Science – 1st Year

Subject Code : 30540063

1. **Introduction to dairy industry :** Present position of dairy industry in India & Maharashtra. Scope of dairy business.
2. **Milk** : Definition, Composition, Constituents of milk, factors affecting composition of milk, physico- chemical properties of milk, Nutritive value of milk, Grading of milk, Defects in milk, Adulteration of milk.
3. **Collection & Transportation of Milk**: Buying of milk,Cooling of milk, Methods of collection & transportation of milk.
4. **Processing of Milk** : Reception of milk at processing plants. Testing of milk, evaluation of milk of its qualities., cooling , Storage of milk, Pasteurization & Homogenization of milk, Standardization of milk, Packing of milk.
5. **Processed milk** : Flavour milk, Sterilised milk, Homogenised milk, Tonned milk, Double tonned milk, Recombined milk.

Practical - III - Fundamental of Dairy Science – 1st Year

Subject Code : 30540063

1. Physical examination of milk
2. Determination of Sp. Gravity, Fat, SNF & TSS of milk.
3. Determination of acidity of milk.
4. Determination of Adulteration in milk.
5. Cleaning & sanitization of milk utensils.
6. Preparation of standardized of milk
7. Preparation of Toned & Double milk
8. Preparation of Flavor of milk.

Theory - III - Fundamental of Dairy Science – 2nd Year
Subject Code : 30540063

1. **Milk products** : Classification of milk product
   Concentrated milk product - khoa, Basundi, Kheer,Rabdi.
   Fermented milk product - Dahi, Chakka, Shrikhand
   Coagulated milk product - Channa,Panir
   Fat rich milk product - Cream, Butter, Ghee
   Frozen milk product - Ice cram, Kulfi,
   Definition, Compostion, Nutritive value, Method of production, yield, Packaging , Storage & Manufacturing defects of above milk product,
2. Microbiology of milk - Sources of contamination clean milk production study of beneficial & harmful microorganisms microbial standards of raw milk.
3. **Milk and metals** : Selection of metal for dairy industry, action of milk on metal, characteristics of different metals & its alloy.
4. **Cleaning & sanitization of dairy equipments** - milk can, milk tankers, storage tank & silo type of can washers, CIP of processing plant.

Practical - III - Fundamental of Dairy Science – 2nd Year
Subject Code : 30540063

1. Preparation of Khoa.
2. Preparation of Kheer.
3. Preparation of Basundi.
4. Preparation of Channa.
5. Preparation of Panir.
6. Preparation of Rabdi.
7. Preparation of Dahi.
8. Preparation of Chakka / Shrikhand.
9. Preparation of Kulfi.
10. Preparation of Ice cram
11. Study of Cram Seperation .
12. Visit to milk Processing plant.

Tools And Equipment for Dairy Farming

Sr.No.	Tools And Equipment (Dairy Science)	Require Quantity
1	Fat testing machine (Milko tester)	01
2	Milk adulteration kit	01
3	Cream separator (Electric operated)	01
4	Mixer – grinder	01
5	LPG gas burner & Cylinder	01
6	Stainless steel vessels (10,5,2,1 Lit.)	Each 02
7	Aluminum vessel (10,5,2,1 Lit.)	Each 02
8	Iron karahi	02
9	Ice Cream making machine	01
10	Single bucket milking machine	01
11	Microscope	01
12	Butter churner	01
13	Panir making equipment	01
14	Refrigerator.	01
15	Computer	02
16	Electronic weighing balance	01
17	Volumetric measures (1 lit., 1/2 lit., 250 ml)	Each 01
18	Titration stand	04
19	Serving spoons	As per requirement
20	Khunti	As per requirement
21	Steel tin container (5,2,1,1/2 lit.)	Each 02
22	Ice cream scoop	04
23	Electric churner	01
24	Mortar pastel	01

Sr.No.	Tools And Equipment (Animal Husbandry)	Require Quantity
1	Electric dehorner	01
2	Vaginal speculum	01
3	Burdizoo castrator	01
4	Branding rod set	01
5	Tagging punch / kit	01
6	Tattooing puching / kit	01
7	Bull nose ring	01
8	Trocar canula	01
9	Wool shearer	01
10	A.I. container	01
11	A.I. gun / sheath	01
12	A.V. set	01
13	Casting rope	01
14	Trevis	01

Chemicals :

1. Sulphuric acid
2. Amyl alcohol
3. NaoH
4. Phenolphthalein indicator
5. HCl
6. Potassium per magnate
7. Boric acid
8. Phenyl
9. Caustic soda
10. Methylene blue
11. Mastitis reagent kit
12. Iodine solution
13. Sodium bicarbonate

Chart / Models:

1. Cow breeds
2. Buffalo breeds
3. Male reproductive system
4. Female reproductive system
5. Artificial insemination
6. Silage
7. Animal diseases
8. Milking system
9. Udder of cow
10. Flow chart of products
11. Part of ice cream machine
12. Part of cream separator

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