

**GUIDELINES FOR POST GRADUATE DIPLOMA PROGRAMME
IN
POST HARVEST TECHNOLOGY**

Diploma	Post Graduate Diploma Programme in Post Harvest Technology
Duration	One year course of two (2) Semesters.
Residential Requirement	Minimum residential requirement for completion of PG diploma course shall be of two (2) Semesters extendable to maximum of 4 semesters in total.
Credit Requirement	In order to qualify for PG Diploma in Post Harvest Technology, a student shall be required to complete 35 credits.
Credit Load per Semester	A student shall offer a minimum of 10 credits and a maximum of 18 credits in each semester including seminar credit. Minimum prescribed load shall not be mandatory beyond the second semester of study.
Course Seminar	Two Semesters; One (1) credit seminar each in two semesters shall be compulsory.
Training and report writing	Five (5) credit training of three / four weeks duration during second semester and report writing after completion of the training shall be compulsory.
Examinations	All examinations will be regulated as per Ordinance governing M.Sc.(Ag.) examinations of the Institute of Agricultural Sciences. However, the Seminar and training report shall be evaluated by the Coordinator of the Diploma course in consultation with at least two course instructors.
No. of Seats	There shall be a minimum of 10 (Ten) maximum 30 (Thirty) seats including reservation seats as per University ordinance.
Fee	Rs. 30,000/- p.a. i.e. Rs. 15,000/- per semester in addition to normal fee of the Institute.
Eligibility Criteria for admission and Entrance test	Passed 4 years B.Sc. (Ag.)/B.Tech. (Ag. Engg.) exam. of the University or an equivalent examination recognized by the University and obtained at least 50% marks in aggregate under traditional system or an OGPA of 2.5/4, 3.5/5, 4.0/6 and 6.0/10 under the course credit system. For SC/ST only pass marks is required. Entrance test will be regulated as per existing ordinances of the PET.

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Semester – I		
Course Number	Course Title	Credits
PGD PHT 101	Principles of Post Harvest Management	2+2
PGD PHT 102	Food Chemistry and Physiology	2+2
PGD PHT 103	Food Processing & Engineering-I	2+2
PGD PHT 104	Seed Processing Technology	2+2
PGD PHT 105	Seminar	0+1
Total		17
Semester – II		
PGD PHT 201	Food Microbiology	1+2
PGD PHT 202	Food Processing & Engineering-II	1+2
PGD PHT 203	Food Quality Testing and Evaluation	1+2
PGD PHT 204	Entrepreneurship and Marketing	1+2
PGD PHT 205	Seminar	0+1
	Total	13
PGD PHT 206	Training	0+5
Total		18
Grand Total		35

DETAILED SYLLABUS FOR P.G. DIPLOMA COURSE IN POST HARVEST TECHNOLOGY

PGD PHT 101 - Principles of Post Harvest Management **4 Crs. (2+2)**

Post-harvest technology: Importance of post harvest management of food; Causes of post-harvest losses; Maturity, ripening and biochemical changes after harvesting; Post-harvest loss reduction technology including aspects of packaging, storage, post-harvest treatment; General principles and method of preservation; Principles and applications of modern techniques in food processing.

PGD PHT 102 - Food Chemistry and Physiology **4 Crs. (2+2)**

The structure, properties, and reactions of food constituents; Key principles and applications in the chemistry of food; Techniques to study the composition, nutritional value, quality, safety, and functionality of foods and food constituents, Molecular components of foods, their quantification, characterization, manipulations and interactions, Improvement of food quality, safety and nutrient content through enzymes.

Physicochemical properties of carbohydrates, lipids, proteins and other polymers in foods;

Effects of processing on nutritive content, quality, stability and value of foods; Fortification of processed food with vitamins, minerals and other additives.

