

MAHARASHTRA INSTITUTE OF TECHNOLOGY, AURANGABD

An Autonomous Institute Affiliated to Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra (India)

Syllabus of Bachelor of Vocation

In

Food Processing

Under Choice Based Credit System (CBCS)

Under Faculty of Science and Technology

(Effective from 2022-23 and onwards)

NSQ	QF Level -5								Seme	ester -I
Sr.	Course	. Course Title	Credit	Contact Hr/Wk			Evaluati	on Scheme		ESE
No.	Code			L	P	MSE	TA	ESE	Total	nour
		*	Theo	ory						
1.	VFP101	Food Quality Analysis	3	3	-	10	15	25	50	1.5
2.	VFP102	Food Refrigeration and Supply Chain	3	3	-	10	15	25	50	1.5
3.	VFP103	Food Plant Sanitation	3	3	-	10	15	25	50	1.5
4.	VFP104	Food Plant Equipment	3	3	-	10	15	25	50	1.5
			Lab/Pra	actical						
5.	VFP121	Food Quality Analysis Laboratory	1.5	-	2	-	25	· 25	50	-
6.	VFP122	Food Refrigeration and Supply Chain Laboratory	1.5	-	2	-	25	25	50	-
		On Job Train	ing (OJT)	/Qual	ification	Packs*				
	VFP131	Assistant Lab Technician FIC/Q7601								
7.	VFP132	Cold storage Technician FIC/Q7004	15	-	7-8 weeks		50	150	200	-
	VFP133	Plant Biscuit Production Specialist FIC/Q5003								
*Any	one On-Job-Tr	raining as per guidelines of AICTE & S	SC for the	given	skill set	s for 150	Marks Exte	ernal Assessr	nent by NS	DC/SSC

Curriculum for B. Voc Food Processing

NSQ	F Level -5								Seme	ster -II	
Sr.	Course	Course Title	Credit	Co H	ntact r/Wk		Evaluat	ion Scheme ESE		ESE	
No.	Code			L	Р	MSE	TA	ESE	Total	noui	
			Theo	ory				1.1.1.1			
1.	VFP151	Entrepreneurship Development	3	3	-	10	15	· 25	50	1.5	
2.	VFP152	Bakery, Confectionery and snack products	3	3		10	15	25	50	1.5	
3.	VFP153	Food Packaging Technology	3	3	-	10	15	25	50	1.5	
4.	VFP154	Processing of Meat & poultry Products	3	3	-	10	15	25	50	1.5	
			Lab/Pra	actical							
5.	VFP171	Bakery, Confectionery and snack products Laboratory	1.5	-	2	-	25	25	50	-	
6.	VFP172	Food Packaging Technology Laboratory	1.5	-	2	-	25	25	50	-	
		On Job Traini	ing (OJT)	/Qual	ification	Packs*					
	VFP181	Baking Technician FIC/Q5005			1				G		
7.	VFP182	Packing Machine Worker FIC/Q7002	15	-	7-8 weeks	-	50	150	200	-	-
	VFP183	Food Products Packaging Technician FIC/Q7001						Mas	ster	Cop	y
*Any o	one On-Job-Tr	raining as per guidelines of AICTE & SS	SC for the	given	skill sets	s for 150) Marks Exte	nal Assessi	nent by NS	DC/SSC	

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NSC	QF Level -6								Seme	ester -I
Sr.	Course	Course Title	Credit	Co H	ntact r/Wk		Evaluat	tion Scheme		ESE
No.	Code			L	Р	MSE	TA	ESE	Total	nour
			Theo	ry				•		1
1.	VFP201	Food Process Technology-III	3	3	-	10	15	25	50	1.5
2.	VFP202	Energy conservation and management	3	3	-	10	15	25	50	1.5
3.	VFP203	Sensory Evaluation of Food	3	3	-	10	15	25	50	1.5
4.	VFP204	Food Plant Layout	3	3	-	10	15	25	50	1.5
			Lab/Pra	ctical						
5.	VFP221	Food Processing Technology and Sensory Evaluation – Lab	1.5	-	2		25	25	50	-
6.	VFP222	Food Plant Layout- Lab	1.5	-	2		25	25	50 .	-
	-	On Job Traini	ng (OJT)	/Qual	ification	Packs*				,
	VFP231	Fruits and Vegetable Canning Technician FIC/Q0107							P	
7.	VFP232	Fruit Pulp Processing Technician FIC/Q 0106	15	-	7-8 weeks		50	150	200 ·	-
	VFP233	Fruits and Vegetable Drying/Dehydration FIC/Q0105								

Curriculum for B. Voc Food Processing

NSC	PF Level -6								Seme	ester -II
Sr.	Course	Course Title	Credit	Co Hi	ntact r/Wk		Evalu	ation Scheme	•	ESE
No.	Code			L	Р	MSE	ТА	ESE	Total	nour
			Theo	ory						
1.	VFP251	Fish and Poultry Processing	3	3	-	10	15	25	50	1.5
2.	VFP252	By Product Utilization	3	3	-	10	15	25	50	1.5
3.	VFP253	Marketing Management and Trade	3	3	-	10	15	25	50	1.5
4.	VFP254	Instrumentation and Process Control	3	3	-	10	15	25	50	1.5
			Lab/Pra	actical						
5.	VFP271	Fish and Poultry Processing -Lab	1.5	-	2	-	25	25	50	-
6.	VFP272	By product Utilization-Lab	1.5	-	2	-	25	25	50	-
		• On Job Train	ing (OJT)	/Qual	ification	Packs*				
-	VFP281	Fish and Sea Food Processing Technician FIC/Q4001	15		7-8		50	. 150	200	-
1.	VFP282	Purchase Assistant Food and Agriculture FIC/Q7005	15		weeks		50			
*Any	one On-Job-T	raining as per guidelines of AICTE & S	SC for the	given	skill sets	s for 150	Marks E	xternal Assess	ment by NS	DC/SSC
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Curriculum for B. Voc Food Processing

