PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

OUTLINES OF TESTS SYLLABI AND COURSES OF READING

FOR

Bachelor of Vocation (Agri Business and Agrarian Entrepreneurship)

Session 2018-19

(1\textsuperscript{st} to 6\textsuperscript{th} Semester)
## COURSE OUTLINE
### BACHELOR OF VOCATION
#### (AGRI-BUSINESS AND AGRARIAN ENTREPRENEURSHIP)

### SEMESTER 1

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>General/Skill Component</th>
<th>Theory/Practical</th>
<th>Internal (Theory)</th>
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<th>Internal (Practical)</th>
<th>External (Practical)</th>
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<tbody>
<tr>
<td>*GEN 101</td>
<td>Communication Skills</td>
<td>General Component</td>
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<td>Fundamentals of Information Technology</td>
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<tr>
<td>ASC 103</td>
<td>Introduction to Agribusiness and Agrarian Entrepreneurship</td>
<td>Skill Component</td>
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<tr>
<td>ASC 104</td>
<td>Livestock Production and Management</td>
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<td>ASC 105</td>
<td>Feeds and Feeding of Animals</td>
<td>Skill Component</td>
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### SEMESTER 2

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<tr>
<td>*GEN 201</td>
<td>Soft Skills and Personality Development</td>
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<td>Business Ethics</td>
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<td>ASC-203</td>
<td>Dairy Farm Economics &amp; Entrepreneurship</td>
<td>Skill Component</td>
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<td>ASC-204</td>
<td>Quality Control Of Milk And Processing</td>
<td>Skill Component</td>
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<td>ASC-205</td>
<td>Health &amp; Safety Management</td>
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<td><strong>SIT 201</strong></td>
<td>Summer Industrial Training</td>
<td>Skill</td>
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*Refer to Generic Components Common to all B.Voc. Courses

** Summer Industrial Training of 4-6 weeks in a relevant Industry after 2nd Semester Examinations during summer break. Training report by the student to be submitted within one week of start of 3rd Semester. Viva-Voce examination to be held within 3-weeks of the start of 3rd semester.
<table>
<thead>
<tr>
<th>Paper Code</th>
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<td>*GEN 301</td>
<td>Value Education &amp; Human Rights</td>
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<td>E-Commerce</td>
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<td>ASC 303</td>
<td>Introduction to Poultry Farming &amp; Housing</td>
<td>Skill Component</td>
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<td>ASC 304</td>
<td>Management of Broiler &amp; Layer chicken</td>
<td>Skill Component</td>
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<td>ASC 305</td>
<td>Hatchery Management</td>
<td>Skill Component</td>
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**Semester 4**

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<td>Environmental Studies</td>
<td>General Component</td>
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<td>GC 402</td>
<td>Project Management</td>
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<td>ASC-403</td>
<td>Poultry Nutrition</td>
<td>Skill Component</td>
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<td>ASC-404</td>
<td>Poultry Health &amp; Bio-security</td>
<td>Skill Component</td>
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<td>ASC-405</td>
<td>Poultry Production Economics and Marketing</td>
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<td>**SIT 401</td>
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*Refer to Generic Components Common to all B.Voc. Courses

** Summer Industrial Training of 4-6 weeks in a relevant Industry after 4th Semester Examinations during summer break. Training report by the student to be submitted within one week of start of 5th Semester. Viva-Voce examination to be held within 3-weeks of the start of 5th semester.
### SEMESTER 5

<table>
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<tr>
<th>Paper Code</th>
<th>Title</th>
<th>General/Skill Component</th>
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<td>*GEN 501</td>
<td>Critical Thinking And Elementary Statistics</td>
<td>General Component</td>
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<td>GC 502</td>
<td>Introduction To Research Methodology And Report Writing</td>
<td>General Component</td>
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<td>ASC - 503</td>
<td>Economics of Floriculture</td>
<td>Skill Component</td>
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<td>ASC - 504</td>
<td>Land Preparation and cultivation of Floriculture</td>
<td>Skill Component</td>
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<td>ASC - 505</td>
<td>Landscaping</td>
<td>Skill Component</td>
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### SEMESTER 6

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<td>*GEN 601</td>
<td>Entrepreneurship Development Programme</td>
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<td>GC 602</td>
<td>Total Quality Management</td>
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<td>ASC-603</td>
<td>Protective Floriculture</td>
<td>Skill Component</td>
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<td>ASC-604</td>
<td>Post-Harvest Management of Flowers</td>
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<td>ASC-605</td>
<td>Practical Learning in floriculture</td>
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<td>**SIT 601</td>
<td>Summer Industrial Training</td>
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*Refer to Generic Components Common to all B.Voc. Courses
**Winter Industrial/ In-house Training of 2-3 weeks done after 5th Semester Examinations and before start of 6th semester. Training report by the student to be submitted within one week of start of 6th Semester. Viva-Voce examination to be held within 3-weeks of the start of 6th semester.
SEMESTER I

Title: ASC- 103 Introduction to Agribusiness and Agrarian Entrepreneurship

Objective: the objective of this paper is to provide knowledge to the student about the domain of agribusiness, its components and the initiatives being taken by the government.

