GANPAT UNIVERSITY

FACULTY OF SCIENCE

TEACHING AND EXAMINATION SCHEME

Program	B.Sc. Food Technology	Branch	Food Technology	Semester	VI	Version	1.0.0.0
Effective from	2020-21	Effective for batch admitted onwards		July 2018			

S. N	Subject Code	Subject Name	Theory/ Practical	Teaching Scheme								Examination Scheme						
				Credit				Hours Per Week				Theory Marks			Practical Marks			Total Marks
				Th	Tu	Pr	Total	Th	Tu	Pr	Total	CE	SE	ES	CE	SE	ES	
1	BFT601	Food Plant Design and Layout	Theory	2	-	-	2	2	-	-	2	20	20	60	-	-	-	100
2	BFT602	Industrial Project	Theory	16	-	-	16	16	-	-	16	40	60	100	-	-	-	200
		Total		18	-	-	18	18	-	-	18	60	80	160	-	-	-	300

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Semester		VI				Version			1.0.0.0			
Effective From Academic Year				2020-21		Effective for the batches admitted onwards					July 2018	
Subject Code		BFT601		Subject Name		Food Plant Design and Layout						
Teaching scheme						Examination scheme						
	Th	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	2	-	-	2	Theory	20	20	60	100	Theory	1 hr.	3 hr.
Credit	2	-	-	2	Practical	-	-	-	-	Practical	-	-

Pre-requisites

Nil

Scope and Objectives:

To impart basic knowledge about food plant design and layout.

To know about the importance of building, equipments, products and process design.

Learning Outcomes:

Know the concept of food plant design and layout

Understand the importance of food plant design, requirement, equipment and location.

Apply the proper drainage, CIP system, dust removal, fire protection system to enhance the productivity and safety of food premises.

Analyse the effect of various parammeters on food plant design and layout

Apply the skill of computer for the development of flow charts of plant design.

Develop the skill to design the food plant and layout for sustainable and safe working

Syllabus- Theory

Unit	Content	Hrs
1	**Introduction** General principles of food plant Design and layout, Classification of food processing plants, food plant design concepts, situations giving rise to plant design problems and general design considerations (technical, economic, legal, safety and hygiene). Executive design making in a food plant.	9
2	**Food Plant Location and Size** Factors affecting plant location, their interaction with plant location, location theory models for evaluation of alternate locations. Economic plant size, factors affecting the plant size (technical and economical), raw material availability, market demand, competition in the market, return on investment etc. Procedures for estimation of economic plant size (breakeven analysis and optimization), estimation of volume of production for each product.	9
3	**Equipment, Product and Process Design** Process equipments, material handling equipment, service equipment, instruments and controls, considerations involved in equipment selection, economic analysis of equipment alternatives using optimization techniques and cash flows, economic decision on spare equipment, prediction of service life of the equipment Design of product, product specifications, least cost mix of raw materials, process design, process selection considering technical, economic and social aspects. Process planning and scheduling, flow sheeting, flow	9

	diagrams and process flow charts including their design and computer aided development of flow charts.	
4	**Plant Layout** Types of layouts, considerations involved in planning an efficient layout, preparation and development of layout, evaluation of alternate layouts, use of computers in development and evaluation of layouts, equipment symbols, flow sheet symbols, electric symbols, graphic symbols for piping systems, standards for space requirement and dimensions, distances between critical plant areas and for different plant facilities.	9
5	**Building, Service Facilities and Plant Surroundings** Requirements in respect of building type, wall, ceiling and floor construction, building height and building materials. Requirements of the steam, refrigeration, water, electricity, waste disposal, lighting, ventilation, drainage, CIP system, dust removal, fire protection etc. Design and installation of piping system, codes for building, electricity, boiler room, plumbing and pipe coloring. Planning of offices, laboratories, lockers and toilet facilities, canteen, parking lots and roads, loading docks, garage, repair and maintenance shop, ware houses.	9
Text and Reference books		
1	Maroulis Z.B. and Sarvacos, G.D. Food Plant Economics. Published by CRC press	
2	Rao, D. G. (2010). Fundamentals of Food Engineering, PHI learning Private Ltd.	
3	Moore, J.M. Plant Layout and Design Published by The Mcmillan company.	
4	Backhusrt J.R. and J.H. Barker. Process Plant Design Published by Heimann Educational Books, London.	
5	Peters M.S. and K.D.Timmerhaus. Plant Design and Economics for Chemical Engineers Published by McGraw-Hill.	
6	Leesley M.E. Computer Aided Process Plant Design. Published by Gulf Publishing Company, Houston.	
7	Rosenau, M.D. Project Management for Engineers Published by Van Nostrand Reinhold Co., New York.	

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Effective from Academic Year				2020-21		Effective for the batches admitted onwards					July 2018	
Subject Code		BFT602			Subject Name			Industrial Project				
Teaching scheme					Examination scheme							
	Th	Tu	Pr	Total	Marks	CE	SE	ES	Total	Duration	SE	ES
Hours	16	-	-	16	Theory	40	60	100	200	Theory	1 Hr.	3 hr.
Credit	16	-	-	16	Practical	-	-	-	-	Practical	-	-

Pre-requisites
Nil

Scope and Objectives:	
	To impart basic knowledge about food industries.
	To know about the importance of industrial products, processing and project design.

Learning Outcomes:	
	Know about the function and role of various food industries
	Understand the working environmetn of food industries
	Analyse the product and techniques for various food industries
	Compare the working and technical differences between varous foodindustries
	Apply the communication and technical skill to secure position in food industries
	Developed the technical and managment skill to work with industrial professonal.