PERIYARUNIVERSITY

PERIYARPALKALAINAGARSA

LEM–636011

SYLLABUSFOR

B.Sc.-NUTRITIONANDDIETETICS

CHOICEBASEDCREDITSYSTEMOUTCOMEBASEDEDUCATION

(ForCandidatesadmittedintheCollegesaffiliatedtoPeriyarUniversityfrom2021-2022onwards)

CONTENTSPAGE

REGULATIONS

1. Preamble:

NutritionandDieteticscurriculumhasbeenstructuredtopreparetheundergraduates to achieve skills to move forward with the development ofthesociety/community/nationandentrepreneurship.Nutritionhasbeenrecognized and given a special role in national development .This course isfollowing on the same lines laid out in National Policy of Nutrition. Thiscurriculumaimsattrainingstudentstotakeupleadershiprolesinextension and community outreach programs. The students are encouragedto develop a scientific temper. Familiarizing them with the use of newertechnologies,methodsinfamilyandcommunitylinkages,andsustainableuse of resources for human development are the hall mark of this course.This course aims at enriching the minds of the students who have interestin learningfiner points of nutrition. Nutrition is the key to facilitate thestudyandenhancethequalityofhumanlife.Itsapproachisthereforeinherentlyinterdisciplinary.Itscurriculumthatengagesthestudentthroughteaching,researchandextension.

2. ELIGIBILITYFORADMISSION:

Candidates for admission to the first year of the Degree ofNutrition andDieteticscourseshallberequiredtohavepassedtheHigherSecondaryExaminationsconducted by the Governmentof Tamil Nadu or any otherequivalentexamination.

As per Government Order (2020-2021) G.O.(1D)N0.110, Higher Education(G1)Department,dated18.07.2020.

*ELIGIBILITY:*1.GeneralStream:Chemistry withBiology orHomeScience

2. VocationalStream:BiologyorHomeScience.

3. ELIGIBILITYFORTHEAWARDOFTHEDEGREE:

A candidate shall be eligible for the award of the Degree only if she hasundergone the prescribed course of study for a period of not less than threeacademicyears,passed theexaminationsofallthesixsemesters prescribed.

4. COURSEOFSTUDY:

The main subject of study for Bachelor Degree shall consist of the following:PART-I: Tamil/Otherlanguages

PART-II: English

PART-III: CoreCourses,ElectiveCoursesandAlliedCoursesPART-IV: SBEC*/NMEC**/Add-oncourse/EVS/ValueEducation

PART-V:

ExtensionActivities:NSS/NCC/Sports/YRCandotherExtra curricular activities offered under part V of theprogrammes.

*SkilledBasedElectiveCourse

**NonMajorElectiveCourse

Semester I&II: Allied Course I- Chemistry Allied II- Chemistry and AlliedCoursepracticalChemistry(Compulsory).

SemesterIII&IV: AlliedCourseI-GeneralHomeScienceI AlliedII-GeneralHomeScienceIIandAlliedCoursepracticalGeneralHomeScienceI(Compulsory)

Non major elective course subjects may be chosen by the respective collegesandthesamemustbecommunicatedtotheUniversity.

5. Examinations

There shall be six examinations- two in the first year, two in the second yearand two in the third year. Candidates failing in any subject / subjects willbepermittedtoappearforsuchfailedsubject/subjectsatsubsequentexaminations.TheSyllabushasbeendividedintosixsemesters.Examinations for I, III and V semesters will be held in November/ Decemberand for II, IV and VI semesters will be held in April / May. The practicalexamination I will be held at the end of I year. II will be held at the end of IIyear.IIIandIVwillbeheldattheendofIIIyear.

Requirementtoappearforthe examinationA candidate shall bepermittedtoappearfortheuniversityexaminationsforanysemester(practical/theory) if He / She secure not less than 75% of attendance in thenumberofworkingdaysduringthesemester.

6. Passing Minimum

A candidate who secures notless than 40%in the university (external)Examination and 40% marks in the external examination and continuousinternal assessment put together in any course of Part I, II, III & IV shall bedeclaredtohavepassedtheexaminationinthesubject(theoryorPractical).

7. ClassificationofSuccessfulCandidates

Candidates who secure not less than 60% of the aggregate marks in thewhole examination shall be declared to have passed the examination in FirstClass. All other successful candidates shall be declared to have passed inthe Second Class. Candidates who obtain 75% of the marks in the aggregateshallbedeclaredtohavepassedtheexaminationinFirstClasswithDistinctionprovidedtheypassalltheexaminationsprescribedforthecourse at the first appearance. Candidates who pass all the examinations(Part I, II, III & IV) prescribed for the course in the **FIRST APPEARANCEITSELFALONE**iseligibleforranking.

8. MaximumDurationforthecompletionoftheprogramme:

The maximumdurationforcompletionoftheUGProgrammeshallnotexceedtwelve semesters.

9. CommencementofthisRegulation:

These regulations shall take effect from the academic year 2021-2022, i.e.for students who are to be admitted to the first year of the course during theacademicyear2021-2022andthereafter.