Job Role: The Dairy Farmer/Entrepreneur is expected to take various decisions regarding viability and sustainability of dairy farms. He/she is expected to ensure proper care of dairy animals, their health and productivity, milking and marketing of dairy products.

Instructions:

The syllabus of this paper has been divided into FOUR units.

Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.

The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.

All questions carry equal marks.

Unit I

Nature, Scope and Importance of Agribusiness and Agrarian Entrepreneurship: Agriculture Regional locations; Second green revolution; New Vistas in Agriculture: Contract Farming; Organic Farming; Agriculture Insurance; WTO and Indian Agriculture.
Unit II

**Horticulture:** Production of various horticulture crops, Mission for Integrated Development of Horticulture; market development of fresh horticulture produce.

Unit III

**Agriculture Marketing:** Features of agriculture marketing in India; Government measures to improve the system of agriculture marketing.

Unit IV

**Animal Husbandry:** Nature, Scope, growth and problems of livestock sector in India; Introduction to dairy, poultry, fishery, beekeeping, piggery, goat & sheep cultivation; National livestock policy, 2013.

References:

1. Indian Economy by Arvind Mahajan and Gaurav Datt, S Chand Publications
3. Annual Report, Department of Agriculture.
Objective: The course is designed to impart knowledge about the livestock production and management i.e. breeding and reproductive system, housing and care and the management of livestock.

Job Role: The Dairy Farmer/Entrepreneur is expected to take various decisions regarding viability and sustainability of dairy farms. He/she is expected to ensure proper care of dairy animals, their health and productivity, milking and marketing of dairy products.

Instructions:

- The syllabus of this paper has been divided into four units.
- Examiner will set a total of nine questions comprising two questions from each unit,
  Question number one is compulsory of short answer type questions covering the whole syllabus.
- The students are required to attempt one question from each unit.
- All questions carry equal marks

Unit I

Breeding of dairy animals
Breeding of dairy animals and farm records; Selection methods of animals; Culling of animals; Systems of breeding-Inbreeding and Cross breeding; State and National breeding policies for enhancing milk production.
Unit II

Reproductive system - Artificial Insemination; Reproductive organs of cow and bull; Oestrous cycle - symptoms of heat; A.I. advantages – disadvantages; Collection of semen and evaluation; Insemination method; Embro transfer Technology - Advantages and disadvantages; Frozen semen- method and preservation; Pregnancy diagnosis; Parturition – Assistance and other precautions

Unit III

Housing and care of dairy animals

Selection of site for dairy Farm; Systems of housing-loose, housing system - conventional dairy barn; Cleaning and Sanitation in dairy farm; Care and management of calf, and milk animal, dry, pregnant animal and bulls & bullocks; Dairy farm routine; Restraining methods, Dentition and ageing of animals; Common vices of dairy animals; Weaning of calf; Castration and dehorning.

Unit IV

Sheep & Goat production and management

Important sheep and goat breeds; Housing, breeding and Health Management of sheep and goat; Management of different classes of sheep and goat.

Practical: To prepare notes and draw conclusions from the same about the livestock production and management practices practiced by the dairy farmers in the neighbourhood.

Instructions for Practical Paper: (for 40 marks)

- Examiner will set total of four questions covering the whole syllabus.
- Student will attempt any three questions.
- Each question carries 5 marks. • Practical file carries 5 marks and 20 marks for practical work and viva-voce.
• Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Books Recommended:


Title: ASC - 105 FEEDS & FEEDING OF ANIMALS

Theory: 40
Practical 40
Internal Assessment: 20
Time:3 hours

Objective: The objective of the course is to provide knowledge about the feed quality, procurement, storage, feeding process, the provision of water, the equipment required for feeding, watering the livestock and fodder production and management.

Job Role: The Dairy Farmer/Entrepreneur is expected to take various decisions regarding viability and sustainability of dairy farms. He/she is expected to ensure proper care of dairy animals, their health and productivity, milking and marketing of dairy products.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks
Unit – I

Digestive system & feed
Digestion of carbohydrates, Proteins & Fats in animals; Classification of Nutrients and their role in Animal nutrition; Roughages-Leguminous, Non leguminous - green and dry; Concentrates - Energy and Protein Feeds; Feed Supplements - Minerals and Vitamins; Feed additives - Hormones and antibiotics.

Unit – II

Feeding of Animals
Definition of Ration and Feeding Standards; Importance of Feeding in dairy animal production; Feeding of newly born calf; Feeding of milch, pregnant and dry animal; Feeding of Sheep and goat.

