

SHIVAJI UNIVERSITY, KOLHAPUR.



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CHOICE BASED CREDIT SYSTEM

Syllabus For

B.Sc. Part - II

Food Science and Technology (Entire)

(Sem. III & IV)

To be introduced From the academic Year 2021-22

(w. e. f. June 2021) onwards

Semester-III

û Cereals & legume Technology-I DSC-FST-C

û Cereals & legume Technology-I Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours Allotted
Unit-I-	1½ Introduction to cereals & legumen -Structure wheat rice, ragi or sorgium -compstion of -Nutritive value -processing & storage -cooking quality. 2½ milling of cereals- -Basic milling operations -Wheat milling- type of wheat, quality of blour & blour treatment, quality characteristics 7 rh eological properties & wheat, milling products & it's assessment by product utilization 3½ rice milling- -milling of rice, types of rice mill, parboiling of paddy, crieteria in assessment of milling, cooking nutritional & storage quality of raw & parboiled rice, processed rice product (flaked, expanded, puffed) by product utilization.	15

Unit- II	1)Ragi Processing- types of ragi, milling of ragi, quality of blour & blour treatment. Quality characteristics & rheological properties of ragi, milling products- malt & it's assessment, by product utilization. 2) Sorghum processing- -types of sorghum, milling of sorghum, quality of blour & blour treatment, Quality characteristics & rheological properties of sorghum, milling products & it's assessment by product utilization 3)Pulses processing- - Structure & composition -processing of Turd hal, moong dal, masoor dal, chick pea & urad dal, toxic cercsituteuts in pulses, soaking, germination, decortications, cooking & femeutation. -milling of pulses-dry milling, wet milling, improved milling method.	15
Reference book- previous old syallabus		

û Cereal & legume Technology- II DSC-FST- C2

û Cereal & legume Technology- II Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit-I	1)processing of corn. - Structure & compostion of corn grain, -types of corn - wet & dry milling of corn & their products - corn sweetness & their uses 2) processing of barely - Structure & composition of barely. - Barely malting proess. - significance of malting. -Different types of malts & their Food applications	15

Unit- II	1)Processing of legumes & pulses - soaleing, roasting, steaming & Cooking -germination, parching -factors affecting cooking of legumes - processing of fried pulses. - end products of legumes & pulses, - processed soybean products- soya oil, meal flour, infant formula, - pulse protein concentrates- extracted soya bean proteins, soyabean card, soyabean milk. -fermeuted products of soyabean- soya sauce, soyabean parte (miso), Temph, Natto, Humantto. 2)utilization of pulses- -mature seeds -fresh seeds -immature seeds	15
Reference book- refer old syallabus for reference book		

Û Post harvest technology-I DSC-FST-C3

Û Post harvest technology-I Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
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Unit- I	1)Plantation on crops -introduction to post harvest techonolgy. -importance of plantation crops. 2) Tea -occurance, History. -Chemicals constitauteuls, -harvesting -leaf processing -types & varieties -manufacturing of green & black tea - quality & grading of tea -packaging 3)coffee- -History, Occurance - Chemical constitauteuls, -harvesting, - bean processing -types & varieties -manufacturing of coffee -fermentation & cluanger during fermentation -quality & grading -adultrants used in coffee -instant coffee	15
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Unit- II	1)coca- -Intoduction -compostion -grading -production -processing -cocca products(coca mass, cocca powder, cocca butter, cocca based beverages, cocca liquid malted beverages. 2)Chocolate- -introduction -ingridiuts - types -chocolate processing -mixing - pefining -conching -tempering -cooling & coating -Defects in chocolate 3)Coconut processing- -production -compostion -grading, -post harvest technology, -processing & products (coconut milk, desiccated cocont) 4cashew nut harvesting & processing	15
Reference book- old syallabus		

Û Post harvest Techonology- II- DSC-FST-C4

Post harvest Techonology- II Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit-I	1)post harvest technology of spices - History of spices & condiments -classification & composition of spices & condiments -fumigation of irradiation of spices 2) major spices- chemisty, constitalent, nutritive value & functional benefits of the following -pepper (black, white & green) -cardamom -cloves -ginger - chillied (red & green) -Turmeric -processed products -oleoresins & volatile oils	15

