Structure of B.Sc. with Food Nutrition and Dietetics as a Subject

Semester I								
Sl. No	Course Code	Title of the Course	Category of Courses	Teaching Hours per Week	SEE	IA	Total Marks	Credits
1		Human Nutritional	Theory	4	80	20	100	3
2			Practical	4	40	10	50	2
3		Human Physiology -I	Theory	4	80	20	100	3
4			Practical	4	40	10	50	2
5		Food Science I	Theory	4	80	20	100	3
6			Practical	4	40	10	50	2
Semester II								
7		Food Science II	Theory	4	80	20	100	3
8			Practical	4	40	10	50	2
9		Human Nutrition-II	Theory	4	80	20	100	3
10			Practical	4	40	10	50	2
11		Human Physiology-II	Theory	4	80	20	100	3
12			Practical	4	40	10	50	2
Semester III								
13		Life span Nutrition–I	Theory	4	80	20	100	3
14			Practical	4	40	10	50	2
15		Food Microbiology	Theory	4	80	20	100	3
16			Practical	4	40	10	50	2
17		Dietetics-I	Theory	4	80	20	100	3
18			Practical	4	40	10	50	2
19		Elective Nutritional Assessment / Food Safety and Hygiene	Theory	2	40	10	100	2
Semester IV								
20		Dietetics–II	Theory	4	80	20	100	3
21			Practical	4	40	10	50	2
22		Life span Nutrition II	Theory	4	80	20	100	3
23			Practical	4	40	10	50	2
24		Quality Control	Theory	4	80	20	100	3
25			Practical	4	40	10	50	2
26		Elective Food Technology/ Diet in lifestyle disorder	Theory	2	40	10	100	2

ModelCurriculum

Name of the Degree Program: B.Sc.
Discipline Core: Food Nutrition and
DieteticsTotalCreditsfor theProgram:
Startingyearofimplementation:

ProgramOutcomes(POs)

After successful completion of this program, graduates of Food Nutrition and Dietetics will have thefollowing attributes:

1. Scientific Knowledge: Apply the knowledge of food science, chemistry, nutrition, physiology anddietetics inacompetentmannerto innovateinthefieldofnutritionanddietetics.
2. Design and Development of Solutions: Design nutrition and dietetics strategies as per the specifiedrequirements of regulatory bodies related to food, health, environment, hospitals, families andcommunities.
3. Problem Analysis: Identify, formulate, rationalise, and analyse nutrition-related problems in thecommunity and hospitalsso as to reach substantiated diet-based conclusions usingthe principlesoffoodnutritionanddietetics.
4. Modern Tool usage: Create, select, and apply modern nutrition and dietetics tools, techniques, andresources ofrelevanceinnutritionanddietetics.
5. Environment and Sustainability: Evolve nutrition and dietetics approaches in the context of foodsecurityandenvironmentallysustainabledevelopment goals.
6. Teamwork:Functionobjectivelyasanindividualandasamemberindiverseteams.
7. Communication: Effectively document and communicate nutrition and dietetics approaches andplanswithindividuals,patientsandcommunities.
8. Lifelong learning: Independently engage in continuous learning to adapt to newer concepts innutritionanddietetics.

ProgramSpecificOutcomes(PSOs):

Aftersuccessfulcompletionofthisprogram,graduatesofFoodNutritionandDieteticswillhavethefollowing specificattributes:

- Utilizetheknowledgefromthephysicalandbiologicalsciencesasabasisforunderstandingthe roleoffoodandnutrients inhealthanddiseaseprocesses
- Evaluatethefoodproductandtheapplicationofnecessarypreservationtechniquestoincreasetheshelflifeofth eproduct andalso beapart intheauditing industry
- WorkinResearchlaboratoriesonthefortificationandenrichmentofexistingproductaswellasthedevelop mentofnew product
- Applythenutritionanddietetics-basedknowledgeandskillsintheplanningandassessmentofsuitabledietsforindividualsofeveryage,pati entsandthecommunityinasustainablemanner.
- Providenutritioncounsellingandeducationtoindividuals,groups,andcommunitiesthroughoutthelifes panusing avariety ofcommunicationstrategies

- Apply technical skills, knowledge of health behaviour, clinical judgment, and decision-making skillswhen assessing and evaluating the nutritional status of individuals and communities and theirresponsetonutritionintervention.
- Implementstrategiesforfoodaccess,procurement,preparation,andsecurityforindividuals,families,an dcommunities.
- Applyfoodscienceknowledgetodescribefunctionalpropertiesoffoodingredients.
- Apply the knowledge of principles and techniques of nutrition and dietetics for research-basedapproaches.
- Applyskillsgainedinnutritionanddieteticsforresearch,development,andentrepreneurship.

Assessment:

Weightageforassessments(inpercentage)

TypeofCourse	WeightageinMarks	SummativeAssessment
Theory	20	80
Practical	10	40
Projects	20	80
Experiential Learning(Internshi psetc.)	20	80

ContentofCoursesforB.Sc.Degree/HonoursinFoodNutritionandDieteticsModelC4

Semester	Course Code	Category ofCourse	Theory/ Practicals	Credits	Course/PaperTitles	Marks	
						IA	SA
I		DSC-C1	Theory	3	HumanNutritionI	20	80
		DSC-C2	Practical	2		10	40
		DSC-C3	Theory	3	HumanPhysiology -I	20	80
		DSC-C4	Practical	2		10	40
		DSC-C5	Theory	3	FoodScienceI	20	80
		DSC-C6	Practical	2		10	40
		E-1	Theory	3	Compulsory	20	80
II		DSC-C7	Theory	3	FoodScienceII	20	80
		DSC-C8	Practical	2		10	40
		DSC-C9	Theory	3	HumanNutrition-II	20	80
		DSC-C10	Practical	2		10	40
		DSC-C11	Theory	3	HumanPhysiology-II	20	80
		DSC-C12	Practical	2		10	40
		E-2	Theory	3	Compulsory	20	80

ExitoptionwithUndergraduateCertificateinFoodNutritionandDieteticswithcompletionofcoursesequivalent toaminimumof 48credits,followed by10-12creditbridgecourse(s)fortwomonths, includingat-least6-creditjob-specificinternship/apprenticeshiptoacquirejob-readycompetencies requiredtoenterthejob							
III		DSC-C13	Theory	3	LifespanNutrition–I	20	80
		DSC-C14	Practical	2		10	40
		DSC-C15	Theory	3	FoodMicrobiology	20	80
		DSC-C16	Practical	2		10	40
		DSC-C17	Theory	3	Dietetics-I	20	80
		DSC-C18	Practical	2		10	40
		OE-3	Theory	2	Nutritional Assessment /FoodSafetyand Hygiene	20	80
IV		DSC-C19	Theory	3	Dietetics–II	20	80
		DSC-C20	Practical	2		10	40
		DSC-C21	Theory	3	LifespanNutritionII	20	80
		DSC-C22	Practical	2		10	40
		DSC-C23	Theory	3	QualityControl	20	80
		DSC-C24	Practical	2		10	40
		OE-4	Theory	2	FoodTechnology/Dietinlifestyle disorder	20	80
Exit option with Undergraduate Diploma in Food Nutrition and Dietetics (with completion of coursesequaltoaminimumof96credits),followedby10-12creditbridgecourse(s)fortwomonths,including at-least6-creditjob-specificinternship/apprenticeshiptoacquirejob-readycompetenciesrequiredtoenterajob							
V		DSC-C25	Theory	3	NutritionalBiochemistry-I	20	80
		DSC-C26	Practical	2		10	40
		DSC-C27	Theory	3	TherapeuticNutrition-I	20	80
		DSC-C28	Practical	2		10	40
		DSC-C29	Theory	3	FoodPreservation	20	80
		DSC-C30	Practical	2		10	40
		VOC-1	Theory	3	CommunityNutrition	20	80
		VOC-2	Theory	3	Foodproductdevelopmentand sensoryanalysis	20	80
		VOC-3	Theory	3	NutritioninWeight Management	20	80
VI		DSC-C31	Theory	3	NutritionalBiochemistryII	20	80
		DSC-C32	Practical	2		10	40
		DSC-C33	Theory	3	TherapeuticNutritionII	20	80