Unit – III

Feed plant and Quality control of feeds
Methods of purchasing, procurement of feed ingredients and their physical evaluation; Grinding, mixing and pelleting of Feed ingredients – Equipment; Procurement and storage of feed ingredients; Cleaning and Fumigation of stores; use of Pesticides in feed stores to control Biological Agents; Spoilage of feeds during storage.

Unit – IV

Fodder production and conservation
Study of soils for fodder production; Importance of green fodder feeding for economic milk production; Study of different forage farm equipment-Ploughing, Harrowing, Planking etc.; General principles of irrigation, fertilizers requirement in fodder production; Cultivation practices of Legume and non legume fodder; Silvi pasture – Hortipastures; Chaffing of fodders; Improvement of low quality roughages and non conventional feeds–urea paddy straw treatment; Aims of Fodder conservation; Silage & Hay making; Preparations of vermin-culture from compost.
**Practical:** Prepare sketches of the digestive system of cattle, sheep and goat. Identify and prepare the list of feed ingredients, supplements and additives. Visit a feed plant to know about ration and quality control of feed and feeding of animals. Visit to the feed market shall be undertaken to inquire about the prices and quality of ingredients. Visit to fodder and grass lands.

**Instructions for Practical Paper: (for 40 marks)**

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

**Books Recommended:**

3. John Morgan and Scott Mc Donald “Feed Pads for Grazing Dairy Cows”
Objective: The objective of this paper is to familiarize the students with the importance of ethics in business and understanding of issues related to corporate social responsibility and corporate governance.

Instructions:

The syllabus of this paper has been divided into FOUR units.

Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.

The students are required to attempt one question from each unit and the entire Compulsory Question No. 1. All questions carry equal marks.

Unit 1

Business Ethics: Meaning and Concept, Principles of Business Ethics, Characteristics of Ethical Organisations, Theories of Business Ethics.

Unit-II

Globalization and Business Ethics, Stakeholder’s Protection, Corporate Governance and Business Ethics. Ethical Issues in Indian Business.

Unit – III

Professional Values: Objectives, Morals, Values, Ethics, Integrity, Work ethics, Service learning, Virtues, Respect for others, Living peacefully, Caring, Sharing, Honesty, Courage, Valuing time, Cooperation, Commitment, Empathy, Self-confidence, Challenges in the work place, Spirituality.
Unit - IV

Corporate Social Responsibility: Social Responsibility of business with respect to different stakeholders, Arguments for and against social responsibility of business, Social Audit, Corporate Social Responsibility and Corporate Governance.

Books Recommended:


Title: ASC- 203 DAIRY FARM ECONOMICS & ENTREPRENEURSHIP

Theory: 40
Practical: 40
Internal Assessment: 20
Time: 3 hours

Objective: The objective of the course is to provide knowledge about the process of planning and budgeting of a dairy farm, market structure of the dairy industry and the relevance of collection of market information.

Job Role: The Dairy Farmer/Entrepreneur is expected to take various decisions regarding viability and sustainability of dairy farms. He/she is expected to ensure proper care of dairy animals, their health and productivity, milking and marketing of dairy products.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number **one** is compulsory of short answer type questions covering the whole syllabus. The students are required to attempt one question from each unit. All questions carry equal marks

**Unit I**

**Dairy farm and livestock**

Dairy farm types: starting a project, prerequisites, project cost estimates; retail and wholesale markets of livestock; verities of livestock and their geographical distribution.

**Unit II**

**Milk pricing and commerce**

Pricing mechanism of milk and milk products; Management of books of accounts; Prices of livestock, feed and forage, book keeping in dairy business, dairy marketing.

**Unit III**

**Dairy development programmes**

White revolution, Operation flood, National Technology mission for dairy development; Role of voluntary organizations in dairy development; Concept of socio-economic and cultural changes for dairying programmes; Dairy cooperatives (village, district and state level), Role of information technology in dairy extension.

**Unit IV**

**Dairy Entrepreneurship**

Dairying as self-employment; Programmes for entrepreneurship development in dairying; Organizations of training programmes, cattle shows, exhibitions etc; Economic institutions supporting dairy development programmes.
Practical: To conduct a survey and prepare a report on the cost of starting a dairy business; to assess market structure of dairy business in the local area and in general. Reports to be submitted for financial institutions for 2, 10, 50 and 100 animal dairy farms; Project reports for 5,000 litres and 50,000 litres processing centres.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Books Recommended:

1. “Handbook of Dairy Farming”, EIRI Books

Title: ASC - 204 QUALITY CONTROL OF MILK AND PROCESSING

Objective: The course is designed to impart knowledge about the preparation of livestock accommodation and its maintenance. Also, the placing of livestock in the accommodation and monitoring the livestock placed.
**Job Role:** The Dairy Farmer/Entrepreneur is expected to take various decisions regarding viability and sustainability of dairy farms. He/she is expected to ensure proper care of dairy animals, their health and productivity, milking and marketing of dairy products.