PGD PHT 103 - Food Processing and Engineering– I **4 Crs. (2+2)**

Biological and physico-chemical principles of food materials in relation to processing; Introduction to material and energy balances-Fluid flow, physical and thermal properties of food materials, Fundamentals of heat and mass transfer, Application of momentum and heat transfer to unit operations in food processing; Unit operation in Post-Harvest processing (Cleaning, grading, drying, size reduction, evaporation, pasteurization, distillation);

PGD PHT 104 - Seed Processing Technology **4 Crs. (2+2)**

Introduction to Seed - Structure of seeds, Grouping of seed forms, Physical properties of seeds, Chemical composition of seeds; General seed production, Cereal / legume / forage seed production; Seed certification and seed quality testing, Seed health testing, Management of seed programs, Longevity and storage of seeds; Seed processing - Pre processing seed storage, Seed dryers, Pre cleaners and Fine cleaners: Air cleaners and gravity separators, indented cylinders, spiral separators, magnetic separators, Electronic color separators; Seed graders; Vibratory feeders; seed coaters; Seed polishers; Seed conveyers and elevators; Seed treater; bagging, weighing and storage equipments; General Seed processing plant and Modern (Computerized) seed processing plant- Features, selection, Operation and maintenance; Mobile seed cleaners; visit to local seed industry.

PGD PHT 105 Seminar **1 Crs.**

PGD PHT 201 - Food Microbiology **3 Crs. (1+2)**

Microbiology of food- General account of food microbes, Effects of microbial growth in foods, effect of food properties and new preservation techniques on microbial growth, and mode of action of

antimicrobials; Food borne infections and intoxications, Major classes of toxicants in the food supply; Methods to control, detect, and enumerate microorganism in food; Economic importance of controlling microbes in Food products; governmental regulation of food borne hazards; Microbiology of milk and milk products, Fermentation (Beverages and antibiotics); Standard techniques used for the microbiological examination of foods including new food borne pathogens, rapid identification methods.

PGD PHT 202 - Food Processing and Engineering – II **3 Crs. (1+2)**

Various size reduction machineries and energy requirement, Material handling equipments, Separating equipment based on size, shape and surface characteristics of food material, Heating and cooling of food products, mode of heat transfer, different type of heat exchangers, Principles of drying and drying equipments.

Processing of food grains, animal feed, seeds, fruits and vegetables, flowers, spices, dairy products, eggs and meat ;Various milling processes. Rice, wheat, maize and pulse milling; Parboiling of wheat and paddy. Storage of grains.

Visit to local Food processing plants like, floor mill, dal mill, rice mill, oil extraction mill etc.

PGD PHT 203 - Food Quality, Testing, Evaluation and safety **3 Crs. (1+2)**

Food quality testing and evaluation : Concept of food quality and its monitoring, The principles of quality assurance for the agro-industries, Establishment of decision-making processes using official, (government and industry) instrumental, chemical, and sensory procedures, the use of statistical tools in quality assurance and their applications; Development of hazard analysis procedures; Rheological techniques and instrumentation for measuring the mechanical properties of foods, relationship of these properties to food textural qualities, Application of methods to various foods and bio-renewable materials; Food specifications, grades, and standards; Sensory test methods and procedures used to evaluate the flavor, color and texture of foods.

Food legislation and safety: Food laws and regulation, Food safety issues, Food safety system, food safety and the environment;

PGD PHT 204 - Entrepreneurship and Marketing **3 Crs. (1+2)**

Entrepreneurship: The concept of entrepreneurship and the legal criteria for small and medium enterprise, The Institutional frameworks, Various business structures Contracts with a focus on sales contract, loan contract, contract of entrepreneurship, labour contract, Essential labour law, Loans and charges; Essential elements of intellectual property and unfair competition; Legal aspects of entrepreneurship-salient features, Basic principles of tax. Marketing- Understanding marketing, the Marketing environment, information Systems & Marketing research, Customer buying behavior, Segmentation, Target marketing & positioning, The Marketing mix: (Product, Price, Place, and Promotion), Strategic planning.

PGD PHT 205 Seminar **1 Crs.**

PGD PHT 206 Training **5 Crs.**