10. PatternofQuestionPaper(AllCourses)

Time:3Hours Maximum:75

MarksPart A : 15x1=15 (Multiple Choice) (Three questions from each unit)Part B : 2 x 5 = 10(Any Two questions) (One question from each unit)PartC:5x10=50(Onequestionfromeachunitwithinternalchoice)

11. EVALUATIONPATTERNFORINTERNALASSESSMENT1

1A.THEORYPAPERS

component	Time	TotalMarks	IAmarks
TestI	2hours	50	10
TestII	2hours	50	10
Assignment(minimum2)		10	05
		Total	25

PASSPERCENTAGE

Passingminimum(InternalAssessment)40%	10marks
Passingminimum(ExternalAssessment)40%	30marks
Total	40marks

11B.PRACTICALS

ExternalAssessment(EA)	InternalAssessment(IA)
60Marks	40Marks

component	Time	TotalMarks	IAmarks
PracticalI	3hours	50	15
PracticalI	3hours	50	15
Record			05
Attendance			05
		Total	40

PASSPERCENTAGE

Passingminimum(InternalAssessment)40%	**16marks**
Passingminimum(ExternalAssessment)40%	**24marks**
Total	**40marks**

ProgrammeOutcomes

PO1.KNOWLEDGE

Students:

- Followthedevelopmentsinthefieldofnutritionanddietetics.
- Haveknowledgeandskilloftheinformationandcommunicationtechnologies essential tofollow today's technological developmentsandimprovethemselvesinthisfield.
- Acquire the skill of understanding the basic values and culture of thesocietytheylivein,adaptingtotheseandchangingthemselvespositivel y.
- Haveknowledgeoftheconceptsofphysiology,nutritionalbiochemistry,nu trition,dieteticsandotherrelatedtohumanhealth.

PO2.SKILLS

Students:

- Acquire the ability to apply the knowledge and skills they obtain to thesituations encountered in both national and international level, aswellastheabilityoflifelonglearning.
- Awareofprofessionalethics.
- Applythescientificmethodsandtechniques,aswellasqualitymanagement processesrelatedtotheirfield.
- Acquire the skills of designing experiments/projects and conductingandinterpretingthembyanalysingtheirresults.

PO3.COMPETENCES

Students:

- Use the knowledge they acquire to increase the society's level of healthandqualityoflife.
- Havetheskillsofplanningtheworkprocessesinthe fieldsofprofessionalapplication,beingateammember,collaboratingandconductingcollaborativestudies.

ProgramSpecificOutcomes(PSO)

Nutrition&DieteticsstudentswilldemonstratethefollowinglearningObjectivesuponcompletionofthisdegreeprogram

1. Understanding, critically assessing and knowing how to use andapply informationsourcesrelatedtonutrition,food,lifestyleandhealth.
2. Beingfamiliarwithnutrients,theirfunctioninanorganism,bioavailability, requirements and recommended quantities, as well asthebasesofenergeticandnutritionalbalance.
3. Interpreting a nutritional diagnosis, evaluating nutritional aspects of aclinicalrecordandimplementingadietarytreatmentplan.
4. Understanding the structure of food services, nutrition departmentsandhospitalnutritionists,identifyinganddevelopingthefunctionsofanutritionist-dieticianinamultidisciplinaryteam.
5. Perform food system management and leadership functions thatconsider sustainability in business, healthcare, community, andinstitutionalareas

COURSEOFSTUDYANDSCHEMEOFEXAMINATION

SEMESTERI								
Part	**StudyComponent**	**CourseTitle**	**Hrs/ week**	**Exam**				**Credit**
				Dur. Hrs	**CIA**	**Uni.exam**	**Total**	
I	Language	TamilIorotherlanguage	6	3	25	75	100	3
II	Language	English I-Communicative English	6	3	25	75	100	3
III	CoreI	HumanPhysiology	6	3	25	75	100	5
III	CorePracticalI	HumanPhysiology	3	-	-	-	-	-
III	AlliedI	ChemistryI	4	3	25	75	100	4
III	AlliedPracticalI	Chemistry	3	-	-	-	-	-
IV	Add-oncourse	Professional English-I	6	3	25	75	100	4
IV	-	ValueEducation	2	3	25	75	100	-
		TOTAL	36		150	450	600	19

SEMESTERII								
Part	**StudyComponent**	**CourseTitle**	**Hrs/ week**	**Exam**				**Credit**
				Dur. Hrs	**CIA**	**Uni.exam**	**Total**	
I	Language	TamilIIorotherlanguage	6	3	25	75	100	3