**Instructions:**

- The syllabus of this paper has been divided into four units.
- Examiner will set a total of nine questions comprising two questions from each unit.
- Question number **one** is compulsory of short answer type questions covering the whole syllabus.
- The students are required to attempt one question from each unit.
- All questions carry equal marks

**Unit – I**

**Milk Reception, Filtration and cream separation**
Milk collection, transportation and methods of preservation; Milk chilling methods and storage; Milk Filtration method, Milk clarification, Cream separation methods, Milk standardization for Fat and SNF procedure; Pasteurization – definition – objectives, types, advantages and disadvantages; Sterilization and Homogenization of milk, advantages, disadvantages; Cleaning and sanitation-methods-hand, machine and CIP systems.

**Unit – II**

**Physico Chemical Properties, Adulterants and Preservatives**
Definition of milk, PFA designated milks; Composition of milk from different species and factors affecting composition of milk; Colour and flavour; PH and Acidity; Specific gravity; Freezing and boiling point; Viscosity and surface tension; Common Adulterants in milk – their detection; Common preservatives in milk – their detections; Effects of adulterants and preservation on human health.
Unit – III

Microbiology of Milk
Types of micro-organisms present in milk; Milk borne diseases (pathogens); Microbial standards of raw and pasteurized milk; Microbial spoilage of milk; MBRT and RRT tests; Direct Microscopic count (DMC test).

Unit – IV

Milk Products
Types of Liquid milks; Fat rich products (e.g. cream, butter and ghee)- Definition, composition, types and legal standards; Fermented milk products- (Dahi, Cheese etc.); Concentrated and dried milks; Indigenous milk products- Khoa, Khoa based sweets, Paneer, Kheer and kulfi; Dairy by products; Packing and storage of milk products.

Practical: Study of milk sterilizer, boilers, refrigeration plant and bulk milk cooler. Visit to milk chilling centre and milk products factory. Prepare a study of milk collection, and milk transportation

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.
Objective: to acquaint the trainee about the health and hygiene standards to be maintained by the workforce in the farm. Also it aims to provide the knowledge about various safety measures to be adopted and practiced.

Job Role: The Dairy Farmer/Entrepreneur is expected to take various decisions regarding viability and sustainability of dairy farms. He/she is expected to ensure proper care of dairy animals, their health and productivity, milking and marketing of dairy products.

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks

Unit – I
Animal Health and first aid
Signs of health and ill health; Recording body temperature, pulse and respiration rates; Normal values of body temperature, pulse and respiration rates; Attending to traumatic condition; Attending to poisoning cases; Attending to obstetrical difficulties; First aid to burns and scalds; Attending to fracture; First aid kit; First aid during natural calamities

Unit – II
Animal disease types, causes and remedies
Common bacterial, viral and protozoan diseases, types, causes and remedies; Helminthic and External parasitic diseases; types, causes and remedies; Mycotic diseases: types, causes and remedies; Production & Systemic diseases: types, causes and remedies; Reproductive disorders and diseases associated with reproduction; Infertility - causes and prevention
Unit – III

Disease prevention in livestock
Surveillance of animal diseases; Outbreak reports; Action plans for prevention of diseases for different seasons; Isolation; Quarantine; Vaccination for dairy animals, sheep and goat; Deworming – cattles, sheep and goat; Disinfection; Disposal of Carcasses; Sterilization of equipment- hot/cold/chemical methods

Unit – IV

Workforce health and safety management
Safety Procedures at dairy farm: Risks to health and safety and the measures to be taken to control those risks in dairy farm; Procedures and requirements for the treatment of injuries/illnesses in dairy farm; Basic emergency first aid procedure.

Practical: A report is to be prepared about the general health and hygiene standards maintained on the dairy farms. Comparison of the same with industry standards.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Books Recommended:

1. Safety Management: A Comprehensive Approach to Developing a Sustainable System by Chitram Lutchman, Rohanie Maharaj, Waddah Ghanem
Objective: the paper aims to provide the student with the knowledge of poultry farming as an industry, its role and importance in Indian Economy. It will equip the student with the knowledge about selection of a farm site, construction of shed and the related economic aspects.

Job Role: Poultry Farm Entrepreneur is responsible for handling various activities involved in broiler/layer chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and health management to raise the chicks according to market’s standards

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit.
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks

Unit I

Poultry Industry: an overview

The importance of poultry products; Socio-economic relevance of poultry farming in India; Poultry development in India: quantitative and qualitative improvement.
Unit II

Spatial distribution & development

Role of financial and development agencies in poultry development; Regional concentration of poultry population: state wise growth and concentration of commercial poultry farming.

Unit III

Farming Systems

Free range extensive systems; Backyard extensive systems; Semi Intensive Systems; Intensive System- deep litter, slatted floor and battery cage system.