NSQ	QF Level -7						•		Seme	ester -I
Sr.	Course	Course Title	Credit	Co Hi	ntact r/Wk		Evaluat	ion Scheme		ESE
No.	Code			L	Р	MSE	ТА	ESE	Total	nour
			Theo	ry		*		, v		
1.	VFP301	Ice cream and Frozen Desserts	3	3	-	10	15	25	50	1.5
2.	VFP302	Traditional Indian Dairy Products	3	3	-	10	15	25	50	1.5
3.	VFP303	Food Quality, Safety and Certification	3	3	-	10	15	25	50	1.5
4.	VFP304	Financial Management and Cost Accounting	3	3	-	10	15	25	50	1.5
			Lab/Pra	actical						
5.	VFP321	Ice cream and Frozen Desserts -Lab	1.5	-	2	-	25	25	50	-
6.	VFP322	Traditional Indian Dairy Products- Lab	1.5	-	2	-	25	25	50	-
		On Job Traini	ng (OJT)	/Qual	ification	Packs*				
	VFP331	Ice Cream Technician FIC/Q2004								
7.	VFP332	Traditional Snack and savoury Maker FIC/Q8501	15	-	7-8 weeks		50	150	200	-
	VFP333	Butter and Ghee Processing Operator FIC Q/2003								
*Any	one On-Job-T	raining as per guidelines of AICTE & SS	C for the	given	skill sets	s for 150) Marks Exte	ernal Assessi	ment by NS	DC/SSC

Sr.	Course	Course Title	Credit	Co H	ontact r/Wk		Evaluat	ion Scheme	•	ESE
No.	Code		L P		MSE	ТА	ESE	Total	l nour	
			Theo	ry						
1.	VFP351	Project Preparation and Management	3	3	-	10	15	25	50	1.5
2.	VFP352	Entrepreneurship Development	3	3	-	10	15	25	50	1.5
			Lab/Pra	ctical						
3.	VFP371	Project	9	-	4	-	100	100	200	-
		On Job Train	ing (OJT)	/Qual	ification	Packs*		•	1. Sec. 1.	
	VFP381	Production Manager FIC Q/9003								
4.	VFP382	Processed Food Entrepreneur FIC/Q9001	15	-	7-8 weeks		50	150	200	-
	VFP383	Multi Skill Technician FIC/Q9007							1200	

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	N	Iaharashtra]	Institute of	Techno	ology,	Aurangat	oad.	
			(An Autono	mous Instit	tute)			
			B.Voc. (For	od Proces	sing)			
NSQF I	Level-5	• • V	FP101: Foo	d Quality	Analy	sis	Seme	ster-I
Te	aching	Scheme				Examinati	ion Scheme	
Lectures		03Hrs./Week			MSE		10 Marks	
Practical		-			TA		15 Marks	
Credits		03			ESE	25 Marks		
					Durat	ion of ESE	1.5 hours	
Course C	Dutcom will be	es (CO) able to						
1.	To pro	ovide students v	with the basic	c practical	skills	required to	prepare for	ods, and
	evalua	te raw and proce	essed foods	1				
2	Tolena	able students to	evaluate foor	l establish	ments	for their cor	sumer accei	otability
and sanitation attributes								
Unit Course Content H						Hours		
Unit 1	Unit 1 Basics of Food Science and Food Analysis, Concept, objectives and need				(06)			
	of food quality.							
Unit 2	Measu	rement of colo	r, flavor, co	nsistency,	visco	sity, texture	and their	(05)
	relatio	nship with food	quality and o	compositio	on			·
Unit 3	Sampl	ing; purpose, sa	mpling techn	iques, san	npling	procedures f	for liquid,	(06)
	powde	ered and granula	r materials, S	Sensory ev	aluatio	on methods,	panel	
	selecti	ion methods, Int	erpretation of	f sensory I	Results	. Instrument	al method	
	for tes	ting quality.	1					
Unit 4	Food	adulteration and	food safety.	. TOM an	d TOO	, consumer	references	(06)
	and a	cceptance, Food	Safety Mar	nagement	Syster	ns GAP, G	HP, GMP,	
	Hazar	ds and HACCP	(Hazard anal	ysis and c	ritical	control point	t).	
Unit 5	Sanita	tion in the food	l industry (S	SOP), Fo	od La	ws and Reg	ulations in	(07)
	India, FSSAI, Food grades and standards BIS, AGMARK, PFA, FPO,							
1	ISO 9	9000, 22000 S	eries. CAC	(Codex	Alime	entarius Con	mmission),	
	Tracea	ability and Qual	ity Assurance	e system i	n a pro	cess planBio	osafety and	
	Bioterrorism.							
Text/Ref	ference	Books ·						
Sr. No.		Book		Auth	or		ublisher	1.
1	A lal	boratory Manu	al of food	Sehgal		I.K. Interna	itional publi	sning
	Analy	sis		S.2016		House Pvt.	ltd	
								·