II	Language	EnglishII-CommunicativeEnglish	4	3	25	75	100	3
III	CoreII	FoodScience	6	3	25	75	100	5
III	CorePracticalII	FoodScience	3	3	40	60	100	3
III	AlliedI	ChemistryII	4	3	25	75	100	4
III	AlliedPracticalI	Chemistry	3	3	40	60	100	2
III	CorePracticalI	HumanPhysiology	-	3	40	60	100	3
IV	Add-oncourse	Professional English-II	6	3	25	75	100	4
IV	-	EnvironmentalStudies	2	3	25	75	100	-
II	NaanMudhlvanSkillDevelopmentCourse	Languageproficiency foremployability(GenericName)-Effective English (CourseName)30-45hours	2	3	25	75	100	2
		TOTAL	**36**		**295**	**705**	**1000**	**29**

SEMESTERIII

Part	**StudyComponent**	**CourseTitle**	**Hrs/ week**	**Exam**				**Credit**
				Dur. Hrs	**CIA**	**Uni.exam**	**Total**	
I	Language	Tamil III or otherlanguage	6	3	25	75	100	3
II	Language	EnglishIII-CommunicativeEnglish	6	3	25	75	100	3

III	CoreIII	NutritionalBiochemistry	4	3	25	75	100	4
III	CorePracticalIII	Nutritional Biochemistry	2	-	-	-	-	-
III	AlliedII	General HomeScienceI	4	3	25	75	100	4
III	AlliedPracticalII	General HomeScience	2	-	-	-	-	-
IV	SBECI	Foodpreservation andprocessing	2	3	25	75	100	3
IV	NMECI	OtherMajor	2	3	25	75	100	2
IV	NMSDC	Digital Skill for Employability-Microsoft Office Essentials	2	3	25	75	100	2
		TOTAL	**30**		**150**	**450**	**600**	**22**

SEMESTERIV

Part	StudyComponent	CourseTitle	Hrs/ week	Exam				Credit
				Dur. Hrs	CIA	Uni.exam	Total	
I	Language	TamilIVorotherlanguage	6	3	25	75	100	3
II	Language	EnglishIV-CommunicativeEnglish	6	3	25	75	100	3
III	CoreIV	Principle ofHumanNutrition	4	3	25	75	100	4

III	CorePractical III	NutritionalBiochemistry	-	3	40	60	100	3
III	CorePracticalIV	FoodAnalysisandQualityControl	3	3	40	60	100	3
III	AlliedII	General HomeScienceII	4	3	25	75	100	4
III	AlliedPracticalII	General HomeScience	3	3	40	60	100	2
IV	SBECII	FoodStandardandQualityControl	2	3	25	75	100	3
IV	NMECII	OtherMajor	2	3	25	75	100	3
IV	NaanMudhalvanSkillDevelopmentCourse	Employability Skills-Microsoft	2	3	25	75	100	2
		TOTAL	**30**		**295**	**705**	**1000**	**30**

SEMESTERV

Part	StudyComponent	CourseTitle	Hrs/ week	Exam				Credit
				Dur. Hrs	CIA	Uni.exam	Total	
III	CoreV	NutritioninLifeCycle	5	3	25	75	100	5
III	CoreVI	AdvancedDietetics	5	3	25	75	100	5
III	CorePracticalV	NutritioninLifeCycle	3	-	-	-	-	-
III	ElectiveI	PublicHealthNutrition	4	3	25	75	100	4
III	ElectiveII	BasicinResearchMethodology	4	3	25	75	100	4

IV	SBECIII	BakeryScience	3	3	25	75	100	3
IV	SBECIV PracticalI	Food PreservationandBakery	2	-	-	-	-	-
III	CoreVII	Institutional Training	2	-	-	-	-	-
IV	**NMSDC**	**Advance Technology for employability in Life Science -Food Analysis Food Processing & Preservation methods**	**2**	**3**	**25**	**75**	**100**	**2**
		TOTAL	**30**		**125**	**375**	**500**	**21**

SEMESTERVI

Part	StudyComponent	CourseTitle	Hrs/ week	Exam				Credit
				Dur. Hrs	CIA	Uni.exam	Total	
III	CoreVII	Institutional Training	3	3	40	60	100	4
III	CoreVIII	FoodMicrobiology	5	3	25	75	100	4
III	CoreIX	QuantityFoodServiceandPhysicalFacilities	5	3	25	75	100	4
III	CorePracticalV	NutritioninLifeCycle	-	3	40	60	100	3
III	CorePracticalVI	Dietetics	3	3	40	60	100	3
III	ElectiveIII	Nutrition forSportsandFitness	4	3	25	75	100	4
IV	SBECIV PracticalI	Food PreservationandBakery	-	3	40	60	100	3

IV	SBECV	DietCounselling	4	3	25	75	100	3
IV	SBECVI	EntrepreneurshipDevelopment	4	3	25	75	100	3
	NMSDC	Food and Agri Business Management skills for Employability-Organic Food Production Techniques	2	-	-	-	-	2
V	ExtensionActivities/NSS/NCC/YRC/OTHERS							
		TOTAL	**30**		**285**	**615**	**900**	**33**
		OVERALLTOTAL					**4600**	**152**

SEMESTERI	
Core/MajorCourseI	**HumanPhysiology**
PaperCode:	**Theory:6hrs/week**

CourseLearningOutcomes:

1. Gainthebasicknowledgeofhumananatomyandphysiology.
2. Definethemainstructurescomposinghumanbody.
3. Explains structure and functions ofcells, tissues and organs,systemsofthehumanbody.
4. Relatesstructureandfunctionsoftissue.
5. Providesexcellentpreparationforcareersinthehealthprofessionsand/or biomedicalresearch.