	DSC-C34	Practical	2		10	40
	DSC-C35	Theory	3	Reasearch Methodology	20	80
	DSC-C36	Theory	3	FoodPackaging	20	80
	DSC-C37		2	Internship/Project		
	VOC-4	Theory	3	FunctionalFoodsand Nutraceuticals	20	80
	VOC–5	Theory	3	Diet Counselling	20	80

ProgramName	**BScFood NutritionandDietetics**	Semester	**FirstSemester**
CourseTitle	**Human NutritionI(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheory+PracticalCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO1.Comprehendnutritionalclassificationoffoodandmethodsofassessingnutritionalstatusandenergyrequirements

CO2.Understandthefunctionsandsourcesofnutrients

CO3.Applytheknowledgeofhumannutritioninmaintenanceofgoodhealthforthe individualandthecommunity

CO4.Assessthefactorsaffectingavailabilityandrequirementsofnutrients

ContentofTheory	**45Hrs**
Unit–1	15
Nutritional Status: Definitions of the terms – Nutrition, Health, Nutrients, Nutritional status, Malnutrition:Definition, types, causes, symptoms, interventions. Methods of assessing nutritional status – Direct andIndirectmethods.	
Unit-2	15
Energy -Definition of calorie and joule, Measurement of calorific values of foods. Basal Metabolic Rate(BMR)-Factorsaffecting.SpecificDynamicAction(SDA)offoods.Energyneedsofthebody.Measurementof energy balance of the body. Direct and indirect calorimetry Calculation of energy requirements. Theideal proportionof caloriesfromprotein, carbohydrates andfats Carbohydrates:Classification,functions,digestion,absorption,glycemicindex,sourcesandrequirements	
Unit-3	15
Proteins:Composition,Classification,functions,digestion,absorption,sourcesandrequirementsNutritional classification of amino acids, evaluation of protein quality, Factors affecting bio-availabilitysupplementationanddeficiency state. Lipids/Fats:Classification,chemicalcomposition,functions,digestion,absorption,sourcesandrequirements.Nutritionalsignificanceandeffectsofdeficiencyofsaturatedandunsaturatedfattyacids	

Pedagogy

FormativeAssessment:

AssessmentOccasion/type	**WeightageinMarks**
Test1	10

Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**HumanNutritionI(Practical)**	PracticalCredits	**2**

ContentofPractical

1. Qualitativeanalysisofglucose
2. Qualitativeanalysisofprotein
3. Estimationoftotallipidineggyolk
4. Demonstrationoflipidextractionusingsoxhletmethod
5. Demonstrationofproteinusingkjeldahl'smenthod

Pedagogy

FormativeAssessment

AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	03
ParticipationandInvolvement	02
Total	**10 Marks**

References

- WTOTechnicalReportsSeriesforDifferentNutrients.
- RodayS.(2018),FoodScienceandNutrition,OxfordUniversityPress
- SrilakshmiB(2015)Nutritionscience-4th Ed.,NewageinternationalPubl.,NewDelhi
- AgarwalA,UdipiSA(2014) TextbookofhumannutritionJaypeeBros.MedicalPubl.,NewDelhi
- RaheenaBegum.,(2009),ATextbookofFood,Nutrition&Dietetics,SterlingPublications,NewDelhi.
- Srilakshmi.B.,(2009),HumanNutrition,NewAgeInternationalPublishers
- MudambiSRandRajagopalMV.,(2008),FundamentalsofFood,NutritionandDietTherapybyNewAgeInternationalPublishers,New Delhi
- Shills ME, Shike M, Ross AC, Caballero B, Cousins RJ (2005) Modern Nutrition in health and disease – 10th Ed.,LippincottWilliams andWilkins
- BamjiM,RaoNP,ReddyV(1996)TextbookofHumanNutrition,OxfordandIBHPubl.Co.PvtLtd,NewDelhi
- GopalanC(1991)NutritionvalueofIndianfoods,ICMR
- GuthrieAH(1986)IntroductoryNutrition,6th Ed.,TheCVMosbyCompany
- RobinsonCH,LawlerMR,Chenoweth WL,GarwickAE(1986)Normalandtherapeuticnutrition,17th Ed.,MacmillanPubl.Co.
- SwaminathanM(1985)Essentialsoffoodandnutrition,VolIandII,GaneshandCo,Madras

ProgramName	**BScFoodNutritionandDietetics**	Semester	**FirstSemester**
CourseTitle	**HumanPhysiology-I(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheory+PracticalCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Understandthehomoeostaticstatus ofthehumanbody

CO 2. Comprehend the physiological processes and functions of various vital organs as applicable tohumannutrition

CO 3. Apply the knowledge of physiological states to therapeutic dietsCO4.Assess malfunctioningofvitalorgansorsystems

ContentofTheory	**45Hrs**
Unit–1	15

Introduction: Cell – structure and function of organelles, nucleus, chromosomes, genes, homoeostasis and body fluids. Blood: Red blood cells – Erythropoiesis, function, counts. Hemoglobin – structure, function, concentration. White blood cells– function, lifespan, counts, differential counts. Platelets normal count, functions. Plasma proteins –concentration, types, albumin, globulin, fibrinogen. Hemostasis– definition, normal hemostasis, clotting factors, mechanism of clotting, disorders of clotting factors.Blood groups– ABO system, Blood grouping and typing, cross matching. Rh system– Rh factor, Rh in compatibility. Anticoagulants – examples and uses. Blood indices – color index, MCH, MCV, MCHC. Erythrocyte sedimentation rate (ESR) and packed cell volume. Blood volume – normal value, determination of blood volume and regulation of blood volume.

Unit-2	15

Cardiovascular system: Heart – structure, functions, cardiac cycle – systole, diastole, conduction system. Blood pressure – Definition, normal value, clinical measurement of blood pressure. Physiological variations, regulation of heart rate, cardiac shock, hypotension, hypertension.

Respiratory System: Function of respiratory system - anatomy of respiratory system. Lung volume and capacities. Transportation of respiratory gases: Transportation of O_2 and CO_2: direction, pressure gradient, forms of transportation, oxygenation of hemoglobin, quantity of O_2 and CO_2 transported. Medical conditions and disorders: Hypoxia, cyanosis, asphyxia, dyspnoea, dysbarism, apnoea. artificial respiration,

Unit-3	15

Digestive System: Physiological anatomy of gastro-intestinal tract, functions of digestive system. Salivary glands –structure and functions, deglutition, mastication – stages and regulation of saliva, functions of saliva. Stomach–structure and functions. Gastric secretion–composition, function, regulation of gastric juice secretion. Pancreas – structure, function, composition and regulation of pancreatic juice. Gall bladder – functions. Intestine – small intestine and large intestine: functions, digestion, absorption. Defecation

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**HumanPhysiologyI(Practical)**	PracticalCredits	**2**

ContentofPractical

1. Instrumentsusedinhematology
2. Bloodgroupingbyagglutinationmethod
3. Recordofbloodpressure–Sphygmomanometer,palpatorymethod,auscultatorymethod,variationofBP
4. DeterminationofBleedingTime(BT)byDuke'smethod
5. DeterminationofCoagulationTime(CT)byWright'smethod
6. EnumerationofRBCandWBCcount byhemocytometry/Neubauer'scountingchamber

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	5
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10 Marks**

References

- JainNA(2022)CCChatterjee'sHumanPhysiology,24th Ed.,CBSPublishers,NewDelhi
- StuartIF,RompolskiK.(2018)HumanPhysiology,15thEd.,McGrawHill
- MariebE,HoehnK.(2018)HumanAnatomyandPhysiology,Pearson
- ChatterjeeCC(2016),HumanPhysiologyVolumeI, MedicalAlliedAgency,Kolkata
- JainAK(2012) TextBookofPhysiologyvolume1andVol.2,APCpublications NewDelhi
- SembulingamK,SembulingamP(2012)EssentialsofmedicalphysiologyJaypeeBros.MedicalPubl.,NewDelhi
- ChatterjeeCC(1988)HumanPhysiology,Calcutta,WB
- GuytonAC,HallJE(1996):TextbookofMedicalPhysiology,9thEd.,PrismBooks PvtLtd.,Bangalore
- Wilson(1989)AnatomyandPhysiologyinHealthandIllness,EdinburghChurchillLivingstone

ProgramName	**BScFood NutritionandDietetics**	Semester	**FirstSemester**
CourseTitle	**FoodSciencel(Theory)**		
CourseCode:	**DSC**	No.ofCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**
CoursePre-requisite(s):Certificate withminimum45%			

CourseOutcomes:

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO1.Understandfactorstobeconsideredduringselectionofbasiccommodities,rawandprocessedandvarious aspectsoftheirproductsanddistribution

CO2.Comprehendtheprinciplesunderlyingchangesinoverallqualityoffoodcharacteristicsduringcooking.