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NOOF	Louis 1.7	VED103	B. VOC. (FOC	aration and Supp	ly Chain	Somo	ster-I
NSQF	Level-5	VFP102	: Food Keirig	eration and Supp	Fyaminat	ion Scheme	ster-r
It	acning	03 hrs/Week	ing r william	MSE	Блантпа	10 Marks	-
ectures	A 201	US IIIS/ WEEK	intin W	TA	veniona:	15 Marks	
Tactical	dita	- 03	Willist	FSF	-	25 Marks	_
otal Cle	uns	05	Air Arona	Duration	ofESE	1.5 hours	-
ourse	Jutcom	es (CO)		Durution	I OI LOL	1.0 nours	
tudents	will be	able to					
1.	To stu	dy the fundar	nental reason	for having a refri	gerator is	to keep for	od cold.
	Cold to	emperatures he	elp food stay fr	esh longer.			
2.	To illu	ustrate purpose	of the Refrige	eration & supply ch	nain is to r	nake produc	:t
	availat	ole to meet cus	tomer demand				
Unit			Cours	e Content			Hours
Unit 1	Princip	oles of refrige	ration: Defini	tion, background	with seco	nd law of	. (02)
on the	thermodynamics, unit of refrigerating capacity, coefficient of						
	performance; Production of low temperatures, reverse Carnot cycle						
an and	Common refrigerants and their properties: classification, nomenclature,						
	desirable properties of refrigerants- physical, chemical, safety,						
	thermo	odvnamic and	economical.				
Unit 2	Azeoti	copes: Compo	nents of vanc	our compression r	efrigeratio	on system.	(07)
omt 2	evaporator compressor condenser and expansion valve: Ice						
	evapor	manufacture principles and systems of ice production Treatment of water					
	finanui	ling ing bring	freezing ton	la ice cons air agi	totion au	ality of ice	
ties.	for ma	iking ice, brine	s, freezing tan	ks, ice calls, all agi	second and	anty of ice	(07)
Unit 3	Cold s	torage: Cold s	tore, design of	cold storage for di	inerent ca	legories of	(07).
	food 1	resources, size	e and shape,	construction and	material,	insulation,	
	vapou	r barriers, floor	rs, frost-heave,	, interior finish and	l fitting, e	vaporators,	
	autom	ated cold sto	res, security	of operations Re	frigerated	transport:	
	Handl	ing and distrib	ution, cold cha	in, refrigerated pro	oduct hand	lling, order	
	pickin	g, refrigerated	vans, refrigera	ted display.			
Unit 4	Air-co	nditioning: M	leaning, factor	rs affecting comf	ort air-co	nditioning,	(07)
	classif	ication, sensib	ole heat factor	, industrial air-cor	nditioning	, Problems	
	on se	ensible heat t	factor; Winter	r/summer/year-rou	nd air-co	nditioning,	
	unitar	y air-condition	ning systems,	central air-condit	ioning Pr	oblems on	
	sensib	le heat factor:	Winter/summ	er/year round air-o	conditioni	ng, unitary	
	air-co	nditioning syst	ems, central ai	r-conditioning.			
Unit 5	Physic	logical princi	inles in air-co	anditioning air di	istribution	and duct	(07)
Unit 3	dagio	mathad Dasi	on of complet	e air-conditioning	systeme 1	umidifiers	(01)
	design	dahumi difi an	Design	complete air con	nditioning	evetame	
	and	aenumidifiers.	Design of	complete alf-col	nannonnig	, systems,	
	humid	lifters and dehu	imidifiers	Jalacha			
	Manag	ging cold Supp	oly chain.	Maaropin			

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Sr. No.	Book	Author	Publisher
1	Refrigeration and Air	W.F.	McGraw-Hill Book Co., New
	Conditioning	Stoecker and	York, USA. 1982
	strigeration and Supply Chain	J.W. Jones	(2 nd edition)
2.	Refrigeration & Air Conditioning	William C.	Delmar, Cengage Learning,
	Technology	Whitman,	NY, USA. 2017.
	TA 1	William	Practical -
3.	Refrigeration and Air	Arora RC	PHI Learning, New Delhi 2010
	Conditioning		Commence Commence

Students will be able to

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	N	laharash	tra Institute of (An Autono	f Technol	o gy, Auranga te)	bad.	
NSOF	Level-5		VFP103: Foo	d Plant Sa	nig)	Seme	stor_I
T	eaching	Scheme	VII 105. 100		Examinat	tion Scheme	ster-i
Lectures	caeming	03 hrs/We	ek	N	ASE	10 Marks	
Practical		-		T	Ϋ́Α	15 Marks	
Total Cr	edits	03		E	ESE	25 Marks	~
			395	I	Duration of ESE	1.5 hours	
Course Students	Outcom will be	able to	Durat		1000		
1.	Under	stand desire	d manufacturing	practices an	d guidelines for	food industry	1.
2.	Illustra	te good prac	tices of personal hy	giene and sa	nitation in food in	dustry.	
Unit			Cours	e Content	na anhehumist er	and at 1	Hours
Unit 1	Good	manufactur	ing practices and	current goo	od manufacturing	g practices.	(06)
	Sanitation and the food industry: Sanitation, sanitation laws and regulations and guidelines, establishment of sanitary, potential risks of food borne bioterrorism, bioterrorism protection measures and role of pest management in bio-security.						
Unit 2	Relationship of microorganisms to sanitation, Food contamination and protection against contamination. Personal hygiene and sanitary food handling: Role of HACCP in sanitation, quality assurance for sanitation cleaning compounds, handling and storage precautions.Sanitizers, sanitizing methods, sanitation equipment, waste product handling.						(06)
Unit 3	Pest c birds, and c buildin consid	ontrol: Inse use of pest onstruction ng constr lerations and	ct infestation, co icides and integra for food proces uction conside l pest control desi	ckroaches, ated pest ma sing: Site crations, j ign.	insect destruction anagement. Sani- selection, site p processing and	on, rodents, tary design preparation, d design	(06)
Unit 4	Low-moisture food manufacturing and storage sanitation: Sanitary construction considerations, receipt and storage of raw materials and cleaning of low-moisture food manufacturing plants.						(06)
Unit 5	Fruit a sanitar proces	and vegetab ry construct ssing plants,	le processing pla ion consideration cleaners and sani	ant sanitations, cleaning itizers, cleaning	on: Contamination considerations, on ning procedures	on sources, cleaning of	(06)
Referen	ce Book	Date Else	Hotek, H	miot bo	nic Design of fo	Hyele	
Sr. No.	Book		(1700) bla	Author	Publisher	Factor	
1	Biotec Proces	hnology ssing Mecha	and Food nics	Meenaksh Paul	ii Gene-Tech 2007	Books, Nev	w Delh
2.	Processing Mechanics Paul 2007 Biotechnology - Expanding B.D. Singh Kalyani Publishers, New Horizons Delhi, 2014.						