CourseContent

Unit-I

Cell–Structureof organellesand functions. Tissues –Structure, classificationandfunctions.

Unit-II

Blood–Composition,functions,coagulation,factorsaffectingcoagulation,bloodgroups. GastrointestinalandHeptobiliarysystem–Structure,physiologyandfunctionsfordifferentorgansandroleofhormonesand enzymes.

Unit- III

Immunesystem–Innate, acquiredand active immunity, cellmediatedimmunity,humoralimmunityandcomplementsystem.

Heartandcirculation–Structure,cardiaccycle,cardiacoutput,factors affecting cardiac output, normal ECG, heart failure, blood pressure,controlandfactorsaffectingbloodpressure.

Unit-IV

Respiratory system–Structure andfunctions,Lungvolumes andlungcapacities,Factorsaffectingefficacyofrespiration.

Excretory system - (A) Urinary System: - Structure and functions oforgans of urinary system (In brief), Mechanism of urine formation. (B)Skin:- Structureandfunctions,Regulationofbodytemperature.

Unit-V

Reproductive system –(A)Female reproductive system -- Structureandfunctions,menstrualcycle,menarcheandmenopause.

(B) MaleReproductivesystem-- Structureandfunctions.

Endocrinesystem - Thyroid,Parathyroid,Adrenal gland,PituitaryandSexglands–Structureandfunctions.

References

1. RossandWilson(2011),AnatomyandphysiologyinHealthandIllness, 11thEdition,ChurchHillLivingstone.
2. West,J.B.(2007),BestandTaylor'sPhysiologicalBasisofMedicalPrac tice,11thEdition.
3. Gyton (1996), Test Book of Medical Physiology, 9th Edition, PrismBooksPvt.Ltd.,W.B.SandersCompany,USA.
4. Chatterjee C.C (2016), Human Physiology Volume I, Medical AlliedAgency,Kolkata.
5. ChatterjeeC.C(2004),HumanPhysiologyVolumeII,MedicalAlliedAgenc y,Kolkata.
6. Sembulingam,K.(2000)EssentialsofMedicalPhysiology,JaypeeBro thersMedicalPublishers(P)Ltd.,NewDelhi.
7. Chaudhri,K.(1993)ConciseMedicalPhysiology,NewCentralBookAgenc y(Parentral)Ltd.,Calcutta.

SEMESTERI	
Core/MajorPracticalI	**HumanPhysiology**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. Gain the basic knowledge of the different vital organs, glands andtissuesunderamicroscope.
2. Toestimatethebloodparameterslikehemoglobin,bloodgroup,bleed ingtime,clottingtimeandplateletcount

Coursecontent

1. Microscopicstudyoftissues-epithelial,connectiveandmuscular.
2. Collectionofbloodsample-
   Capillarybloodfromfingertipsandvenousblood.
3. Separationofbloodcomponents(Centrifugation).
4. Estimationofhemoglobin-Sahli'sAcidhematinmethod.
5. DeterminationofHematocrit(Wintrobemethod).
6. Preparation and examination of stained blood smear (Wedge or glassslidemethod).
7. DeterminationofErythrocyteSedimentationRate(Wintrobemethod).
8. Determinationofbloodgroup.
9. Determinationofbleedingtime(Dukemethod)andcoagulationtime(Cap illarytubemethod).
10. Plateletcount(ReesEckermethodbyhemocytometry).
11. Clinicalexaminationofradialpulse(pulserate).
12. Measurementofbloodpressure(Sphygmomanometry).
13. Effectofexerciseonbloodpressureandheartrate.
14. Microscopicstructureofheart,digestivesystemandkidney.
15. Microscopicstructureofreproductiveorgans- ovary,uterus,mammaryglandsandtestis.
16. Microscopic structure of endocrine glands- thyroid, pituitary andadrenal.

Reference: G.K.Pal and Pravati pal, Text book of practicalphysiology,OrientLongmanLtd.2001.

SEMESTERII	
Core/MajorCourseI	**FoodScience**
PaperCode:	**Theory:6hrs/week**

CourseLearningOutcomes:

1. Summarize and critically discuss and understand both fundamentalandappliedaspectsofFoodScience.
2. Identifyingnutrientspecificforceandapplytheprinciplesfromthevarious factors of foods and relateddisciplines to solve practical aswellasrealworldproblems.
3. Understand the food groups and their functions, acquire knowledgeondifferentmethodsofcookingandapplyprocessofdifferentfoods.
4. Usecombinationoffoodsinthedevelopmentoffoodproducts.5.Identify and control adulterants in various foods and evaluate foodquality.
5. UsecurrentinformationTechnologiestolocateand apply evidence-based guidelines and protocol and get imported with critical thinkingtotakeleadershiprolesinthe field of health, diet and specialnutritionalneeds.