Unit IV

Poultry shed development

Selection of farm site & farm building; Furnishing of Shed and Poultry equipment; Cost estimation for poultry shed construction and compliance with emergency procedures; Documentation and record keeping.

Practical: To carry out a survey to find the regional density of poultry population in immediate neighbourhood also the farming system practiced at large by the poultry farmers. Enumerate the species kept in the in the poultry farms and their cost to a poultry farmer.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Books Recommended:

Title: ASC 304: MANAGEMENT OF BROILER & LAYER CHICKEN

Objective: To understand the process of meat & egg production and maximize the returns in rearing of Broiler & Layer chicken.

Job Role: Poultry Farm Entrepreneur is responsible for handling various activities involved in broiler/layer chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and health management to raise the chicks according to market’s standards.

Instructions:

The syllabus of this paper has been divided into four units. Examiners will set a total of nine questions comprising two questions from each unit. Question number one is compulsory of short answer type questions covering the whole syllabus. The students are required to attempt one question from each unit. All questions carry equal marks.

Unit 1

Housing and care of broiler chicks

Preparing the brooder house to receive broiler chicks; Brooding & rearing of chicks; Feeding & watering of broilers; Lighting, Ventilation, Litter & Health management
Unit II

**Broiler production and management**

Catching & Transportation to processing; Integration in broiler production; Broiler management during different seasons; Broiler production & performance problems

Unit III

**Getting started in egg business**

Farm location; land requirement; layer buildings for deep litter; cage system & equipment; Record management.

Unit IV

**Layer management**

Management prior to lay (Chick & Grower management) and management during lay (Layer Management) Management practices – Toe, comb & beak trimming. Lighting, Ventilation & Health management, Judging pullets & Factors affecting egg production

**Practical**: A detailed report to be submitted after assessment of the management of both broiler and layer chicks.

**Instructions for Practical Paper: (for 40 marks)**

- Examiner will set total of four questions covering the whole syllabus.
- Student will attempt any three questions.
- Each question carries 5 marks.
- Practical file carries 5 marks and 20 marks for practical work and viva-voce.
- Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

**Book Recommended:**

3. Commercial chicken meat and egg production, 5th edition, Spinger: Donald D.Bell, William D. Weaver
Title: ASC 305: HATCHERY MANAGEMENT

Objective: To understand the process of hatchery operations and to produce the good quality chick of broiler & layer.

Job Role: Poultry Farm Entrepreneur is responsible for handling various activities involved in broiler/layer chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and health management to raise the chicks according to market’s standards

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks

Unit I

Hatching eggs

Egg Formation & Development of the Embryo; Characters for good quality hatching eggs & Maintaining Hatching egg quality;

Unit II

Handling and care

Hatching eggs Selection, cleaning, disinfection, storage and transport; Equipment for hatcheries
Unit III

Incubation & Hatching

Hatchery planning, design & construction; Principles of incubation Operations in Hatchery – securing, storage, traying/setting of hatching eggs, pre-warming eggs prior to setting, testing of fertility (Candling); pulling the hatch; Grading chicks, holding of chicks & chicks delivery.

Unit IV

Hatchery fertility and sanitation

Calculation of fertility & Hatchability of eggs; Factors affecting Fertility & Hatchability; Hatchery sanitation & disposal of hatchery waste.

Practical: Prepare a detailed report on Hatchery Management by visiting a hatchery unit in neighbourhood.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Reference:

3. Commercial chicken meat and egg production, 5th edition, Spinger : Donald D.Bell, William D. Weaver
SEMMESTER IV

Paper Title: GC 402 - PROJECT MANAGEMENT

Objectives: The objective of this paper is to provide knowledge to students about the essentials of undertaking projects in an organizational environment.

Instructions:
- The syllabus of this paper has been divided into FOUR units.
- Examiner will set a total of **NINE** questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
- The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
- All questions carry equal marks.

UNIT-I

UNIT-II

UNIT-III
Project Appraisal Techniques: Objectives, Types and Methods. Project Risks: Meaning, Types, Measurement of Risk, Decision Tree Analysis (Basic Concepts only).
UNIT-IV

Books Recommended:
- Project Management: The Managerial Process (Special Indian Edit.) -Clifford F Gray, Oregon State University.

Title: ASC 403: POULTRY NUTRITION

Objective: The objective of the course is to impart knowledge about improvement of productivity of meat & egg by scientific feeding of broiler & layer.

Job Role: Poultry Farm Entrepreneur is responsible for handling various activities involved in broiler/layer chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and health management to raise the chicks according to market’s standards.

Instructions:
The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks
Unit I

Poultry feeds & feeding
Principles of poultry feeding; Feed ingredients for poultry feeding (Energy & protein feedstuffs); Poultry feed additives & supplements – Vitamins, Minerals, prebiotics & probiotics, enzymes etc.