CO3.Evaluatefoodproductsbasedontheirqualitycharacteristics

CO4.Assessmethodsandmedia ofcooking,nutritivevalueandprocessing,storage,preservationofbothplantandanimal-basedfood

ContentofTheory	**45Hrs**
Unit–1	10
Introductiontofoodscience.Definitionoffoodscience.Foodasasourceofnutrients.Foodgroups:ICMRFiveFood GroupSystem.ElevenFoodGroupSystem.NutritionalClassificationoffoods.MethodsofcookingMoist heat methods – Water/steam as a media of cooking Boiling, simmering, poaching, stewing, steamingandpressurecooking–definition,advantagesand disadvantagesof each method.Dryheatmethod.Air aamediaofcooking -grilling,roastingandbakingFatasmediaofcooking – stirfrying,sautéing,shallowanddeepfatfrying.Definition,advantagesanddisadvantagesofeachmethod.Combination ofcookingmethod –braising.Microwavecooking– mechanismofmicrowavecooking,constructionofamicrowaveovenadvantagesanddisadvantages	
Unit-2	15

Cereals and pulses:cereals: Compositionandnutritivevalue, typesofcerealgrain. Wheat and rice:Structure, production and storage; processing of cereal grains (rice and wheat); milling, soaking,germination, fermentation, parching, extrusion. Parboiling – processes for parboiling, its advantages anddisadvantages.Cerealprotein gluten– processofglutenformation,factorsaffectingglutenformation. CharacteristicsofcerealstarchAmyloseandAmylopectin.Gelatinizationofstarchprocessofgelatinisation, gelatinisation temperature, factors affecting gelatinisation. Changes in cooked starches –gelformation, retrogradation,syneresis. Modifiedstarch.

Pulses:Nutritivevaluecompositionand types,Processing of pulses – milling, soaking, germination,fermentation,parchingandpuffing,extrusion.Toxicconstituentsofpulses.Pulsecookery– effectofcooking,factorsthataffectcookingquality

Unit-3	10

Nuts,oilseeds,spicesandcondiments

Composition,nutritivevalueofspecificnutsandoilseeds– groundnuts,coconut,sunflowerandsoyabean.Animalfats– lard,margarineandbutterProcessingoffatsandoils– rendering,pressing,solventextractionhydrogenationandrefining.Changesduringcooking– effectofheating,changesinfatonheating.Storagespoilage, rancidity,toxicity,fatsubstitutes. Roleoffatsandoilsincookery

Spices and condiments – Composition, flavouring extracts, adulteration and medicinal values Processinganduses ofmajorspices–Pepper(whiteandgreen), cardamom, gingerandturmeric

Unit-4	10

Fruitsandvegetables:

Fruits:Classification,compositionandandnutritivevalue.Pigments.Ripeningoffruits,pecticsubstances.Enzymaticand non-enzymaticbrowningand its prevention,postharvestchanges andstorage.

Vegetables:Classification,nutritivevalueandcomposition.Pigments.Vegetablecookery.Changesduringcooking.lossofnutrientsduringcooking.Enzymesandnon-enzymaticbrowningitsprevention.Postharveslosses andstorageofvegetables

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

\

Coursetitle	FoodScience–I(practical)	Practicalcredits	2

Contentofpractical

1. Foodgroups–ICMRfiveandeleven foodgroupsystem,foodpyramid
2. Methodsofcooking –moistanddryheatmethods
3. Physicalcharacteristicsofcerealgrains
4. a)Waterabsorptioncapacityofwheatflour
   b)determinationofglutencontentofwheatflour
5. Gelatinizationofstarchesincereals
6. Effectofgerminationinpulsesandlegumes
7. Browningoffruitsandvegetables
8. Smokingpointoffatsandoils
9. Adulterationofspicesandcondiments

References

- pentenR,VieiraE.(2022)Elementaryfoodscience,Springer.
- SrilakshmiB.(2020)FoodScience,NewAgeInternationalPublishers.
- SharmaA.(2017)FoodScienceandTechnology,CBSPublishersandDistributors
- WardDJ.(2013)Principlesoffoodscience,Goodheart-Wilcox.
- ManayNS,ShadaksharaswamyM(2010)Foods-Factsandprinciples,NewAgeInternationalPubl.,NewDelhi
- RosevilleLJ,VieraER (1992)Elementaryfoodscience,3rd Ed.,ChapmanandHall,NewYork
- PotterNN,HotchkissJH(1988)FoodScience,5th Ed,CBSPublisherandDistributors,Delhi
- Levies(1988)Foodcommodities,HeinemannLtd.,London
- CharleyH(1982)FoodScience,2nd Ed.,JohnWileyandSons.
- DowellP,BaileyA(1980)TheBookofingredients,DorlingKindersleyLtd.,London
- HughesandBenniionM(1970)IntroductoryFoods,MacmillanandCo,NewYork

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	5
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10 Marks**

ProgramName	**BScFood NutritionandDietetics**	Semester	**SecondSemester**
CourseTitle	**FoodScienceII(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheoryCredits	**3+2**

Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%	
CourseOutcomes: Afterthesuccessfulcompletionofthe course,thestudentwillbeableto:CO1.Understandmethodsusedinprocessingo f milkandmilkproducts CO 2. Assess the nutritional qualities of egg and changes in characteristics during cooking.CO3.Evaluatecompositionofmeat,processingandstorage CO4.Enumeratethenutritivevalueofeggs,fish andtheuseofmajorspicesinprocessing	
ContentofTheory	**45Hrs**
Unit–1	15
Milk and milk products: Composition and nutritive value. Physical properties of milk. Effect of heat or milkconstituents – nutrients, colour, flavour, digestibility, microorganisms, scum formation, scorching o milkProcessingofmilk–clarification,pasteurizationandhomogenization.Processingofcheese,butter,curdand ice cream. Problems encountered in cooking milk. Milk products – Vitamin D milk, skim milkconcentratedmilkandcream	
Unit-2	15
Egg:Structure,composition,nutritivevalue,Pigments.Vegetarianegg.Eggquality– evaluationofeggquality,egggrading,candlinganddeteriorationofeggquality.Functionalpropertiesofeggemu sification,foaming,coagulation,binding,thickening.Eggcookery–Effectsofheatandcoagulationoegg proteins, microorganisms, effect of ingredients on egg protein. Egg prepared in the shell – boiled eggshard and soft. Egg prepared out of the shell – poached egg, fried egg, scrambled egg and omelette Productbasedonegg– custard,meringues,mayonnaise.Preservationandstorage–freezing,coldstorage,drying	
Unit-3	15
Meat:Classesofmeat,Cutsandgradesofmeatandtheirselection.structure,compositionandnutritivevalue of meat.Post mortem changes.Functionalpropertiesof meat–water holdingcapacity, texture andbinding,flavordevelopment,colorstability.Storageandchangesduringcooking.Ageingofmeatandcuringof meat.Factorsaffectingtendernessofmeat.Meat cookery andchangesduringcooking, methodsocooking – dryheatandmoistheat. Poultryandfish:Classification, composition,nutritivevalue..Selection,Processing,preservationandstorage.Methods ofcookingpoultryandfish. Spoilageoffish.	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5

Total	20Marks

CourseTitle	**FoodScienceII(Practical)**	PracticalCredits	**2**

ContentofPractical

1. Platformtestformilk–COB,alcohol,resazurin
2. Determinationoftitrableacidityofmilk
3. Adulterationofmilkandmilkproducts
4. Milkcookery
5. Qualityevaluationofegg
6. Experimentalcookeryofegg–boiledegg,poachedegg,omeletteandcustard.
7. Physicalevaluationoffish