CourseContent

Unit-I

Food: Definition, functional classification, groups (4, 5,7 and 11), foodpyramid.

Cooking: Definition and objectives; Methods- Moist heat methods, dryheatmethods,combinationofbothandmicrowavecooking;Effect ofcookingonnutrients.

Beverages: Classification; Coffee beverage- Constituents and methodof preparation; Tea-Types, preparation; Cocoa- Composition, nutritive valueand preparation of cocoa beverage; Fruit beverages- Types; Introduction tovegetable juices, milk based beverages, malted beverages, carbonated nonalcoholicbeveragesandalcoholicbeverages.

Unit-II

Cereals and millets: Structure, composition and nutritive value of rice,wheatandoats;Nutritivevalueofmaize,jowar,ragiandbajra.Cerealcookery: Effect of moist heat- Hydrolysis, Gelatinisation and factors affectinggelatinization, gel formation, retrogradation and syneresis; Effect of dry heat;Roleofcerealsincookery.

Pulses:Composition,nutritivevalue,toxicconstituents;Pulsecookery- Effect of cooking, factors affecting cooking quality, role of pulses incookery,germinationanditsadvantages.

Unit-III

Milk and milk products: Composition and nutritive value of milk; Milkcookery- Effect of heat, effect of acid and effect of enzymes; Milk products-Non fermentedand fermented products (does not include preparation); Roleofmilkincookery.

Egg: Structure, composition, nutritive value; Egg cookery- Effect ofheat,factorsaffectingcoagulationofeggproteinsand effect of otheringredientsoneggprotein;Roleofeggincookery;Homescalemethodfordetecting eggquality.

Meat: Classification, composition, nutritive value, rigor mortis, ageingandtenderizing;Meatcookery-Changesduringcooking.

Poultry:Classification,compositionandnutritivevalue.

Fish:Classification,composition,nutritivevalue,selectionandprinciplesoffishcookery.

Unit-IV

Vegetables:Classification(nutritional),composition,nutritivevalue;Pigments invegetables-Watersolubleandwater insoluble;Enzymes,flavorcompoundsandbittercompounds;Vegetable cookery- Preliminarypreparation, changes during cooking, loss of nutrients during cooking, effectofcookingonpigments,roleofvegetablesincookery.

Fruits: Classification, composition, nutritive value, ripening of fruits;Browning-Typesandpreventivemeasures.

Spices:Generalfunctions,roleincookery;Medicinalvalueofcommonlyuse dspices.

Unit-V

Fats and oils: Composition and nutritive value, basic knowledge aboutcommonlyusedfatsandoils(lard,butter,margarine,cottonseed oil,ground nut oil, coconut oil, soya bean oil, olive oil, rice bran oil, sesame oil,rapeseedoil,mustardoilandpalmoil);Spoilageoffat-Typesandprevention;Effectofheating,roleoffatsandoilsincookery.

Sugar andrelatedproducts: Nutritive value, characteristics and usesofvarioustypesofsugars;Sugarcookery-Crystallizationandfactorsaffecting crystallization;Stagesofsugarcookery;Roleofsugarincookery.

Reference

1. ManeyS (2008). Foods, Facts andPrinciples, 3 rd EditionPublishedbyWileyEastern,NewDelhi.
2. Usha Chandrasekhar (2002) Food Science and Application inIndianCookery,PhoenixPublishingHouseP. Ltd.,NewDelhi.
3. RainaU,KashyapS,NarulaV,ThomasSSuvira,VirS,ChopraS(2010)BasicFoodPreparation:ACompleteManual,4thEdition, Orient Black SwanLtd,Mumbai.
4. Srilakshmi,B. (2017) Nutrition Science, New AgeInternational(P)Ltd.,NewDelhi,.
5. Mahtab,S.Bamji,KamalaKrishnasamy,BrahmamG.N.V(2012) Text Book of Human Nutrition, Third Edition, OxfordandIBHPublishingCo.P.Ltd.,NewDelhi.
6. SunetraRoday(2017).FoodScienceandNutrition,OxfordUniversityPress,NewDelhi.