Unit II

Feeding standards
Feeding standards/specification for broiler & layer; Feed allowance & Dietary requirements; Feed formulation; feeding methods; feed processing & quality control

Unit III

Quality standards
Storage of feed, water and maintaining their quality; poultry farm’s waste disposal methods; legislation; codes or guidelines of best practice in broilers/layer welfare and accommodation

Unit IV

Balanced feed
Feeds for chicks at different stages: age wise scientific feeding programs, types of feed and water requirements for broiler chicks; Different environmental, feed, water, light requirements to produce quality broilers; documentation of the feed record of the broiler chicks.

Practical: Preparation of report on the feed formulation, management and feeding process. Observations to be made on the quality standards of feed and water prescribed by the industry and the standards maintained.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.
Books Recommended:


Title: ASC404: Poultry Health & Bio Security

Objective: To enable the student to understand the poultry immunity system & disease control. To familiarise them with the generally accepted norms of the industry to maintain health.

Job Role: Poultry Farm Entrepreneur is responsible for handling various activities involved in broiler/layer chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and health management to raise the chicks according to market’s standards

Instructions:

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number one is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks

Unit I

Biology of Poultry & vaccination

Breedes, Varieties and Strains; Disease of the chicken; Vaccination – principles & practices; Vaccination schedule for Broiler & Layer; Medication for the prevention & treatment of diseases;
Unit II

Policy formation and accident reporting
Policy with respect to purchase of day old chicks from suppliers; reporting of accidents; incidents and problems and appropriate action to be taken.

Unit III

Poultry hygiene
Role of a poultry farm manager in maintaining the health standards on the farm; Maintenance of hygiene at poultry farm. Personal protective equipment and clothing required in a poultry farm and how it is cared for; safe usage of materials and equipment required in poultry farm.

Unit IV

Poultry Bio-security
Components of Bio security – isolation, traffic control & sanitation; Routine Daily Sanitation Practices; Cleaning & Disinfection of poultry facilities.
Practical: Prepare a detailed report on Health Management i.e. the poultry immunity system & disease control mechanisms and the norms practiced.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Books Recommended:

3. Commercial chicken meat and egg production, 5th edition, Spinger : Donald D.Bell, William D. Weaver
Objective: The objective of the course is to understand economics & marketing of broiler & layer farms.

Job Role: Poultry Farm Entrepreneur is responsible for handling various activities involved in broiler/layer chicken rearing at poultry farm. The individual at work prepares the poultry farm for placement of chicks, carry out their feed; water; litter; brooding and health management to raise the chicks according to market’s standards.

Instructions:

- The syllabus of this paper has been divided into four units.
- Examiner will set a total of nine questions comprising two questions from each unit.
- Question number one is compulsory of short answer type questions covering the whole syllabus.
- The students are required to attempt one question from each unit.
- All questions carry equal marks.

Unit I

Poultry production economics

Preparation of Project report for broiler farm & Layer farm; Measures of performance efficiency of poultry; Economics of poultry operation;

Unit II

Poultry marketing

Current marketing system; Market structure; Marketing channel; Constrains of marketing; Maintenance of farm records.
Unit III

Poultry budgeting

Poultry farm expenses: infrastructure, labour, chicks etc. Receipts from poultry enterprises; Profits from poultry enterprises: labour income variation; Feed-Egg/meat ratio: effect on number of eggs and chicken produced.

Unit IV

Poultry income and price

Factors affecting labour income: size of flock; Egg/meat production; Factors affecting price of egg/chicken: yearly variation; seasonal variation; storage; grade price curve.

Practical: A project report should be prepared on starting a poultry business, infrastructure required, its expected costs and receipts should be estimated by carrying out a field survey.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Readings:

1. The Economics of Poultry Production - With Information on Income, Profits, Labour and Other Aspects of Poultry Economics. Brunauer Press (February 8, 2011)
3. The Economics of the Poultry Industry by Eric Clayton. Longmans Publisher.
Objective: The objective of the paper is to make the students learn about production and consumption patterns of flowers, floriculture entrepreneurship and agriculture trade.

Job Role: The floriculture Entrepreneur is expected to take various decisions regarding viability and sustainability of floriculture and handle various activities associated with floriculture business. He/she is expected to possess knowledge and practical experience regarding land preparation, cultivation of flowers, landscaping, protective floriculture and post harvest management of flower crop.

Instructions:

- The syllabus of this paper has been divided into four units.
- Examiner will set a total of nine questions comprising two questions from each unit.
- Question number one is compulsory of short answer type questions covering the whole syllabus.
- The students are required to attempt one question from each unit.
- All questions carry equal marks

Unit 1:

New vistas in Floriculture

Role and scope of Floriculture Entrepreneur:: Commercial floriculture; New seed policy; Production and consumption patterns of flowers.
Unit 2:

**Flower variety and spatial distribution**

Variety of flowers produced in India and the world; Geographical distribution of flowers and cropping patterns; Traditional versus modern floriculture; Scope of cut and loose flowers.