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10 Marks**

References

- ManayNS,ShadaksharaswamyM(2010) Foods-Factsandprinciples,NewAgeInternationalPubl.,NewDelhi
- RosevilleLJ,vieraER(1992)Elementaryfoodscience,3rd Ed.,ChapmanandHall,NewYork
- PotterNN,HotchkissJH(1988)FoodScience,5thEd.,CBSPublisherandDistributors,Delhi
- CharleyH.(1982)FoodScience,2ndEd.,JohnWileyandSons.
- Levies(1988)Foodcommodities,HeinemannLtd.,London
- HughesandBenniionM(1970)IntroductoryFoods,MacmillanandCo,NewYork
- DowellP,BaileyA(1980)TheBookofingredients,DorlingKindersleyLtd.,London

ProgramName	**BScFood NutritionandDietetics**		Semester	**SecondSemester**
CourseTitle	**HumanNutrition–II(Theory +Practical)**			
CourseCode:	**DSC**		No.ofTheoryCredits	**3+2**
Contacthours	**45hrs**		DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**		SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%
CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Understandthefunctionsandsourcesofnutrients CO2.Applytheknowledgeinmaintenanceofgoodhealthforindividualandthecommunity.CO3.Evaluatefactors affectingavailabilityandrequirementsofmineralsandvitamins CO4.Assess theroleofwaterandfiberinnutrition

ContentofTheory	**45Hrs**
Unit–1	15
Macrominerals:Calcium,Phosphorus,Magnesium,Sodium,Potassium,ChlorineandSulphur-functionssources,requirementsandeffects ofdeficiency,Bioavailability	
Unit-2	15
Microminerals:Copper,Cobalt,Zinc,Iodine,Manganese,Fluorine,Molybdenum,Selenium,ChromiumIron-functions,sources,requirementsandeffects ofdeficiency,Bioavailability	
Unit-3	15
Vitamins:Classificationonthebasisofsolubility,VitaminA,D,E,K,Ascorbicacid,Thiamine,RiboflavinNiacinFolic acid, Vitamin B12, Pantothenic acid, Pyridoxine- functions, sources, absorption, requirements anddeficiency Water:Importance,distributioninthebody,functions,edema,dehydration,sources,waterbalanceand requirements.Fiber:Definition,classification,sources androleoffiberinhumannutrition	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**HumanNutritionII(Practical)**	PracticalCredits	**2**

ContentofPractical

1. Qualitativetestforminerals
2. Determinationofashcontentsinfruitsandvegetablesample
3. Determinationofmoisturecontentinfoodsample
4. Estimationofcalcium
5. Estimationofphosphorous
6. Estimationofiron

References

- WTOTechnicalReportsSeriesforDifferentNutrients.
- SrilakshmiB(2015)Nutrition science-4th Ed.,NewAgeInternational Publ.,NewDelhi
- AgarwalA,UdipiSA(2014)Textbookofhuman nutrition,JaypeeBrosMedicalPubl.,NewDelhi
- BamjiM,RaoNP,ReddyV.(2007)TextbookofHumanNutrition,OxfordandIBHPubl.Co.PvtLtd,NewDelhi
- ShillsME,ShikeM,RossAC,CaballeroB,CousinsRJ(2005)ModernNutritioninhealthanddisease– 10th Ed.,Lippincott Williams andWilkins
- GopalanC(1991)NutritionvalueofIndianfoods,ICMR
- GuthrieAH(1986):IntroductoryNutrition,6th Ed.,TheCVMosbyCo.
- Robinson CH, Lawler MR, Chenoweth WL, Garwick AE (1986) Normal and therapeutic nutrition,17th Ed.,MacmillanPubl. Co.
- SwaminathanM(1985)Essentials offoodandnutrition,VolIandII,GaneshandCo,Madras.

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10 Marks**

ProgramName	**BScFood NutritionandDietetics**	Semester	**SecondSemester**
CourseTitle	**HumanPhysiology–II(Theory+Practical)**		
CourseCode:	**DSC**	No.ofCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes:

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO 1. Understand the role played by hormones in metabolism and associated disorders.CO 2. Comprehend the structure and function of neuromuscular systems and disordersCO3.Understandexcretoryphysiologyanditsimportanceinnutrientretention

CO4.Differentiatebetweenmaleandfemalereproductivephysiologyandchangesduetopregnancyandlactation

ContentofTheory	**45Hrs**
Unit–1	15

Endocrine System: Definition, classification of endocrine glands and their hormones, properties of hormones. Thyroid gland hormones, Parathyroid gland, Adrenal gland, Pituitary gland hormones – types, functions, structures, secretions, actions and regulations . Insulin – secretion, regulation, function and action. Diabetes mellitus – regulation of blood glucose level. Calcitonin – function, action, Ca metabolism and hormone regulating Ca metabolism.
Reproductive system and puberty. Male reproductive system – structure, functions, spermatogenesis. Androgens - Testosterone- structure and functions. Female reproductive system-ovulation, menstrual cycle, Physiological changes during pregnancy, pregnancy test. Lactation: Composition of milk factors controlling lactation. Contraception

Unit-2	15

Nervous system: Structure, Functions of nervous system, classification and properties, neuroglia. Synapse - structure, types, properties, synaptic transmission and reflexes. Autonomic nervous system : concept of sympathetic and parasympathetic nervous system. Cerebrum, Cerebellum, hypothalamus, neuron- anatomy and functions. Basal ganglia-functions, EEG, Parkinson's disease. Cerebro Spinal Fluid (CSF) - formation, circulation, properties and functions. Special senses

Musculoskeletal physiology: Classification of muscle, structure of skeletal muscle. Neuromuscular junction, transmission across neuromuscular junction, excitation contraction coupling. Mechanism of muscle contraction muscle tone, fatigue. Rigor mortis, isometric and isotonic concentration.

Unit-3	15

Excretory system: Excertory organs - Kidney: function, structural and functional unit - nephrons, vasarecta, cortical and juxta medullary nephrons- comparison, juxta glomerular apparatus-structure and function. Renal circulation peculiarities. Mechanism of urine formation – ultrafiltration, criteria for filtration, GFR, plasma fraction, determination of GFR, urine output. Selective re-absorption - sites of re-absorption, substance reabsorbed, mechanisms of re-absorption. Diuretics: water, diuretics, osmotic diuretics, artificial kidney, renal function tests.
Skin – function and structure, regulation of body temperature.

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

Course title	Humanphysiology–II(practical)	Coursecredit	2
Practicalcontent			
• Histologyofcartilage,bone,skin,tissues • Histologyofepithelial,connective,muscular,nervous • Urineanalysis–albumin • Urineanalysis–glucosetest • Heamoglobinestimationusingsahli'smethod			

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10 Marks**

References

- JainNA(2022)CCChatterjee'sHumanPhysiology,24th Ed.,CBSPublishers,NewDelhi
- ChatterjeeCC(2016),HumanPhysiologyVolumeI,MedicalAlliedAgency,Kolkata
- SembulingamK,SembulingamP(2012)EssentialsofmedicalphysiologyJaypeePublication
- GuytonAC,HallJE(1996)TextbookofMedicalPhysiology,9thEd.,PrismBooksPvtLtd.,Bangalore
- Wilson(1989)AnatomyandPhysiologyinHealthandIllness,EdinburghChurchillLivingstone
- ChatterjeeCC(1988)HumanPhysiology,Calcutta,WB

ProgramName	**BScFood NutritionandDietetics**	Semester	**ThirdSemester**
CourseTitle	**LifeSpanNutritionI(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheory+PracticalCredits	**3+2**

Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%	
CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Comprehendtheconceptofabalanceddiet CO2.Understandtheroleofnutritioningrowthanddevelopmentprocessesfrombirthtilladolescence CO3.Formulatenutritionalneeds ofpeopleatdifferent stagesofgrowth CO4.Formulatedietsforvariousnutrition-relatedhealthconditions	
ContentofTheory	**45Hrs**
Unit–1	15
Basic principles of meal planning: Explanation of terms: Health, RDA, Adequate intake, Balanced diet Foodexchange list, food guide pyramid. Vegetarian diets - classification of vegetarianism. Quality o variousnutrients - proteins, fats, minerals, vitamins, fibers and antioxidants. Principles of planning meals Factorsaffectingmealplanning	
Unit-2	15
Nutritionduringpregnancy:Normalgrowthandweightgain.Physiologicalchanges.Dietarymodifications.Generaldietaryproblems.Complicationsduringvariousstagesofpregnancy.Nutritionalrequirements. Dietplanning Nutritionalneedsduringlactation:Physiologyoflactation.Milkoutputandfactorsaffectingit.Dietaryguidelines. Nutritionalrequirements.Dietplanning	
Unit-3	15
Nutritionduringinfancy:Growthanddevelopment.UseofgrowthcharttomonitordevelopmenAdvantages of breast feeding. Nutrition factors of human milk. Difference between human and anima milkArtificial feeding. Factors to be considered in bottle feeding. Feeding problems. Nutritiona requirementsWeaning: Needanduse.Pointstobeconsideredinintroducingweaningfoods.Problemsin weaning.Typesofsupplementaryfoods	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**LifeSpanNutritionI(Practical)**	PracticalCredits	**2**

ContentofPractical

Planning,preparingandcalculatingthemajornutrientsofthefollowing(Twoplanneddietswithdifferent agegroups)

1. Pregnancy
2. Lactation
3. NutritiveRecipesforweaning
4. DietplanningforInfancy-6-8monthsand9-12months
5. UseandinterpretationofGrowthCharts-WHOGrowthCharts

Pedagogy

FormativeAssessment

AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10Marks**

References

- Elizabeth,K.E.(2022).Nutritionandchilddevelopment,6th Ed.,ParasMedicalPublisher,Hyderabad.
- JoshiAS.(2021).NutritionandDietetics,5th Ed.McGrawHill,Noida
- SrilashmiB.(2019).Dietetics,8th Ed.,NewAgeInternationalPublishers.,NewDelhi
- MudambiSR,RajgopalMV.(2020).FundamentalsOfFoods,NutritionAndDietTherapy,6th Ed.,NewAgeInternationalPublishers., NewDelhi
- AgarwalA,UdipiSA.(2013).TextbookOfHumanNutrition.,1stEd.,JaypeeBrothersMedicalPublishers, New Delhi
- MahanKL,Escott-StumpS(2012)Krause'sFoodandtheNutritionCareProcess,13th Ed.,Elsevier,Missouri
- MclarenDS,MeguidMM(1998)Nutritionanditsdisorders,ChurchillLivingstone
- GopalanC(1993)Recenttrendsinnutrition,9th Ed.,OxfordUniv.Press
- Ghosh(1992)Thefeedingandcareofinfantsandyoung children,VHAI,6th Ed.,NewDelhi
- SwaminathanM(1985)Essentials offoodandnutrition,VolIandII,GaneshandCo,Madras
- WHO(1978)Agrowthchartforinternationaluseinmaternalandchildhealthcare,Geneva

ProgramName	**BScFoodNutritionandDietetics**	Semester	**ThirdSemester**
CourseTitle	**Dietetics-I(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheory+PracticalCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%	
CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Knowtheprinciplesofdiet therapy CO2.Understandthemodificationsofnormaldietfortherapeuticpurposes CO3.Learntheroleofaregistereddietician CO4.Identifytherolesofotherswhocollaborateindeliveryoffoodandnutritionservices	
ContentofTheory	**45Hrs**
Unit–1	15
Definition of dietetics, clinical dietetics, objectives of dietetics, Growth and scope of dietetics,Characteristics and role of dietician in health care, classification of dietitian, characteristics of a dietitian,objectivesofdiettherapy.HospitalDietaryservices-role andfunctions.Routinehospitaldiets:Liquiddiet, semi-solid,regularandblanddiet.Modificationof normaldiets.Typesoffeeding-oralfeedingandtubefeeding-enteralandparental	
Unit-2	15
Dietsinobesityandunderweight:Obesity-Etiology,assessment, types.Regionaldistributionoffatinthebody. Metabolic changes in obesity. Modification, dietary treatment. Nutritional requirements. Diemanagement–objectives,macronutrients,micronutrients,generalconsiderations, foodsallowed/not allowed.Underweight-Aetiology,Symptomsandcomplications,Dietarymanagement-objectivesmacronutrients,micronutrients,generalconsiderations,foodsallowed/notallowed	
Unit-3	15
Dietininfectionsandfebrileconditions:Fever:Development,typesandmetabolicchanges.Acuteandchronicfevers.Causesanddietarymanagementoftyphoid,influenza,malaria,tuberculosis.Dietarmanagementofallfevers-objectives,macronutrients,micronutrients,generalconsiderations,foodallowed/notallowed.Chronicinfection - HIV(HumanImmunodeficiencyVirus)infectionandAIDS(AcquiredImmuneDeficiencySyndrome).StagesofHIVinfection.Aetiology,diagnosis.MalnutritionandAIDS:Dietarymanagement-objectives,macronutrients,micronutrients,generalconsiderations	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10

Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**Dietetics-I(Practical)**	PracticalCredits	**2**

ContentofPractical

Planning,preparingandcalculatingthefollowingdiets(Twocasestudies)

1. Fluiddiets
   a. Clearfluid
   b. Fullfluid
   c. Tubefeeding
2. Obesity
   a. Childhoodobesity/overweight
   b. Adulthoodobesity/overweight
3. Underweight.
   a. Childhood
   b. Adulthood
4. Febrileconditions
   a. Generalfevers
   b. Typhoid
   c. Tuberculosis

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10Marks**

References

- SrilakshmiB(2011)Dietetics,6th Ed.,NewAgeInternationalPubl.,NewDelhi
- JoshiSA,(1992)Nutritionanddietetics,TataMcGrawHillPublications,NewDelhi
- RaheenBegum(1989)Atextbookoffoods,nutritionanddietetics,SterlingPubl.,Delhi
- Anderson L, Dibble MV, Turkki PR, Mitchall HS, Rynbergin HJ (1982) Nutrition in health and disease,17th Ed.,JBLippincottandCo.,Philadelphia
- AntiaFP(1973) Clinicaldieteticsandnutrition,2nd Ed,OxfordUniv.Press,DelhiWilliamsSR(1989) Nutritionanddiettherapy,6th Ed,Time,Mirror,MosbyCollegePubl.

Program Name	**BScFoodNutritionandDietetics**	Semester	**ThirdSemester**
CourseTitle	**FoodMicrobiology(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheoryCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Diplomawithminimum45%

CourseOutcomes:

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO1.Understandthenatureofmicroorganismsinvolvedinfood-spoilage,foodinfectionsandintoxication

CO 2. Comprehend the significance of microorganisms and methods used in food industry tosterilize

CO3.Discusstherelevanceofbacteriainfoodandunderstandlifecycle ofviruses

CO4.Appreciatetheimportanceofyeastandtheproblemofmoldsinfood.

CO5.Understandthe important pathogensandspoilage microorganismsinfoods,andthe mostlikelysourcesoftheseorganisms.

CO6.Evaluatewaterqualitybasedonmicrobiologicalcontentandapplytreatmentprocedures.

CO7.Applypreventivemeasuresbasedonanunderstandingofthe factorsaffectinggrowthofmicroorganismsinfood

CO8.Describefoodcontaminants,foodpoisoningandfoodborneinfectionscausedbymicroorganisms

ContentofTheory	**45Hrs**
Unit–1	15
Definitionandhistoryofmicrobiology-Introduction,historicaldevelopmentsinfoodmicrobiology,Contributionsofvariousscientiststothe developmentofmicrobiology.Instrumentation in microbiology - Construction and working principles ofautoclave, hot air oven, pHmeter,laminarairflow,incubator,bacterialcolonycounter,spectrophotometerandmembranefil ter unit. Sterilization - Physical methods - heat, irradiation, filtration, solarisation, ultrasonicvibration.Chemicalmethods-alcohol,aldehydes,dyes,halogens,phenols,metallic salts,surfaceactiveagents,gases	
Unit-2	15
Culture media used in culturing of microorganisms, The common nutrient requirement forbacteria - macro and micronutrients, Isolation of microorganisms- serial dilution, streak plate,pour plateandspread platemethods.Growthcurve,Measurementofgrowth.Factorsaffectingkinds and numbers of microorganisms in food. Factors affecting the growth of microorganismsinfood.Bacteria-classificationaccordingtoBergey'smanualuptolevelsofsection, ultrastructure,reproduction-asexualandsexualmethods,importanceofbacteriainfood.	
Unit-3	15

Yeast-morphology, reproduction - haplobiontic,diplobionticandhaplodiplobionticcycle,physiologyandnutritioninyeast.Importanceof yeastinfood.Mold-outlinesofclassificationandreproduction- asexualandsexualmodes.TypestudyofAspergillus,PenicilliumRhizopusandMucor.Importanceofmol dsinfood.Viruses-structureandclassification- plant,animal,bacterialandcyanophyceanviruses,lifecycle invirus-lyticandlysogenic cycle. Generalprinciplesunderlyingspoilageoffood;Causes forspoilage.Contaminationandkindsoforganisms causing spoilage of fruits and vegetables, meat, poultry, fish, eggs, milk and milkproducts,fatsandoils,bottledbeverages, spicesandcondiments.