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emester-1	Maharashtra Inst (A B.V	titute of Technology, Aur In Autonomous Institute) Voc. (Food Processing)	angabad.				
NSOF	Level-5 VFP1	04: Food plant Equipment	Seme	ster-I			
· To	eaching Scheme	Ex	amination Scheme	Leci			
Lectures	03 hrs/Week	MSE	10 Marks	JET 1			
Practical	Stvi CL	ТА	15 Marks	1 013			
Total Cr	edits 03	ESE	25 Marks				
		Duration of	fESE 1.5 hours	10J			
Course Students	Outcomes (CO) will be able to	lesired manufacturing practices	Understand	1			
1.	To understand concepts of	plant layout.					
2.	To have knowledge on bui	ilding, utilities in the plant.					
3.	To know the importance o	f proper food plant design and	safety.	and the			
Unit	EWAI ROUGIANS JUDIO	Course Content	100 Marana	Hours			
Unit 1	Introduction- Definition, Basic concepts of plant layout and design with Special reference to food process industries. Application of HACCP concept, ISO, FPO & MPO requirements in food plant layout and design.						
Unit 2	Plant Location- Influence of location on plant layout, location factors, location theory and models, Economic plant size, types of manufacturing processes like continuous, repetitive and intermittent processes.						
Unit 3	Plant Layout- Preparation of a Plant Layout, Plant Layout problem, importance, objectives, classical types of layouts. Evaluation of layout. Advantages of good Layout.						
Unit 4	Plant Building-Consider buildings, choice of build walls, doors, Windows, prevention and illumination	Plant Building- Considerations in building design, type of factory buildings, choice of building construction, material for floors, foundation, walls, doors, Windows, drains etc., ventilation, fly control, mold					
Unit 5	Plant layout & Equipm and biscuit industries; including Beverages; mi processing industries.	ent Layout-Plant layout and fruits and vegetables proc lk and milk products; meat,	design of bakery essing industries poultry and fish	(06)			
Sr. No	Book	Author	Publisher				
1	Hygienic Design of food	John Holah, H.L.M	Elsevier Publicat	tion.			
New Data	Factories	Lelieveld,(2011)	io, Book Biotechnolo: Processing				
2.	Food Plant Designs	Antonio Lopez Gomez, Gustav Canovas,(2005)	CRC Press Publi	cation			

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		Maharashtra Institut (An Au B.Voc. (G. S. Mandal's e of Technology, Au tonomous Institute) (Food Processing)	rangabad.					
NSQF	Level	-5 VFP121: Fo	od Quality Analysis Lab	Semester-I					
Т	'eachir	ng Scheme •	Ex	xamination Scheme					
Practica	al	Hours/week	TA	25 Marks					
Credits	. she	1.5	ESE/PE	25 Marks					
Sr.No.		List of Experiments							
1	Estimation of Reducing and Non-Reducing Sugars in Honey by Lane Eynon Method.								
2	Estin	nation of Proteins in food us	ing the Biuret Method	zueiner in vhut?					
3	Sapo food	nification, Iodine, and Acid s.	Value of Edible Oils – f	resh, stale and packed					
4	Estin	nation of Lactose in Milk	inte thisir twonerlies and	musicibar in utimiz					
5	Estin	nation of Ascorbic Acid in F	oods	6 Estimation of refe					
6	Estin	nation of Beta-Carotene in F	oods	7 Study of referen					
7	Estimation of Calcium, Phosphorous and Iron content of Foods								
8	Estimation of Calcium, Phosphorous and Iron content of Foods								
9	Estimation of Anti-Nutritional Factors in Foods								
		Study of sampling techniques from food processing establishments							

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	N	Jaharashtra	G.S.1 Institute of (An Autonor B.Voc. (Foo	Mandal's Technology, Aur nous Institute) d Processing)	rangabad.
NSQF I	Level-	5 VFP122: I	Food Refrigera	ation and Supply Cha	in Lab Semester-I
Te	aching	Scheme *		Exa	amination Scheme
Practical	Mad	2 Hours/week	AT	TA	25 Marks
Credits	halvi -	1.5	KUSA	ESE/PE	25 Marks
Sr.No.			List	of Experiments	07130
1	Study	of vapour comp	pression refrig	eration system	
2	Deter	mination of CO	P of vapour co	mpression refrigerati	ion system
3	Study	of various type	s of compresso	ors and condensers us	sed in refrigeration system
4	Study refrig	of various ty eration system	pes of evapo	orative coils and e	xpansion valves used in
5	Study	of refrigerants,	their propertie	es and charts	 Estimation of Lac
6	Estim	ation of refriger	ation load for	meat and poultry pro	ducer
7	Study	of refrigeration	system for da	iry plant	6 Estimation of Bob
8	Study	of refrigeration	n system of da	airy plant; Estimation	n of refrigeration load for
	ice-ci	eam			
9	To st	udy of cold supp	oly chain and e	explain their types of	cold supply chain
10	To ex with	xplain the cold their importance	supply chain	their component and	1 process of supply chain