Unit 3:

**Flower entrepreneurship**

Floriculture: starting a project, prerequisites, project cost estimates; retail and wholesale markets of flowers; factors affecting demand and supply of flowers; Institutional support in floriculture.

Unit 4:

**Liberalization, flower trade and marketing**

Impact of liberalization on flower trade; Marketing of flowers in India and abroad; Challenges in flower exports; Composition and direction of flowers trade; Potential export Markets; Recent government policies with regard to promotion of floriculture exports; Agri-Export Zones.

**Practical:** Make a proposal for a demo project on starting of floriculture business (domestic/export) considering the cost, demand and supply constraints and the institutional support required.

**Instructions for Practical Paper: (for 40 marks)**

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.
Books Recommended:


Title: ASC 504 LAND PREPARATION AND CULTIVATION OF FLOWERS

**Objective:** The objective of the paper is to introduce to the students about basics of land preparation, flower cultivation, flower diseases and their prevention.

**Job Role:** The floriculture Entrepreneur is expected to take various decisions regarding viability and sustainability of floriculture and handle various activities associated with floriculture business. He/she is expected to possess knowledge and practical experience regarding land preparation, cultivation of flowers, landscaping, protective floriculture and post harvest management of flower crop.

**Instructions:**

- The syllabus of this paper has been divided into four units.
- Examiner will set a total of nine questions comprising two questions from each unit,
- Question number one is compulsory of short answer type questions covering the whole syllabus.
- The students are required to attempt one question from each unit.

All questions carry equal marks

**Unit 1**

**Introduction to Nursery**

Definition, introduction, importance and types of nursery; Site selection, required climate, season and weather for nursery; Land preparation and soil types.
Unit 2

**Land preparation and inputs**

Ploughing, digging, and leveling; Soil treatment; Manure and fertilizer, its importance and application methods; Handling tools and equipment; Types of irrigation

Unit 3

**Flower cultivation practices**

Uprooting, transplanting and maintenance of plant spacing; Definition; Seed sowing and propagation; grafting and clonal propagation of plants.

Unit 4

**Flower diseases and prevention**

Definition of insects, mites and plant diseases, and their identification, prevention and management; Common pesticide available and precaution to be taken when handling pesticide; Doses; Bio pesticides/micronutrient / growth promoters in flowering.

**Practical**: The students shall observe the gardeners in the college and other places outside college to learn the skills regarding land preparation, flower cultivation, flower diseases and their prevention which is a prerequisite to being an entrepreneur in Floriculture. They shall submit a project report for the same.

**Instructions for Practical Paper: (for 40 marks)**

- Examiner will set total of four questions covering the whole syllabus.
- Student will attempt any three questions.
- Each question carries 5 marks.
- Practical file carries 5 marks and 20 marks for practical work and viva-voce.
- Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.
Books Recommended:


Title: ASC 505 LANDSCAPING

Theory: 40  
Practical 40  
Internal Assessment: 20  
Time: 3 hours

Objective: The objective of the paper is to teach the students about the types and prospects of landscaping industry and make him abreast with various turf grass characteristics and computer aided designing.

Job Role: The floriculture Entrepreneur is expected to take various decisions regarding viability and sustainability of floriculture and handle various activities associated with floriculture business. He/she is expected to possess knowledge and practical experience regarding land preparation, cultivation of flowers, landscaping, protective floriculture and post harvest management of flower crop.

Instructions:

The syllabus of this paper has been divided into four units. 
Examiner will set a total of nine questions comprising two questions from each unit,  
Question number one is compulsory of short answer type questions covering the whole syllabus.  
The students are required to attempt one question from each unit. 
All questions carry equal marks

Unit 1:
Introduction to Landscape industry

Prospects of landscape industry; Landscape designs, Styles of garden, formal, informal and free style gardens, types of gardens, Landscaping for specific institutions.

Unit 2:

Garden & ornamental plants

Garden plant components; Production technology for selected ornamental plants; Lawns, Establishment and maintenance; Bio-aesthetic planning; indoor gardening, roof gardening.

Unit 3:

Landscaping and grass selection

Selection of grasses for different locations; Site selection, basic requirements, site evaluation, concepts of physical, chemical and biological properties of soil pertaining to turf grass establishment; Turf grasses - Types, species, varieties, hybrids;

Unit 4:

Computer Aided Designing in landscaping

Computer Aided Designing (CAD) for outdoor and indoorscaping; Exposure to CAD (Computer Aided Designing) – Applications of CAD in landscape garden designing; 2D and 3D drawing by computer software; Visualization tools for landscape preview; Making sample drawing for outdoor and indoor gardens.

