

**DIPLOMA (AGRICULTURE) – FOURTH SEMESTER**

Fourth Semester			
S. No.	Name of Subject	Credits	Total Marks
1	Seed Production Technology	5	100
2	Diagnosis of Crop Health Problem	4	100
3	Food Processing & Preservation	5	100
4	Practical	4	100
5	Fundamental of Environment Studies	4	100
6	Food Science, Nutrition	2	100
<b>Total</b>		<b>24</b>	

**Subject Name: SEED PRODUCTION TECHNOLOGY**

1. Seed – its importance in agricultural development, introduction of seed industry in India.
2. Seed morphology, development & classification, difference between seed and grain.
3. Basic principles of seed production, Seed production techniques of some.
4. Importance crops of India
5. Seed production in phases – breeder seed, Foundation and certified seed
6. Qualities of improved seed and maintenance of purity
7. Post – harvest handling – thrashing, cleaning, drying, grading, seed treatment
8. Viability of seed and factors affecting it, Seed packaging and packing materials, Seed storage
9. Seed testing, seed certification and seed Act

**Practical's:**

1. Methods of seed production and visit of seed production plots of castor, bajra, maize, sorghum, wheat, groundnut and cotton crop etc.
2. Method of field inspection and rouging.
3. Visit of seed testing laboratory
4. Visit of commercial seed processing and seed storage units.
5. Seed treatments.
6. Seed sampling procedure.
7. Physical purity analysis of seed samples.
8. Seed germination test.
9. Seed standards, prescribed in Indian Seed Act.
10. Identification of Seed certification tags

**References**

1. Agarwal R.L (1980). Seed Technology, oxford and IBH Publication Co., New Delhi. . Agarwal P.K. and Dadlani, M. (1987).Techniques in seed science and technology, South Asian Publishers, New Delhi.
2. Nema, N.P (1986) Principles of Seed Certification and Testing Allied Publishers, New Delhi

**Subject Name:** DIAGNOSIS OF CROP HEALTH PROBLEM

1. Causes of health problems of crops
2. Diagnosis of health problems of cereals
3. Diagnosis of health problems of jute
4. Diagnosis of health problems of pulse
  
5. Diagnosis of health problems of oilseeds
6. Diagnosis of health problems of vegetables
7. Diagnosis of health problems of fruits
8. Diagnosis of health problems of flowers
9. Insecticides, pesticides, fungicide, types and or classification , application , effect on health and environment
10. Principles of IPM
11. Role of IPM in crop production
12. Different methods and strategies of IPM
  
1. Study and gain knowledge about procedure of identification of pests, pathogens, parasite and their impact
2. Study and learn about procedure of identification of health problems in major cereals and their impact
3. Know and understand about principles of identification of health problems in sugarcane and their impact
4. Acquire knowledge on the process of of identification of health problems in vegetables and fruits and their impact
5. Acquire knowledge on the process of of identification of health problems in flowers and their impact

**References**

1. Principles of Insect pest Management .Dhaliwal G.S and Arora Ramesh
2. Introduction to insect Pest Management Metcalf, R.L Lucknow W.H
3. Insect Pest Management Venugopal Rao

**Subject Name:** FOOD PROCESSING & PRESERVATION

1. Importance &principles of food preservation
2. Importance & principles of food processing
3. Different methods of preservation of fruits and vegetables
4. Different methods of preservation of processed food
5. Principles of preservation of juices and squashes
6. Principles of preparation of jam & jelly
7. Spoilage in food and their controls strategies
8. Storage and marketing of processed and preserved products

### **Practical's**

1. Study and gain knowledge about procedure of food processing
2. Study of different types of tools & equipments used in preservation
3. Study of different types of preservatives
4. Canning of fruits and vegetables
5. Storage of canned products
6. Preparation of juice, squash, cordial and syrups
7. Preparation of jam and jelly
8. Preparation of candy and ketchup
9. Preparation of pickles
10. Study of different methods of drying of horticultural products, preservation and marketing
11. Visit to local processing units and packing industries

### **References**

Handbook of food processing: Food Preservation – CRC Press

### **Subject Name: PRACTICAL**

1. Preservation of foods by sugar-Jam, Jelly, Marmalade, Cordial, Squash, Fruit bars, Fruit Preserves- Tuity Fruity (Papaya), Ginger Murabha (Ginger).
2. Preservation of foods by salt and acid-Vathal, Vadagam, Tomato ketchup and Squash, Pickles- Lemon, Mango, Mixed vegetable, Garlic
3. Different types of tools & equipments used in preservation
4. To diagnosis of health problems of cereals-Rice, Wheat and Maize- their insect pests and diseases and their control measures.
5. Nursery requirement of different vegetables and flower crops. Seedling age for transplanting. Floral structure and seed identification.
6. Seed production planning in different crops with special reference to land and isolation requirement, Roguing harvesting and threshing.

### **References**

- Agarwal R.L (1980). Seed Technology, oxford and IBH Publication Co., New Delhi. .
- Agarwal P.K. and Dadlani, M. (1987).Techniques in seed science and technology, South Asian Publishers, New Delhi.
- Insect Pest Management Venugopal Rao
- Handbook of food processing: Food Preservation – CRC Press.

### **Subject Name: FUNDAMENTAL OF ENVIRONMENT STUDIES**

1. Definition, scope and importance
2. Renewable and non- renewable resources
  - Forest resources
  - Water resources
  - Mineral resources
  - Food resources
  - Energy resources
  - Land resources

3. Ecosystems
  - Concept of an ecosystem
  - Structure and functions of an ecosystem
4. Biodiversity
  - Introduction: Definition
  - Biogeographical classification of India.
  - Hotspots of biodiversity.
  - Threats to biodiversity
  - Conservation of biodiversity
5. Environmental Pollution
  - Definition
  - Causes, effects and control measures
  - Air pollution
  - Water pollution
  - Soil pollution
  - Marine pollution
  - Noise pollution
  - Thermal pollution
  - Nuclear hazards
6. Social Issues and the Environment
  - Sustainable Development
  - Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents.
7. Human Population and the Environment
  - Population characteristics, growth, variation among nations
  - Population explosion- causes, consequences, effects and mitigation.
  - Environment and Human Health
  - Human Rights
  - Value Education
  - HIV/AIDS
  - Women and Child Welfare
  - Role of Information Technology in Environment and Human health

**Subject Name:** FOOD SCIENCE, NUTRITION

1. Definition of nutrition- nutrients and nutritional status.
2. Food-functions-classification-food groups-food pyramid-daily food guide-factors to be considered-different age groups-composition and nutritive value of common foods
3. Major nutrients –carbohydrate-importance-nature classification functions-digestion and absorption of carbohydrate present in foods- sources-deficiency-toxicity
4. Proteins-Importance- nature-classification-functions-digestion and absorption of proteins present in foods- sources-deficiency-toxicity. Fats-Importance- nature-classification-functions-digestion and absorption of fats present in foods- sources-deficiency
5. Formulation of balanced diet for different age groups and sex. Vitamins-fat soluble-functions-digestion and absorption-sourcesdeficiency. Vitamins-water soluble-functions-digestion and absorption-sources-deficiency- micro nutrients –functionsdeficiency-sources.
6. Nutritional problems of India-causes-PEM-obesity-clinical symptoms-diagnosis-manageme
7. Post harvest management for quality produce- reasons for spoilage of fruits and vegetable
8. General principles and methods of preservation. Preservation by dehydration- thermal processing- chemicals preservation- germinationradiation—etc
9. Regulations and Specifications for fresh and processed productspackaging of fresh and processed products