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Maharashtra Insti (Ar B.V	tute of Technology, Auran Autonomous Institute) oc. (Food Processing)	igabad.	Lectures
SQF Level -5 On Job Ti	raining/Qualification Packs*	S	emester-I
Teaching Scheme	Exami	nation Sch	eme
actical 7-8 weeks	ТА	50 Ma	irks
edits 15	ESE/PE	150 M	larks
	- 01 si	Will be ab	Students
P131 Assistant Lab Technicia	in FIC/Q7601	Woax of	
P132 Cold Storage Technician	n FIC/Q7004	To have	
P133 Plant Biscuit Production	1 Specialist FIC/Q5003	50 Mortes Exte	arnal Assassment
NSDC/SSC	ALLE & SSC for the given skin sets for 1.	JU IVIAIKS EXIC	and Assessment
		Project	
h, characteristics and qualities of			i tinu .
weltorine, evaluation and follow	a summer in manufactor lase		
	nedising: Kole, moonily of anne		
evanation of projects: Otenata			
			Unit 5
idium enterprises (SMEs)/SSIs;			
		processi	
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			Master Ot
			Sr. Mo.

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			B.Voc. (Food	Processi	ng)		C	
NSQF	Level-5	VFP151: E	ntrepreneursh	ip Develo	pme	nt	Semest	ter-II
Te	eaching	Scheme	control accomono	tu A nA)		Examinat	ion Scheme	
Lectures		03 hrs/Week	Food Process	N	1SE		10 Marks	
Practical	8	- "saloie" no	noillenO\9a		A	12	15 Marks	4
Total Cro	edits	03		E	SE	CECE.	25 Marks	
els :	50 Ma	A	F		Jurati	on of ese	1.5 nours	19
Course	Outcom	es (CO)						
Students	will be	able to	rique procedure	es for start	ing a	small scale	unit of produ	iction
1.	TO KNO	ow about the val	hous procedure		nig a	to start a sm	all scale	
2.	To hav	e a basic idea a	bout now to pr	epare a pro	ojeci	io start a sir	lan scale	
-	Indust	ry.	+ hot		da aci	istance for	starting a ne	137
3.	To kno	ow about variou	s agencies that	can provi	ue as:	sistance for	starting a ne	vv
	Projec	t.	Caunda	Contont				Hour
Unit	Entron	man aunghine Ima	Course	rowth cha	aracte	ristics and	malities of	(06)
Unit I	Entrep	breneursnip. mij	ontrance and g	in othics	and	social respo	nsihilities.	(00)
	entrepreneur, role of entrepreneurship, eunes and social responsionnes,							
	Entrep	breneurship deve	elopment,Asse	Undian and		alitical and		
	the In	dian economy;	Overview of	Indian soc	nai, p	onucar and	individual	
	systen	ns and their	implications f	tor decision	on n	haking by	individual	
	entrep	reneurs;						(0.0)
Unit 2	Globa	lization and th	e emerging b	ousiness/er	ntrepr	eneurial en	vironment;	(06)
	Conce	ept of entre	epreneurship,	entreprei	neuria	al and	managerial	
	charac	cteristics, manag	ging an enterp	rise, motiv	vatior	and entrep	oreneurship	
	develo	opment, importa	ance of planning	ng, monito	oring,	evaluation	and follow	
	up, ma	anaging compet	ition.					
Unit 3	Entre	oreneurship dev	velopment pro	grams, S	WOT	analysis,	generation,	(06)
	incuba	ation and com	mercialization	of ideas	and	innovation	s; Women	
	entrer	reneurship: I	Role and	importance	e, 1	problems;	Corporate	
	entrer	reneurship: Rol	e, mobility of	entreprene	ur.			
Unit 4	Entre	preneurial motiv	vation: Plannir	ng and eva	luatio	on of project	cts: Growth	(06)
Unit 4	of fir	m project ide	ntification and	selection	, fac	tors induci	ng growth;	
	Proie	t feasibility st	idy. Post plan	ning of p	roject	project pl	anning and	
	contro	1. New venture	management.	Creativity	5		U	
ITuit F	Gove	mment scheme	and incentiv	es for pro	motio	n of entrer	reneurship:	(06
Unit 5	Gove	mment policy	on small an	d medium	n ent	erprises (S	MEs)/SSIs:	
	Gove	minent policy	olicica relever	a mean	proc	essing sect	or: Venture	
10.00	Expo	t and import p	ming and ising	ventures	pibl	ic-nrivate n	artnershins.	
	capita	u; Contract Tari	induction in Joint	ventures,	publ	stics of L	ndian food	
	Overv	view of food	industry inp	uis; Char	acteri	ity of husin		
	proce	ssing industries	and export; So	ocial respo	IISIDII	ity of busin	055.	
BM								
0.11	Deal			Author		Publisher		-
Sr. No.	BOOK	nrangurshin Do	velonment	CB G	unta	S. Chand	& Sons, Ner	w Dell
	Entre	preneursnip De	veropment	C.D. U	upia	S. Chana		