SEMESTERII	
Core/MajorPracticalI	**FoodScience**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. Demonstrateskillsondeterminationofedibleportion,effectofcooki ngonvolumeandweight.
2. Chooseappropriatecookingmethodtoconservenutrients.
3. Acquire skills on different methods of cooking. Understandexperimentalcookery.
4. Developrecipesbyapplyingknowledgeoncookingmethodsandpro pertiesoffood

CourseContent

1. Groupingoffoodsaccording to ICMRclassification.
2. Measurementof foodmaterialsusingstandardmeasuringcups,spoonsandweighing.
3. Findthepercentageofedibleportionoffoods.
4. Observethemicroscopicstructureofdifferentstarchesbeforeandafterge latinization(rice,wheatandcorn).
5. Studytheeffectoftemperature,timeofheating,concentration,additi onofsugarandacidongelatinizationofstarch.
6. Preparerecipesusingthefollowingprocesses- Gelatinization,glutenformationandgelformation.
7. Demonstratethebestmethodofcookingrice.
8. Demonstratetheeffectofsoaking,hardwater,sodiumbicarbonateandpap ayaoncookingqualityofpulses.
9. Preparerecipesusingwholegram,dhal,pulseflours,sproutedpulsesandc erealpulsecombination.
10. Demonstratethefactorsaffectingcoagulationofmilkprotein.
11. Preparerecipes usingmilkand itsproducts.
12. Demonstratetheformationofferroussulphideinboilingeggandits preven tivemeasures.

13. Demonstratetheeffectofadditionofacid,fat,salt,waterandsugaronthetexture ofomelettes.
14. Preparerecipeswhereeggactsas– thickeningagent,bindingagent,emulsifyingagentandenrichingagent.
15. Demonstrate the effect of acid,alkali andovercooking on vegetablescontainingdifferentpigments.
16. Demonstratetheeffectsofdifferentamountsofwateraddedto vegetablesduringcookingonflavorandappearance.
17. Demonstrateenzymaticbrowninginvegetablesandfruits andanyfourmethodsofpreventingit.
18. Preparethefollowingusingfruitsandvegetables- salads,soupsandcurries.
19. Determinethesmokingpointofany4cookingoils.20.Preparereci pesusingshallowfatanddeepfatfryingmethods.21.Demonstrateth estagesofsugarcookery
22. Preparerecipesusingvariousstagesofsugarcookeryandjaggery.
23. Preparationofanyonebeverageunderthefollowingtypes- refreshing,nourishing,stimulating,soothingandappetizing.

Reference

1. Srilakshmi.B.FoodScience,NewAgeInternational(P)Ltd.Publishers,Sixthedition.2016.
2. Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art andScienceofCooking:APracticalManual,RevisedEdition.ElitePublishingHousePvtLtd.
3. Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S(2010).BasicFoodPreparation:ACompleteManual,FourthEdition.OrientBlackSwanLtd.
4. Bamji MS, Krishnaswamy K, BrahmamGNV (2009). Textbook ofHuman Nutrition, 3rd edition. Oxford and IBH Publishing Co. Pvt.Ltd.

SEMESTERIII	
Core/MajorCourseIII	**NutritionalBiochemistry**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. ToacquireknowledgerelatedtotheroleofTCAcycleincentralcarbonmetabolism.
2. To understandthe importance of lipid as storagemoleculesandasstructuralcomponentofbiomembranes.
3. Capableofdescribingbiochemicalpathwaysrelevantinnutrientmetabolism.
4. Tounderstandtheconceptsofpreparationofbuffers
5. Toacquirefundamentalknowledgeonenzymesandtheirimportanceinbiologicalreactions.

CourseContent

Unit-I

FundamentalsofBiochemistry,BiologicalMembranesandTransport.Carbohydrates- Definition, classification.Structure (linear) ofMonosaccharides-Glucose,fructoseandgalactose;Disaccharides-Maltose,lactoseandsucrose;Polysaccharides-Starchandglycogen.DefinitionofGlycolysis,glycogenesis,glycogenolysisandgluconeogenesis.Metabolism-Glycolyticpathway,oxidationofpyruvicacid,CitricAcidCycle.PentosePhosphatePathway

Unit-II

Lipids-Definition,classificationandproperties.Metabolism-Beta-Oxidationandbiosynthesisoffattyacids.Cholestrolmetabolism.Definitions-Ketonebodies,ketogenesisandketosis.

Unit- III

Protein-
Definition,classification,structure,physicalproperties,chemicalpropertiesand utilization.Aminoacids-Types,Definition-
deamination,transaminationanddecarboxylation.UreaproductionEnzymesan dco-enzymes-
Definition,types,classificationandfactorsaffectingvelocityofenzymecatalyzedr eactions.

Unit-IV

Introductiontogeneticcontrolofmetabolism-Nucleicacids-
Types,composition,structure,functions,replication.Elementaryknowledgeofbi osynthesisofproteinElectrontransportchainandoxidativephosphorylation.Bio energetics.

Unit-V

Acid – base balance: Acid-base balance in normal health, definition ofbuffers,principlesofbuffers,majorsourcesofacidproducedinthebody,physiologi calbuffersystemandroleofdifferentbuffersystems.Fluidandelectrolytebalance-
Maintenanceinnormalhealth.

Reference

1. 1.Pattabiraman. T.N. Concise Text Book of Bio-chemistry, 2ndedition,AllIndiaPublishersandDistributors,1998.
2. Deb.A.C.,FundamentalofBiochemistry,NewCentruyBookAgency (P)Ltd,Reprint2004.
3. AmbikaShanmugam, Fundamentals of biochemistry for Medicalstudents,
4. KarthikPprinters,7thedition,1992.
5. U.SathyanarayanaandU.Chakrabani,Biochemistry,ThirdEdition,Upp ala-AuthorPublishers,2007.