Pedagogy

FormativeAssessment:

AssessmentOccasion/ type	**Weightage inMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

References

- FrazierWC,WestoffDC(1998),FoodMicrobiology4th Ed.,TataMcGrawHillPubl.Co.Ltd.
- JayJM(1986)ModernFoodmicrobiology,3rd Ed.,VanNoStrandReinholdCo.Inc.
- PelezerML,ReidRD(1978)Microbiology,McGrawHillBookCo.,NewYork
- BrownA,SmithH(2015)Benson'sMicrobiologicalapplications,McGrawHillPubl.

CourseTitle	**FoodMicrobiology(Practical)**	PracticalCredits	**2**

ContentofPractical

- Studyofinstrumentsinmicrobiologylab
- Preparationofmedias
- Culturingtechniques (serialdilution,spread plate,pourplate,streakplate)
- Stainingtechniques–simplestaining,gramstaining
- Negativestaining
- Fungalstaining
- Isolationoffoodspoilagemicroorganisms

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10Marks**

Program Name	**BScFoodNutritionandDietetics**	Semester	**ThirdSemester**
CourseTitle	**Foodsanitationandhygiene(Theory)**		
CourseCode:	**OE**	No.ofCredits	**3**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Diplomawithminimum45%

CourseOutcomes:

After the successful completion of the course, the student will be able to:CO1.Toapplyknowledgetoassessconsumers'foodpreferencesandchoicesCO2.To odesignprocessestoimproveexisting productsornewproductsCO 3.Tounderstandtheknowledgebaseforproductdevelopment CO4.Toevaluateproducedfoodsbasedonsensoryevaluationoffoods

ContentofTheory	**45Hrs**
Unit–1	15
Personal Hygiene & Importance of Water: General principles of food hygiene. Necessity forpersonalhealthandHygiene(Handsandskin, hair,nose,mouthandears,cuts,boilsetc),medicalcheckup.Habits,ImportanceofRest,ExerciseandRecreation.ProtectiveClothing.GMP&GLP andSanitaryaspectsofbuildingandequipment.Equipmentforpersonalhygiene.	
Unit-2	15
Sources of water, contamination of water. Importance of water and Purification of Water,potablewater.Waterqualitystandards,Criteriaforjudging waterquality.Sanitaryaspectsofwatersupply,watersewagetreatment	
Unit-3	15
FoodContamination,Poisonings:Different Typesofcontamination-Bacterial,Physical,ChemicalFoodPoisoning-commontypesanditssymptoms(Salmonella,*Clostridiumperfringens*,Botulism,Staphylococcus).Preventionoffoodpoisoning.Crosscontaminationinfoodplants.FoodBorne Diseases/Illness-Amoebiasis,Acutediarrhoea/dysentery,Typhoid	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/ type	**Weightage inMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

References

- JohnsN(1991)ManagingFoodHygiene,PalgraveMacmillan.
- SprengerRA(2000)TheFoodHygieneHandbook,HighFieldPublication
- ParkK(2015)ParkTextbookofpreventive&social medicine24th Ed.,BanarsidasBhanotPubl.
- BediYP(1977)Ahandbookofsocialandpreventivemedicine,AnandPubl.
- RodayS(2011)FoodHygieneandSanitationwithcasestudies,2nd Ed.,TATAMcGraw HillEducationPvt. Ltd.New Delhi.

OR

Program Name	**BScFoodNutritionandDietetics**		Semester	**ThirdSemester**
CourseTitle	**NutritionalAssessmentandSurveillance(Theory)**			
CourseCode:	**OE**		No.ofTheoryCredits	**3**
Contacthours	**45hrs**		DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**		SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Diplomawithminimum45%

CourseOutcomes:

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Assessnutritionalstatususingrapidassessmentprocedures
CO2.Useanthropometricsandinterpretthesame
CO3.Developnutritionalassessmentandsurveillanceprotocols inthecommunity,carryout datasurveyandanalysisanddevelopdietarycounsellingstrategies
CO4.Performroleofprofessionaldietician

ContentofTheory	**45Hrs**
Unit–1	15

Nutritional status assessment and surveillance - Meaning, need, objectives and importance.Community,regional,nationalandinternationalsurveillancesystems.Rapidassessmentprocedures-
Need,importance,techniques,interpretationandstepsinRAP.Sourcesofsecondaryhealthdata-sourcesofrelevantvitalstatistics,importanceofinfant,child,maternal mortalityrates,andepidemiologyofnutritionrelateddisease.

Unit-2	15
Growth chart - Meaning, WHO Chart, and charts used in India, uses, use of growth charts forvarious age groups. meaning of reference curveand growth curve.Anthropometry: Need,importance,standardsforreference,techniquesofmeasuringheight,weight,headcircumference,chestcircumference,mid-armcircumference,skinfoldthickness,waisthipratio, calculationofBMI,interpretationofthemeasurements	
Unit-3	15
Nutritionalassessment- DietSurveys:need,importance,methods,interpretation,conceptofconception unit, intrainterindividual distribution in thefamily, verifying theadequacy of thedietwithrespecttoRDA,conceptoffamilyfoodsecurity.Clinicalsigns,biochemicalandbiophysical methods:need,importance,identifyingsignsofdeficiencydiseases,interpretationoftheclinicalsigns, biochemicalandbiophysicalvaluesinmajordiseases.Nutritionalcareprocess- MedicalHistoryassessment.Assessmentof patientneeds.Roleof Dietitian – Professionalcodeandethicsofadietitian.	

Pedagogy

FormativeAssessment:

AssessmentOccasion/ type	**Weightage inMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

References

- AntiaFP(2008)Clinicaldieteticsandnutrition.,OxfordUniversityPress,NewDelhi.
- MahanLK,Escott-StumpS(2000).Krause'sFoodNutritionandDietTherapy10th Ed.,W.B.SaundersLtd.
- Zeeman, FJ. (1998) Applications of clinical nutrition. Englewood cliffs: Prentice Hall ,InternationalInc.,
- ThomasB(1995)BlackwellManualofDieteticpractice,2nd Ed.,Oxford:NewYork
- Robinson(2006)Normalandtherapeuticnutrition,MacmillanPub.CompanyNewYork
- MudambiSR,Rajagopal MV(2015)Fundamentaloffood,nutritionanddiettherapy.NewageInternationalPubl.,New Delhi,
- SrilakshmiB(2014)Dietetics,NewageinternationalPubl.,NewDelhi.