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Γ	100	the of Tashadagan to start	and N.P.	2012
		2	Srinivasan	
	2.	Entrepreneurship Development	Anil Kumar,	New Age International
		ery, Confectionery and Snack	S.,Poornima,	Publishers, New Delhi. 2003
		products	S.C., Mini,	
		ouenimex3.	K., Abraham	Leaching Scheme
T	3.	Management: Theory and Practice	Jayashree, K	Sultan Chand & Sons, New
		AL	Gupta, C.B.	Delhi. 2001
		400		Sto California Into I

	Will be able to		
	Manufacturing of sugary- Sugaryane, junters, Ithandasari meat, new sugar,	·Unit i	
	refined sugar, white sugar, beet sugar, manufacture of sugar from sugar i		
	the second secon		
1			
		1.200	
	Gatta hand at also Yadaabaa fa Maal. Calu, to a		
	inclem instantion for a minimum frequent - chips, which, papers, i		
	Plate and the produce pages states structure from the starks,	0.089	
	contrology in Vegenole-mated snacks, Lectureleyy for Control Nuls,	Mast	er Conv
	and and selected and processing rectinicacy. Coloring and	MADE	U UUPJ

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inte	Age	B	B.Voc. (Food P	rocessing Te	chnology)	2. Entrop	
NSQF	Level-5	VF	P152: Bakery,	Confectione products	ery and Sna	ck Seme	ester-II
Т	eaching S	Scheme	deep a St		Exa	mination Scheme	
Lectures	5	03 hrs/Wee	ek	1	MSE	10 Marks	-
Practical	1	-		-	ГА	15 Marks	
Total Cr	edits	03	and and and a second	I	ESE	25 Marks	
<u> </u>		(50)		1	Duration of I	ESE 1.5 hours	
Students	will be a	able to					
1.	To dev	elop skills o	of the student re	elated to Bake	ery confection	onery.	
2.	The stu bakery	udent will and confec	gain an unders tionery industry	standing of p	processing to	echniques utilize	ed in th
3.	To acque snack f	uaint studer foods.	nts with the prir	ncipals involv	ved in the ma	anufacture of cor	nmerci
Unit			Cou	rse Content		Sector Sector	Hou
Unit 1	Manufa	acturing of	sugar:- Sugarca	ne, jiggery, l	chandasari s	ugar, raw sugar,	(06)
	confect candy, fudge, o	tionery crys lemon dro cream, cara	stalline and amo op, china balls mel, toffee, loz	orphous conf , soft candy enges, gumdi	ectionery, ro , lollypop, rops, honeyc	bock candy, hard marshmallows, comb candy.	
Unit 2	strength evaluate factors, ingredie the qual	h, protein e bread an Principles ents and th lity of bread	eat:-Wheat – F content, sound d bread –Whe of baking an eir functions, r d.	Properties, Q ness. Metho at quality – ad Bread ma role of bakin	uality – Ha dology and processing f unufacturing g ingredient	ardness, Gluten approaches to factors, product :-Major baking ts in improving	(06)
Unit 3	Cake and Biscuit manufacturing:-Processing of cakes and biscuits- ingredients, development of batter, baking and packing, Spoilage in cakes and biscuits. Ingredients, dough development methods - straight dough, sponge dough, moulding, proofing, baking, packing, spoilage, bread staling, methods to reduce bread staling and spoilage				(06)		
Unit 4	Grain-b toasted, salted, s Product instant p	based snack , puffed, po spiced, swe ts ,Technolo pre-mixes.	s- Technology opped, flaked , etened ,Techno ogy for Formul	for Whole Technology f logy for Batt ated, Produc	Grains Sna for Coated (er-Based and ts – chips, v	acks – roasted, Grain Snacks – d Dough-Based wafers, papads,	(06)
	Horticu	lture produ	ce-based snack	s -Technolog	gy for Fruit	-Based Snacks,	

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Sr. No.	Book	Author	Publisher
1	Bakery products and science	Zhou.W,HuiY,H	Wiley Blackwell Publishers
	technology	:(2014),	Frederic
2.	Baking science & Technology	Pyler.E.J.andGo	Sosland publication
3	(animasing)	rton,L.A (2009)	
3.	Snacks food	Gordon	NSNE LEVELS
Marke	-1216	B.R.1997	Smona 6 gnmosa 1