6. Mahtab.S.Bamji,KamalaKrishnaswamyandG.N.VBrahmam,TextBookof HumanNutrition,OxfordandIBHPublishingCompany,ThirdEdition.2009
7. RamadeviK,Ed:AmbikaShanmugam'sFundamentalsofbiochemistry for medical students, 8th edition, Wolters Kluwer Health,India,2016.
8. RodwellV,BenderD,BothamKM,KennellyPJ,WeilPA,Harper'sIllustrated Biochemistry,30thEdition,McGrawhillEducation,2015.
9. Sulochana H, Principles of Biochemistry, PBS enterprises, Chennai,2010.
10. Cox MM and Nelson DL, Lehninger Principles of biochemistry, 5thedition,EHFreman&Company,Newyork,2008
11. VasudevanDM,SreekumariS,TextbookofBiochemistry,5thedition,Jayp eePublishers,NewDelhi,2007
12. VeerakumariL,Biochemistry,1stedition,MJPPublishers,200513.Murray RK, Granner DK, Mayes PA, Rodwell VW, Harper's IllustratedBiochemistry,26thedition,Mcgrawhillpublishinghouse,.,200 3

SEMESTERIII	
Core/MajorPracticalIII	**NutritionalBiochemistry**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1.Tolearnqualitativeandquantitativeanalysisofbiologicalfluidssuchasurine,bloodandtheirestimationusingstandardmethods.

CourseContent

1. Qualitativeanalysisof carbohydrate-glucose,fructose,lactose,sucroseandmaltose.
2. Qualitative analysis of amino acids- histidine, methionine, tryptophantyrosine,arginineandcysteine
3. Determinationofurinaryphosphorusandurea.
4. Estimationofbloodcholesterol,ironandglucose.

SEMESTERIII	
SBECI	**Foodpreservationand Processing**
PaperCode:	**Theory:2hrs/week**

CourseLearningOutcomes:

1. Describetheprinciplesoffoodpreservation
2. Suggesttheapplicationofthepreservationprocessdependingonthetypeof food.
3. Tounderstandtheprinciplesofprocessingplantfoodsandtostudythene edforprocessingfoods.
4. Choosetheappropriateapplicationofcertainconservationprocesseswith regard to the preservation of quality and the satisfactorydurabilityoffoodproducts.
5. 0ptimizeprocessparametersforselectedconservation processestakingintoaccountthephysico-chemicalpropertiesoffoodproducts.

Course

ContentUnitI

Introduction of food preservation - Definition and scope of food preservation,Principlesofpreservation,FoodPreservationbyhightemperature - SterilizationPasteurizationBlanchingandCanning.

UnitII

Food preservation by drying and dehydration: Definition, drying as a meansof preservation, Differences between sun drying and types of driers used inthe food industry. Evaporation – Definition, factors affecting evaporation,namesofevaporatorsusedinfoodindustry.

UnitIII

FoodPreservationbyLowtemperature-Introductiontorefrigeration,coolstorageandfreezing-Definition,Principleof freezing, changes occurringduringfreezing,Typesoffreezing. PreservativesanditstypesandShelflifeoffoodproducts.

UnitIV

FoodProcessing-Definition,Importance,Scope offoodprocessingindustry.Classificationofplantfoodprocessing-Fruitandvegetableprocessing,CerealandlegumeprocessingandOilseedsproce ssing.

UnitV

Classificationofanimalfoodprocessing-Milkprocessing,Meatprocessing,Fishprocessing,Poultryprocessing. Introductionto FoodPackaging- Objectivesandfunctionsoffoodpackaging,

- TypesofpackagingMaterials(briefly).

Reference

1. PotterNN(2013)Foodscience.2.BrennanJGandGrandison AS(2012)Foodprocessinghandbook.2ndEdition,JohnWiley.
2. ManoranjanKalia(2014)FoodQualityManagementSecondEdition,Aggro techPublishingAcademy,Udaipur.
3. WalterA.Mercer,(1988)AdvancesinFoodResearchFirstEdition,Academic Press, Universityof California, U.S.A. 3. Potter N(1995)FoodTechnology,5thEdition,CornellUniversity,Ithaca,NewYork.
4. Coles R, McDowell D and Kirwan MJ, Food Packaging Technology,CRCPress,2003
5. FrazierWCandWesthoffDC,FoodMicrobiology,TMHPublication,NewD elhi,2004.
6. MeyerLH,FoodChemistry,CBSPublication,NewDelhi,19878.Potter NH,FoodScience,CBSPublication,NewDelhi,
7. RangannaS,HandbookofAnalysisandQualityControlforFruitsandVeget able,Products,2nded.