ProgramName	**BScFood NutritionandDietetics**	Semester	**FourthSemester**
CourseTitle	**DieteticsII(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheory+PracticalCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes(COs):Aftersuccessfulcompletionofthiscourse,studentswillbeableto:
CO 1. Understand the principles of diet therapy for various ailments and diseasesCO2.Workoutthemodificationsofnormaldietfortherapeuticpurposes
CO3.Assessfoodallergies,intoleranceandnutrient-druginteractionsforappropriatedieteticsapproaches
CO4.Evaluatenutritionalrequirementsfordeficienciesanddevelopsuitabledietarytreatments

ContentofTheory	**45Hrs**
Unit–1	10
Diet in burns injury and surgery conditions: Burns- definition, classification, complications: Dietarymanagement - objectives, macronutrients, micronutrients, general considerations. Injury/ Trauma-definition. Metabolic, physiological and hormonal response to Injury: Dietary management - objectives,macronutrients,micronutrients,generalconsiderations.Surgery-definition.Metabolic,physiologicalandhormonal response to surgery: Dietary management - objectives, preoperative and postoperativenutritionalcare,macronutrients,micronutrients,generalconsiderations	
Unit-2	15
Gastro-intestinaltractailments:Diarrhoea-definition,classification,consequences.Treatmentodiarrhoea-Fluid management- Oral Rehydration Therapy (ORT). Dietary management - objectives macronutrients,micronutrients,generalconsiderations,lowresidueandlowfiberfoods.Definitionsymptoms,classification,complicationsanddietarymanagement-objectives,macronutrientsmicronutrients,generalconsiderations, foods allowed and not allowed for the following: Constipation Gastro Oesophageal RefluxDisease(GERD),Gastritis-acuteandchronic,Pepticulcer,Irritablebowesyndrome,Steatorrhoea,Ulcerativecolitis,Diverticulosis.	
Unit-3	10
Food intolerance: Definition, causative factors, diagnosis, treatment – elimination diet. Lactose intolerancesymptoms,causativefoodsandstagesaccordingtoseverity,foodsincludedandexcluded,nutritiontreatment. Gluten intolerance – symptoms, dietary treatment, foods included and excluded, nutritionatreatment.Nutrient-drug interaction FoodAllergy:Definition,typesofallergy,common foodasallergens.SignsandSymptoms,testsforallergy.Dietetictreatment.	
Unit-4	10

Nutritionaldeficiency:Protein–energymalnutrition-aetiology,types,symptoms,dietarytreatmentandprevention, hospital treatment, domiciliary rehabilitation. Aetiology, clinical features, dietary treatmentand prevention, prophylaxis programmes of the following: Iodine Deficiency disease and Vitamin Adeficiency. Nutritional Anaemia - Aetiology, clinical features, types, dietary treatment and prevention ofthe following: Iron deficiency Anaemia / Disorder (IDD), Megaloblastic Anaemia, Folate Deficiency,Pernicious Anaemia

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**DieteticsII(Practical)**	PracticalCredits	**2**
ContentofPractical			
Planning,preparingandservingthefollowingdiets(twocasestudies) • Burns • Constipation • Pepticulcer • Proteindeficiency • Irondeficiency • VitaminAdeficiency • Foodallergy/intolerance			

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10Marks**
References	

- SrilakshmiB(2011)Dietetics,6thEd,NewAgeInternationalPubl.,NewDelhi
- JoshiSA,(1992)Nutritionanddietetics,TataMcGrawHillPublications,NewDelhi
- MahanLK,ArlinMT(1992)Krause'sFood,NutritionandDietTherapy,8thEd.,W.BSaundersCompa ny,London
- WilliamsSR (1989)Nutritionanddiettherapy,6thEd.,Time,Mirror,MosbyCollegePubl.StLouis
- RaheenBegun(1989)Atextbookoffoods,nutritionanddietetics,SterlingPubl.,NewDelhi
- RobinsonCH,LawlerMR,ChenowethWL,GarwickAE(1986)Normalandtherapeuticnutrition,17thEd,Ma cmillanPublandCo.
- AndersonL,DibbleMV,TurkkiPR,MitchallHS,RynberginHJ(1982):Nutritioninhealthand disease,17th Ed.,JBLippincott andCo.,Philadelphia
- AntiaFP(1973)Clinicaldieteticsandnutrition,2ndEd.,OxfordUniv.Press,Delhi

ProgramName	**BScFood NutritionandDietetics**		Semester	**FourthSemester**
CourseTitle	**LifeSpanNutritionII(Theory+Practical)**			
CourseCode:	**DSC**		No.ofTheory+PracticalCredits	**3+2**
Contacthours	**45hrs**		DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**		SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes(COs):Aftersuccessfulcompletionofthiscourse,studentswillbeableto:
CO 1. Understand the process of growth and development and the concept of growth promotionCO2.Comprehendnutritionalneeds atdifferentstagesofgrowth.
CO3.Evaluatenutritionalneedsduringpregnancyandlactation
CO4.Applynutritionalrequirementsfortheagedtakingtheirphysiologyintoaccount

ContentofTheory	**45Hrs**
Unit–1	15
Nutritionalneedsforchildren:Pre School-Factorstobeconsideredinplanningmealsforpreschoochildren. Factors affecting nutritional status. Pica. Dietary guidelines. Nutritional requirements. Dieplanning School children - Meal planning for school children. Feeding problems. School lunch programmes. Factorsaffectingfeeding programes. Nutritionalrequirements.	
Unit-2	15
Nutritionalneedsforadolescents:Specialneedsforgirlsduringmenarche-Foodhabits.DietaryguidelinesNutritionalproblems-obesity,eatingdisorder,osteoporosis,anaemia,undernutrition,premenstrualsyndrome,PCOD.Nutritionalrequirements.	
Unit-3	15
Nutritionalneedsofadults:Referencemanandreferencewomaninrelationtooccupation.Dietaryguidelinestoreducethecost ofameal. Nutritionalrequirements.	
Unit- 4	15

Nutritional needs during old age: Physiological changes, RDA, Nutritional guidelines, nutritional, healthconcerns&complicationsandtheirmanagement.Dietarymodifications.Factorscontributingtolongevity

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**LifespanNutrition-II(Practical)**	PracticalCredits	**2**
ContentofPractical			
Planning,preparingdietsandcalculatingthemajornutrientsoffollowing(Standardwithtwoplanneddietsofdifferentcaloriesandactivities) 1. DietplanningforToddlers-(1-3years) 2. DietplanningforPreschoolChild-(4-6years) 3. DietplanningforSchoolgoingChild-(7-9yearsand10-12years) 4. NutritiveRecipesforsnacksandpackedlunches 5 DietplanningforAdolescents(13-15yearsand16-18years) 6 DietplanningforAdult(menandwomen) 7 Oldage			

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**WeightageinMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10Marks**

References

- Elizabeth,K.E.(2022).Nutritionandchilddevelopment,6th Ed.,ParasMedicalPublisher,Hyderabad.
- JoshiAS.(2021).NutritionandDietetics,5th Ed.McGrawHill,Noida
- SrilashmiB.(2019).Dietetics,8th Ed.,NewAgeInternationalPublishers.,NewDelhi
- MudambiSR,RajgopalMV.(2020).FundamentalsOfFoods,NutritionAndDietTherapy,6th Ed.,NewAgeInternationalPublishers., NewDelhi
  AgarwalA,UdipiSA.(2013).TextbookOfHumanNutrition.,1stEd.,JaypeeBrothersMedicalPublishers,New Delhi
- SrilakshmiB(2011)Dietetics,6th Ed.,NewAgeInternationalPubl.,NewDelhi
- MclarenDS,MeguidMM(1998)Nutritionanditsdisorders,ChurchillLivingstone
- GopalanC(1993)Recenttrendsinnutrition,9th Ed.,OxfordUniv.Press
- Ghosh(1992)Thefeedingandcareofinfantsand youngchildren,VHAI,6th Ed.,NewDelhi
- SwaminathanM(1985)Essentialsoffoodandnutrition,VolIandII,GaneshandCo,Madras
- WHO(1978)Agrowthchartfor internationaluseinmaternalandchildhealthcare,Geneva

ProgramName	**BScFoodNutritionandDietetics**	Semester	**FourthSemester**
CourseTitle	**QualityControl(Theory+Practical)**		
CourseCode:	**DSC**	No.ofTheoryCredits	**3+2**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:

CO 1. Understand international and national food laws, regulations and standards governing the safety ofthefoodfromfieldtofork

CO2.Abletolocateandinterpretgovernmentregulationsregardingthemanufactureandsaleoffoodproducts.

CO3.Describetheuseofadulterantsaddedtofoods

CO4.Discusstheapplicationofbiotechnologicaltechniquesandevaluatepackagingrequirementsof diversefoods

ContentofTheory	**45Hrs**
Unit–1	15

Food quality and quality control: Definitions. Principles of quality control. Food inspection androle of food inspector, Sample and samplingmethods.Industrialqualitycontrol: Rawmaterialcontrol,Processcontrol,FinishedProductcontrolandinspection.