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	N	Iaharas	htra II	An Autonomous B.Voc. (Food Pr	chnology, A Institute) rocessing)	urangal	oad.	
NSOF	evel-5		VFP1	53: Food Packa	ging Techno	logy	Semes	ter-II
Te	aching	Scheme			Examination Scheme			
Lectures	aviiiig	03 hrs/W	Veek	BRIDG	MSE		10 Marks	
Practical		-			TA		15 Marks	
Total Cre	dits	03			ESE		25 Marks	
Total Cic	and	0.5			Duratio	n of ESE	1.5 hours	
Course (Jutcom	es (CO)						
Students	will be	able to						
1.	To kn	ow the No	ovel For	d Technology, f	unction of page	ckaging, ty	pes of packa	iging.
2	To get	t aware al	out the	nackaging mater	ials			
3	Tour	derstand	propert	ies of packagir	g materials	their meth	ods of test	ing ar
5.	evalua	ation	propert	nes or puonuBit	0			0
Unit	oruiut		A ALAS	Course Co	ontent			Hou
Unit 1	Novel	Food	Packag	ging Technolog	gy:-I: Novel	Food	Packaging	(06
Unit I	Techr	nology 12	Period	s Introduction	to principles	of Food	Packaging.	
	Funct	ions of	nackagi	ng Types of	Package I	Packaging	materials	
	Functions of packaging, Types of Package. Packaging materials,							
	Desirable properties of Packaging Materials, Selection of packaging							
	mater	ial for dif	ferent fo	oods.				
Unit 2	Metho	ods of pa	ckaging	g and packaging	g equipment's	:-Differen	t forms of	(06
	packa	ging suc	h as R	igid, Semi rigi	d, Flexible	forms. Pro	operties of	
	packa	ging mat	erials t	heir methods o	f testing and	l evaluation	on; Barrier	
	prope	rties of r	ackagir	ng materials: Pe	rmeability, C	as transm	ission rate	
	(GTR) Water v	vapor tra	ansmission rate (WVTR) and t	heir measu	irement.	
Ilnit 2	Glass	Glass.	compo	sition propertie	s types of a	losures, r	methods of	(06
Unit 5	lass	Olass.	Matala	Tinplata contai	ners tinning	process of	omnoments	. (
	bottle	making,	Ivicials.	Thiplate contained	ners, tilling	luminum	containers	
	of th	iplate, tin	Tree st	teel (IFS), type	s of calls, A		containers,	
	lacqu	ers. Biod	egradab	le and edible p	ackaging, ase	plic packa	aging-need,	
	advar	ntages, pr	ocess, c	comparison of c	onventional a	& aseptic	packaging.	
	system	m of ase	ptic pac	kaging and ma	terials used	in aseptic	packaging	
	mach	ineries us	ed in pa	cking foods				
Unit 4	Plasti	cs: - Plas	tics: typ	bes of plastic fil	ms, laminated	l plastic m	aterials, co	(06
	extru	sion, edil	ole film	s, biodegradabl	e plastics. A	ctive and	Intelligent	
	nacka	aging tech	miques	Concept tech	iques and us	es in Foo	d Industry.	
	Curre	int use	of nove	al packaging to	chniques C	onsumers	and novel	
	Curre	in use (JI HOVE	packaging u	eninques, et	onouniero		
	раска	aging.	D 1 1	0 11	lana Carlan	diorida	and other	(0)
Unit 5	Scave	engers:-	Periods	Oxygen, ethy	iene Carbon	uioxide	and other	(00
-	scave	engers: S	cavengi	ng technology,	and its ap	oplications	. Different	
	packa	aging syst	em for o	lifferent foods, F	Prediction of S	Shelf Life of	of foods.	
	Perm	eability	- theor	etical consideration	ation permea	bility of	gases and	
	Vapor	r's, perme	ability	of multilayer pa	ckages, perm	eability in	relation to	
	1 Yubb				0 1			

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Sr. No.	Book	Author	Publisher
1	Food Packaging Academic press.	Kadoya T(ED).1990	
2.	Principal of food packaging.	Sacharow S & Griffin RC.1980.	AVI Publication
3.	Development of food Packaging.	Palling SJ.(ED).1980	App.Sci. publication
Marks	MSE 10	03 hrs Week	Lectures

cus was types and granes of mean, pounty, and rea roods,		
		A
ortance of meat and poiliny, Status of Ment and poulicy (00) For slaughter operations and slaughtering operations for they Evaluation of animal corcusses; Fectors affecting inges, properties and shell life of meat; Mechanical e and aging, Eating and cooking quality of meat	bources and mp industry in ladin animals and pou post-morear cm debouing gradin	
next by chilling inverting picteling conteg. cooking and (00) diation, chemical and biological preservatives. MER est emoleters: Men childre and handling: Pressation, configurent for manufacture of smoked men and the presention, prekeging or manufacture of dehydrated men products and their b		Ma0
beging and equipment for martificative of deliverated (05) y evaluation; Pactors affecting; post-motivan changes, of fills of meat, Preparation, preservation and equipment of most sausages and their quality evaluation; Abatteit	 Preparation, pack meat products And their qualit proparties and ab for menufacture design and layout 	Unit
	Smithing, compl	
	ton la solgiotrifi	Master Copy
(66) reation of eggs; Processing and preservation of poulity (66) in publics, By-products of poulity and eggs and their y standards in meat industry. HACCHY ISON METOY is faith, Processing and preservation of meat mechanical or chilling, freezing, picture, Coning, cooking and post the picture.	Freedsing press meat and chicks utilization. Siden PSSAI/ Kosher/ i deboging, eging smoking of ment	ild'
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		a T(ED) 1990	G. S. Mandal's	ood Packaring Acad	9	-	
	N	Iaharashtra	Institute of Techn	ology, Aurangal	bad.		
		D XZ-	(An Autonomous Inst	itute)			
NSOF	Loval	VED154	Dc. (Food Processing)	echnology)	Como	ten II	
Tyen	Devel-S	Scheme	Frocessing of meat &	Examinat	ion Schomo	ster-II	
Lectures	acing	03 hrs/Week		MSF	10 Marks		
Practical		-		TA	15 Marks		
Total Cre	dits	03	-	FSF	25 Marks		
Total Cit	Juits	05		Duration of FSF	1.5 hours		
Course	Jutcom	es(CO)		Duration of LSL	1.5 110415		
Students	will be	able to					
1.	To acc	quaint students v	with types and grades of	of meat, poultry, and	1 sea foods.		
2.	To far	niliarize student	s with processing tech	niques used for the	production	of	
	comm	ercial meat, pou	ltry, and sea foods	1			
Unit			Course Conten	nt		Hours	
Unit 1	Source	es and importan	ice of meat and poultr	y; Status of Meat a	nd poultry	(06)	
	indust	ry in India; Pre	slaughter operations a	nd slaughtering ope	rations for		
	anima	ls and poultry;	Evaluation of animal	l carcasses; Factors	s affecting		
	post-n	nortem changes	s, properties and she	If life of meat; N	Mechanical		
	debon	ing, grading and	l aging; Eating and coc	oking quality of mea	at.		
	D		1 1 1111 0 1			(0.5)	
Unit 2	Preservation of meat by chilling , freezing, pickling, curing, cooking and					(06)	
	Debud	Debudration radiation chemical and biological preservatives Meat					
	tender	tenderization: Meat emulsions: Meat outfing and handling: Preparation					
	nreser	vation and equ	inment for manufacti	ure of smoked me	et and its		
	quality	veralization. Pre	enaration nackaging	are of smoked me	at and its		
	and ed	uipment for m	anufacture of dehydra	ated meat products	and their		
	quality	v evaluation.		area mear produces	und then		
	1 5						
Unit 3	Prepar	ation, packagin	ng and equipment for	manufacture of o	lehydrated	(06)	
	meat p	products					
	And their quality evaluation; Factors affecting post-mortem changes,						
	proper	ties and shelf li	fe of meat, Preparation	n, preservation and	equipment		
	for ma	anufacture of m	leat sausages and their	r quality evaluatior	n; Abattoir		
	design	and layout.					
TIn:4 4	Course	and important	a of poultry Status of	f poultar inductor	India: Dec	(06)	
Unit 4	Source	tor operations	and aloughtoning	poultry industry in	India; Pre	-(06)	
10.000	Struct	ure compositions	and staughtering op	stics Mest tender	ization		
5141	Princi	nles an methods	ni, quanty characteri	stics, wieat tender	12ation. –		
DIA!	Timer	pies an methods					
Unit 5	Proces	sing, preservati	on of eggs: Processing	g and preservation	of poultry	(06)	
	meat	and chicken pa	atties; By-products of	poultry and eggs	and their	(00)	
	utiliza	tion. Safety sta	andards in meat indu	stry: HACCP/ ISC)/ MFPO/		
	FSSAI	/ Kosher/ Hala	l. Processing and pres	ervation of meat- n	nechanical		
	deboni	ing, aging or	chilling, freezing, pic	kling. Curing, co	oking and		
	smoki	ng of meat.					