Practical: Research work on the landscapes of the famous gardens, institutions, public buildings of various national and international repute. A project is to be undertaken using CAD in landscapng.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Books Recommended:

Title: ASC 603 PROTECTED FLORICULTURE

Objectives: The objective of the paper is to introduce students to various types of protective floriculture, cost & design, handling operations and crop regulation.

Job Role: The floriculture Entrepreneur is expected to take various decisions regarding viability and sustainability of floriculture and handle various activities associated with floriculture business. He/she is expected to possess knowledge and practical experience regarding land preparation, cultivation of flowers, landscaping, protective floriculture and post harvest management of flower crop.

Instructions:

- The syllabus of this paper has been divided into four units.
- Examiner will set a total of nine questions comprising two questions from each unit.
- Question number one is compulsory of short answer type questions covering the whole syllabus.
- The students are required to attempt one question from each unit.
- All questions carry equal marks

Unit 1:

Prospect, type and designing of protected floriculture

Prospects of protected floriculture in India; Types of protected structures – Greenhouses, polyhouses, shade houses, rain shelters etc., Designing and erection of protected structures. Location specific designs; Low cost/Medium cost/High cost structures – economics of cultivation
Unit 2

Structural Components:

Structural components of protective floriculture; Suitable flower crops for protected cultivation; introduction to genetically modified flowering plants.

Unit 3:

Environment Control

Management and manipulation of temperature, light, humidity, air and CO₂; Heating and cooling systems, ventilation, naturally ventilated greenhouses, fan and pad cooled greenhouses, light regulation; irrigation system; important diseases & pest problems/ control in protective floriculture.

Unit 4:

Crop regulation and post harvest management

Crop regulation by chemical methods and special horticultural practices (pinching, disbudding, deshooting, deblossoming, etc.); Staking and netting, Photoperiod regulation; harvesting techniques, post-harvest handling techniques.

Practical: Prepare a report on project cost and management of protective floriculture viz greenhouses, polyhouses, shade houses, rain shelters etc.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.
Books Recommended:


Title: ASC 604 POST HARVEST MANAGEMENT OF FLOWERS

**Theory:** 40  
**Practical:** 40  
**Internal Assessment:** 20  
**Time:** 3 hours

**Objectives:** The objective of the paper is to make student understand the post harvest handling of crops, grading & packaging, utilization of cold chains and best practices for retail display.

**Job Role:** The floriculture Entrepreneur is expected to take various decisions regarding viability and sustainability of floriculture and handle various activities associated with floriculture business. He/she is expected to possess knowledge and practical experience regarding land preparation, cultivation of flowers, landscaping, protective floriculture and post harvest management of flower crop.

**Instructions:**

The syllabus of this paper has been divided into four units.
Examiner will set a total of nine questions comprising two questions from each unit,
Question number **one** is compulsory of short answer type questions covering the whole syllabus.
The students are required to attempt one question from each unit.
All questions carry equal marks
Unit 1:

Post Harvest Management

Post Harvest Management of cut and loose flowers; Stage of Harvest in species and within species; Pre-cooling and pulsing treatment

Unit 2:

Grading, packing & standardization

Grading of flowers; automated grading; Packaging of flowers: Packaging material, Standardized export packaging technology and cost involved;

Unit 3:

Cold Chain System in Floriculture:

Cold chains, types, scope and significance; Stages of cold chain: Pre cooling, cold storage, grading and packing, refrigerated vans, cargo cabin.

Unit 4:

Retail Practices in Floriculture:

Best practices for retail display; Preservative solutions; maintenance of quality standards in commercial floriculture.

Practical: A student is expected to submit a project report on the various post harvest management practices.

Instructions for Practical Paper: (for 40 marks)

Examiner will set total of four questions covering the whole syllabus.
Student will attempt any three questions.
Each question carries 5 marks.
Practical file carries 5 marks and 20 marks for practical work and viva-voce.
Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

**Books Recommended:**


**Title: ASC 605 PRACTICAL LEARNING IN FLORICULTURE**

Practical 80
Internal Assessment: 20
Time:3 hours

**Objectives:** To have working knowledge of entire floriculture business.

**Instructions for Practical Paper**

Examiner will set total of four questions covering the whole syllabus.

• Student will attempt any three questions.
• Each question carries 15 marks.

• Practical work carries 30 marks and 5 marks for viva-voce.

• Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

1. Project cost estimates of open and protective floriculture.
2. Raising of seedlings
3. Study of garden equipments
4. Identification of trees, shrubs, creepers & indoor plants.
5. Lawn Management
6. Making of Bonsai/ ornamental plants
7. Construction of garden wall, fencing, hedging etc.
8. Maintenance of potted plants, flowering plants, bulbous plants
9. Field trips/ visits to nursery, propagation centers, commercial units etc.

Suggested Readings:


Randhawa, M.S., Beautiful trees and gardens, National book