Unit- II	1)Minor spices- -cumin -coriander -feenugreele -safforn -tamrind -cinnamon -ajwan -mustard -mace -garlic -onion -mint -asafoetida -nutmeg -constitutents -nutritive value -functional benefit -processed products -oleo resins & volatile oils. 2) Raw & refined sugar- -introduction -manufacturing of raw & refined sugar 3)other plantation crops- -vanilla -annatto -their processing -Quality control	15
Reference book- refer old syallabus		

Unit		Hours
Unit- I	1)Introduction of bakery Products- - Introduction -importance of bakery -principle used in bakery products -working application of dough mixes -moulding machine -oven machine -equipment for batch & continous processing of bakery products 2)baleing -esseutial & optional ingridieuts -role of each ingridieuts -types & quality of flou -various dough & their uses -process parameter -heat transfer in baleing, fime, femp - relationship in baleing	15
Unit-II	1)Introducton to confectinary -Unit overview & description -Introduction to confectinary -scope of confectinary -confectinary terms -small &large equipment used in confectinary 2)Introduction of confectinary products -principles involved in confectinary products -classification of confectinary -types of confectinary products -characteristics of confectinary products -Indian confectinary	15
Reference book- refer old syllabus		

Bakery & Confectionary Technology-II DSC-FST-C6

Bakery & Confectionary Technology-II Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit-I	1)Processing of bakery products. -cane :- types, formulation & process, principle of cane, characters of cane - Bread :- formulation, process, principle of bread, preparation , baking, defects - Biscuits & cookies :- Defⁿ, difference between biscuits & cookies, types of cookies & biscuits, cracker & graham defects 2)preservation of bakery products- -preservation of baked product, -freezing & frozen storage of baked product -equipment for frozen storage, canned bakery product. -quality aspect of preserved baked products -maintenance. -safety & hygiene of bakery plant.	15
Unit-II	1)chocolate processing -ingredients used in chocolate -cocoa butter substitutes -processing of cocoa beans -chocolate refining -conching & molding, -tempering -panning 2)sugar confectionery -types of sugar -production, storage -alternative bulle sweetness -corn syrup & glucose syrup -artificial sweetness -chewing gum & bubble gum 3) Boiled & Gelatin Sweets- -Hard & soft boiled sugar confectionary- fondant, fudge, caramel, toffee, nut brittles -gelatin sweets- fruit chews, jellies, gums, - defects in confectionary- sugar bloom, fat bloom	15

Semester IV

Processing of Fruits & vegetables-I DSC-FST –D1

Processing of Fruits & vegetables-I Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit- I	1)introduction of fruits -classification & composition of fruits & -climacteric & Non Climacteric fruits -post harvest handling -precooling methods -post harvest treatments -storage of fresh fruits- ambient, refrigerated, modified atmosphere -evaporative cool storage 2)Introduction to vegetables -morphology of vegetables -classification of vege -composition of vege -nutritive value of vege -biochemical changes in vege 3) Techniques of fruits & vege. processing -current scenario of fruit & veget in india - world scope of fruit & veg. processing industry in india- -present status, constraints & prospective -canning of fruits & vege- principle & process -packaging materials used for canning -causes of spoilage of spoiled canned foods	15

Unit-II	1)Drying / dehydration of fruits & vege -sundrying -factors affecting rate of drying -principle & prefreat meuts for drying -process of drying -types of driers -spoilage of dried products -reconstitution test for dried products. 2)freezing rocess of fruits & veg -types of freezing -changes during freezing -changes during storage 3) chemical preservation- -different types of chemicals used in fruits & veg. processing -preservation by sulphar dioxide & sodium benzoate -safe limits of usage	15
Reference book - refer old syallabus		