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1							
Sr. No.	Book	Author	Publisher				
1	Handbook of meat processing	Fidel Toldra	John Wiley & Sons				
	G & Mandal's	(2010),	Publication.				
2.	"Poultry meat processing"	Casey M. Owens. (2010),	CRS PRESS				
3.	Principles of Meat Technology	Singh V. P.	New India Publishing Agency, Delhi ISBN: 9789380235554				

Development of Instant Food Pro-Mixes	

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ication. PRESS	N	Iaharashtra Ir	G. S. Man astitute of T (An Autonomo B.Voc. (Food)	^{dal's} echnology, Au us Institute) Processing)	irangaba	.d.
NSQF	Level-5	VFP171:	Bakery, Cont produ	fectionery and Sucts	nack	Semester-II
Te	eaching	Scheme		E	xamination	Scheme
Practical		2 Hours/week		TA	2	5 Marks
Credits		1.5		PE	2	5 Marks
Sr.No.	1		List of	Experiments		
1	Tests for the Rheological Properties of Dough					
2	Preparation of Advanced Bakery Products - sourdoughs, pastries, croissants,					
	doughnuts					
3	Preparation of Filled and Iced Cakes					
4	Preparation of Chocolate, Preparation of Coated Confectionery					
5	Quality Evaluation of the Bakery Products, Filled and Iced Cakes, Chocolate, and					
	Coated Confectionery					
6	Determination of Nutritional Value of Bakery and Confectionery Products					
7	Preparation of Snack Foods based on Cereals, pulses, nuts.					
8	Devel	Development of Instant Food Pre-Mixes				
9	Deter	Determination of Shelf-Life and Quality Characteristics of Snack Foods				
10	Visit to Bakery					

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da	M	aharashtra Institut (An Au B.Voc.	G. S. Mandal's te of Technology, Aurang atonomous Institute) (Food Processing)	;abad.	
NSQF	Level-5	VFP172: Food I	Food Packaging Technology -Lab Semeste		
Te	eaching S	Scheme	Examina	ation Scheme	
Practical	1 2	2 Hours/week	TA	25 Marks	
Credits	1	.5	PE	25 Marks	
Sr.No.			List of Experiments	Condita	
1	Identification and testing of packaging materials				
2	Determination of tensile strength of given packaging material				
3	Determining water absorption capacity of packaging material				
4	Determining bursting strength of packaging material				
5	Determining tearing strength of packaging material				
6	To perform vacuum packaging of food sample and carry out its storage study				
7	Testing of lacquered tin plate sheets				
8	Determination of water vapor transmission rate of package films				
9	Pre-packaging practices followed for packaging fruits and vegetables				
10	Packaging and labelling of the product-packaging design, graphics, labelling				

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smo2	(An B.Voc. (Fo	Autonomous Institute) od Processing Technology)	gabau.	
NSQF Le	vel -5 On Job Tr	aining/Qualification Packs*	Semester-II	
Teaching Scheme		Examin	nation Scheme	
Practical 7-8 weeks		TA	100 Marks	
Credits 15		PE	100 Marks	
VFP181	Baking Technician FIC/0	O5005	mill t	
VFP182	Packaging Machine Worker FIC/07002			

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