Adulterationoffood:Definition,types,contaminationoffoodbyincidentaladulterationby microorganisms,packagingmaterialsandothersources.Teststodetectcommonadulterants.

Unit-2	15

FoodLaws:PFA-Modeofworkand dutiesoffoodinspectors.Essentialcommoditiesact,FSSA2006,ISO9000, 22,000 Foodstandards:ISI,AGMARK,Export inspectioncouncil,consumerprotectionact,CODEXAlimentarius,FSSAI.HACCP-Importance.Principles.DeterminationofCCP.Problemsin

implementingHACCP. Importanceof TQM, GMPandGLP

Unit-3	15
Food additives: Definitions. Principles and objectives. Classification and uses. Colouring agents:Natural,Syntheticandnon-certifiedcolours.Leaveningagents:Classificationanduses. Flavouringagents:NaturalandSyntheticflavours. Foodfortificationandenhances:Definitionandimportance.Principles.Commonlyfortifiedandenriched foods.Non-nutritionalconstituentsandfoodsafety:naturallyoccurringtoxicants, microbialtoxins,bacterialfoodpoisoningandcontaminationarisingfromprocessing	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

CourseTitle	**QualityControl(Practical)**	Practical Credits	**2**

CourseOutcomes:

Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Det ectcommonadulterantsfoundin foodsamples
CO 2. Evaluate the quality of egg based on certain indicesCO3.Determine waterparameters
CO4.Evaluatemoisturecontentinfoods
CO 5. Evaluate foods based on sensory evaluationCO6.Determinefatcontentinfoods
CO7.Evaluatequalityofoilsusingstandardmethods

ContentofPractical

1. Detectionofcommonadulterantspresentinthefoodsample– spicesandcondiments,foodgrains,sugars,fatsandoils
2. Qualityevaluationofwater- hardnessofwaterbytitrationmethod
3. Qualityevaluationofmilk–lactometerreadingandteststodetect,adulteration ofmilk
4. Determinationofstarchcontentinfoodsamples
5. Sensoryevaluationoffoods-Sweet,sour,bitter,salt, umami.
6. Sensoryevaluationofvariousfoodsamples
7. Qualityoffatsandoil-Iodinevalue,Acidnumber,peroxidevalueandsaponification
8. Visittoa qualitycontrollaboratoryoffoodindustry

Pedagogy

FormativeAssessment	
AssessmentOccasion/type	**Weightage inMarks**
Test1	05
PracticalRecord	3
ParticipationandInvolvement	2
Total	**10Marks**

References

- FoodSafetyandStandardsAuthorityofIndia,MinistryofHealthandFamilyWelfare,GovernmentofIndia
- ManaySN,ShadaksharaswamyM.(2001),Eds.Foods,FactsandPrinciples.3rdedition,NewAgeIntern ational. New Delhi.
- MartinEH(1986)Standardmethodsfortheexaminationofdairyproducts
- RanjannaS(1985)Handbookofanalysisandqualitycontrolforfruitandvegetableproducts
- LeesR(1978)Foodanalysis,analyticalandqualitycontrolmethodsforfoodmanufacturersandbuyers
- KeisterDC(1977)Foodandbeveragecontrol,PrenticeHallInc,NewJersey
- ColtmanMM(1977)Foodandbeveragecostcontrol,PrenticeHallInc,NewJerseyKotas R(1973)Anapproach tofoodcosting,NelsonThornes,London

ProgramName	**BScFood NutritionandDietetics**	Semester	**FourthSemester**
CourseTitle	**DietinLifeStyleDisorder(Theory)**		
CourseCode:	**OE**	No.ofTheoryCredits	**3**
Contacthours	**45hrs**	DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks	**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Certificate withminimum45%

CourseOutcomes(COs):Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1. Abletogain indepthknowledgeofvariouslifestyledisorders
CO2.Understandingtheprimarytreatmentforthesediseases.
CO3Describethebasicdietaryguidelinestobefollowed forimprovingthediseaseconditions/

ContentofTheory	45Hrs
Unit–1	15
Obesity–WHOclassificationofBMI,causes,riskfactors,consequences,treatment,dietaryguidelines,foods allowed/notallowed.Weightmaintenance.	
Unit-2	15
Atherosclerosis:Causes,Roleoffatinthedevelopmentofatherosclerosis,riskfactors,consequences,treatment,dietaryguidelines,roleofdietaryfiberinmaintainingheartthealth,hearthealthyfoods. Hypertension - Causes, types, stages, Symptoms, consequences, Dietary guidelines, treatment,DASHDiet,foods allowed/notallowed.	
Unit-3	15
DiabetesMellitus:causes,types,riskfactors,consequences,dietaryguidelines,treatment,glycemic index: definition, importance, high/low glycemic index foods, role of physical activity indiabetes mellitus	

Pedagogy

FormativeAssessment:	
AssessmentOccasion/type	**WeightageinMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

References

- JoshiAS.(2021).NutritionandDietetics,5th Ed.McGrawHill,Noida
- SrilashmiB.(2019).Dietetics,8th Ed.,NewAgeInternationalPublishers.,NewDelhi
- MclarenDS,MeguidMM(1998)Nutritionanditsdisorders,ChurchillLivingstone
- Mahan LM, Sylvia ES (2004) Krause's Food Nutrition and Diet Therapy, 11th Ed., Saunders, Elsevier ShilsME,ShikeMS,RossAC,CabarelleroB,CousinsRJ.(Eds.)(2005)ModernNutritioninhealth anddisease –10th Ed.,LippincottWilliamsandWilkins
- RobinsonCH,LawlerMR,ChenowethWL,GarwickAE(1986)Normalandtherapeuticnutrition,17th Ed.,Mac millanPubl.Co.
- M.RaheenaBegum(2008).TextbookofFoodsNutritionandDietetics,3rd RevisedEdition,Steringpublis hers,pvt, ltd,New Delhi

OR

Program Name	**BScFoodNutritionandDietetics**		Semester	**FourthSemester**
CourseTitle	**Food technology(Theory)**			
CourseCode:	**OE**		No.ofCredits	**3**
Contacthours	**45hrs**		DurationofESA/Exam	**2Hours**
FormativeAssessmentMarks		**20**	SummativeAssessmentMarks	**80**

CoursePre-requisite(s):Degreewithminimum45%	
CourseOutcomes: Afterthesuccessfulcompletionofthecourse,thestudentwillbeableto:CO1.Und erstandconceptsinfoodtechnology CO2.Evaluatethevarioustypesoffoodpreservationandpackaging CO3.Dif ferentiatetechniquesusedinmilkprocessing CO4.Usesensoryevaluationtostudythequalityof foods	
ContentofTheory	**45Hrs**
Unit–1	15
Introduction to food technology, Physico-chemical properties of food, classification of foodgroups, Food ingredients, different techniques and equipments used in preservation of food:Drying, refrigeration, thermal treatments. Innovative techniques used in food processing: RTE,RTS,ediblecoatings,ediblefilm,instantpremixes.Differentpackagingrequirementsandits importance.	
Unit-2	15
Milk:Definition,differenttechniquesusedinprocessingofmilkproducts:UHT,Pasteurization,Clarificat ions.Differenttypesofmilkproductsandprocessing.Sensoryevaluationofthefood productsits importance,E-Noise&E-tongue.	
Unit-3	15
Application of enzymes for production in biochemical and food processing industries, industrialapplicationofmicrobialenzymes;productionofamylase,lipaseandpectinase;immobilized enzymesandtheirapplications.Foodregulationsandlicensingrequirements.	

Pedagogy

FormativeAssessment:	
Assessment Occasion/type	**Weightage inMarks**
Test1	10
Assignment/Seminar	5
Project	5
Total	**20Marks**

References

- FlickingerMC,DrewSW(1999)EncyclopediaofBioprocessTechnology,A WileyInterSciencePubl.
- WebbBH,JohnsonAH(1988)Fundamentals ofDairyChemistry,3rd Ed.,CBSPubl.,NewDelhi
- RobinsonRK(2012)ModernDairyTechnology,Springer-Science