Processing of Fruits & vegetables-II DSC-FST-D2

Processing of Fruits & vegetables-II Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit-I	1)Fruit Processing- -Jam- Introduction constituent , selection of fruit processing & tech. Tests for end point determination problems in jam making, pectin properties -jellies- difference betn jam & jelly, processing of jelly, end point determination, failure of jellies to set, cloudy or foggy jellies, formation of crystals synesis -marmalade- types, jam marmalade, jelly marmalade, problem in marmalade making -preserve & candy -chased & crystallized fruits 2)fruit beverage- -introduction -processing of fruits, juice, preservation of fruit juice, -pasteurization -chemically preserved with sugar -freezing -drying -tetra packing - carbonation -processing of RTS -processing of squashes -processing of cordials -processing of nectar, concn & powder	15
Unit-II	1)vegetable processing -pickles- manufactureing, types, defects, problem in pickle making, spoilage in pickles, -saurkraut –principle, process, defects & spoilagein saurkraut -chutney-preparation -sauces & ketchups- difference betn sauce & ketchup classification of sauces- thick & thin, processing of tomato sauce/ketchup.	15

	-prepn of soya sauce- problems in making sauces	
	2)value added products from processing -mushroom processing -drying/dehydration of mushroom -pickling of mushroom -processing of aamchur -processing of mango leather -processing of fruit cheese -processing of fruit butter -processing of toffee -processing of papain	
Reference book - refer old syllabus		

Oil seed & nuts Technology –I DSC-FST-D3

Oil seed & nuts Technology-I Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit-I	1)Oilseeds -Structure, composition, nutritive value, toxic constituents & market varieties of oilseeds -post harvest technology- storage, transportation, handling, prevention of spoilage & post-harvest losses minimization -processing methods & manufacture of oil & facts -products of processing -effect of processing on composition & nutritive -fortification & value addition of products 2)Nuts -Structure - Composition -nutritive value -toxic constituents -health benefits -storage transportation handling	15
Unit-II	1)Extraction of oil -mechanical expelling -solvent extraction -deoiled cake -future development in products & processes -processing of groundnut- -processing of soybean -processing of sunflower -processing of gingelly seed -processing of coconut -processing of mustard -processing of olive oil -processing of cottonseed -processing of ricebran	15

	-processing of maize germ	
Reference book - refer old syllabus		

Oil Seed & Nuts Technology-II DSC-FST-D4

Oil seed & nuts Technology-II Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit		Hours
Unit-I	1)refining oil -Classification -degumming -neutralization (alkali refining) -bleaching -deodorization techniques or processes -blending oil -processing of refined oils -hydrogenation -fractionation -winterization -inter – esterification 2)factors affecting extraction 3)packing and storage of fats and oil -changes during storage	15
Unit- II	Processing of fats -Margarine -Mayonnaise -salad dressing -fat substitution -lard -tallow -cocoa -butter equivalent -peanut butter - low fat spread peanut butter -speciality fats and designed lipid for nutrition and dietetics - nutritional food mixer from oilseeds.	15

Reference – Refer old syllabus.

Food Packaging I DSC –FST-D5

Food Packaging I Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

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Food packaging II DSC-FST-D6

Food Packaging II Credits-2(50 Marks)Hours 30,37.5lectures of 48 min

Unit-I	1.Glass & metal Packaging. - a.Glass . -Composition. -Properties. -Structure. -Types. -Manufacture of glass Containers uses breakage in glass closure for glass containers. - b.Metals. -properties of metals. -Different methods used in food packaging -steel plate & functions of steel. -Formation of two piece & three piece cans. -Aluminium foil -Corrosion of metal cans. 2.Packaging Methods -Aseptic packaging of foods-Sterilization of packaging material,food contact surfaces & aseptic packaging systems. -Active food packaging –detn,scope,physical &chemical principles involved. -Edible films &coatings.	Hours 15
Unit-II	1.Oxygen absorbents -classification &main types of oxygen absorbents. -factors influencing the choice of oxygen absorbents -Application of oxygen absorbents for shelf –life of food. -Advantages & disadvantages of oxygen absorbents. 2. Safety Considerations in food packaging. -Labelling. -Types of food safety associated withpackaging.	15

	-Package labeling & food safety. -Food packaging & environment-recycling,composting,thermal treatment & land fill.	
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Reference – Refer old syllabus