SEMESTERIV	
Core/MajorCourseIV	**PrincipleofHumanNutrition**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Summarizeandcriticallydiscuss andunderstandboth fundamentalandappliedaspectsofnutrition.
2. Abletoexplainfunctionsofspecificnutrientsin maintaininghealth
3. Identifying nutrient specific force and applytheprinciples fromthevariousfactorsoffoods.
4. Gaininbasicknowledgeofthedifferentnutrientsandtheirroleinmaintaining healthofthecommunity
5. Developskills in qualitativeanalysisandquantitativeestimationofnutrients.

CourseContent

Unit-I

Scienceof Nutrition, Concept of Nutrition- Definition ofnutrition, health,nutritional status and malnutrition. RDA- Definition, factors affecting RDAandmethodsusedforderivingRDA.

Carbohydrates-Definition,composition,functions,maintenanceofbloodsugar levels, requirement, sources, digestion and absorption; Dietary fiber-Definition,classification,physiologicaleffectsandsources.

Unit-II

Proteins- Definition, composition, nutritional classification of proteins andaminoacids,functions,sources,requirements,digestionandabsorption.Evaluationofproteinquality:PER,BV,NPUandChemicalscore.

Lipids- Definition, composition, functions, sources, requirements, digestionandabsorption.Essentialfattyacids– Definition,functions,sourcesandeffectsofdeficiency.

Unit- III

Energy-
Definition,unitsofmeasurement,directandindirectcalorimetry;Determinationofenergyvalueoffood,TotalEnergyrequirement,FactorsaffectingphysicalactivityFactorsaffectingBasalMetabolicRate,factorsaffectingThermiceffectoffood,Recommended Dietary Allowances andSources

Unit-IV

MacroMinerals-
CalciumandPhosphorous:Functions,requirements,sourcesandeffectsofdeficiency.Microminerals-
Iron,Iodine,Copper,FluorineandZinc:Functions,sources,requirementsandeffectsofdeficiency. Sodium and Potassium : Functions, sources, requirements andeffectsofimbalances.

Unit-V

FatsolubleVitamins–
VitaminA,D,EandK:Functions,requirements,sourcesandeffectsofdeficiency.WaterSolubleVitamins–
Thiamine,riboflavin,niacin,ascorbicacid,folicacid,vitaminB6andvitaminB12:Functions,requirements,sourcesandeffectsofdeficiency.

Reference

1. SumathiR.Mudambi,Rajagopal,M.V.,FundametalsofFoodsandNutrition, New Age International (P) Ltd, Publishers, Third edition,1997.
2. SrilakshmiB.,NutritionScience,NewAgeInternational(P)Ltd,Publishers, Fifth,multicolouredition,2016.
3. MangalaKango, Normal Nutrition, Curing diseases through diet, CBSPublications,Firstedition,2005.
4. Sue Rodwell Williams, Nutrition and Diet Therapy, C.V. Melskey Co.,6thedition,2000.
5. Mahtab.S.Bamji,KamalaKrishnaswamyandG.N.VBrahmam,TextBook of Human Nutrition, Oxford and IBH Publishing Company, ThirdEdition.2009.

SEMESTERIV	
Core/MajorPracticalIV	**FoodAnalysisandQuality Control**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. To understand different sampling techniques employed in chemicalanalysisoffoods
2. Tounderstandingonthequalityattributes,theirmeasurementprincipleandinstrumentationofvariousinstrumentsusedinfoodqualityanalysis.
3. Tolearnabouttheimportanceofvariousmethodstoidentifyanyadulterationaspectoffood.

CourseContent

1. Determinationofmoisture,ashandfiberinfood.
2. Estimationofcalcium,phosphorous,ironandascorbicacidinfood.
3. Estimationoftotalnitrogeninfood.
4. Estimationoftitrableacidity,pectin contentoffoodsandlactose.
5. Estimationofspecificgravityofmilkusinglactometer.
6. Determinationofglutencontent.
7. Determination of sugar concentration of food products usingrefractometer.
8. Sensitivitytestsforfourbasictastes.
9. IsolationofmicroorganismsbyPureCultureTechniqueandMicrobialcountbyStandardPlateCountMethod.
10. Morphologyand structuralfeaturesof variousbacteriaandfungicommonlyassociatedwithFoods.
11. Testsforidentificationofadulterantspresentincommonlyusedfoods.

Reference

RangannaS.2001.HandbookofAnalysisandQualityControlforFruitandVegetableProducts.2ndEd.Tata-McGraw-Hill.Govt.ofIndia.

SEMESTERIV	
SBECII	**FoodStandardandQuality Control**
PaperCode:	**Theory:2hrs/week**

CourseLearningOutcomes:

1. Toprovideanopportunitytolearnfoodqualitystandards.
2. Todeveloptheskillsonthestandardizationoffood productswithrespecttoqualitymaintainaccordingtouniversalfoodstandard sworldwide.
3. Tounderstandtheprinciplesofsensoryevaluation
4. To develop skills to carry out sensory evaluation of a newly developedproduct
5. Tounderstandthetermsfoodadulterationandadulterant.

CourseContent

UnitI

StandardizationofFoods;Definition,StandardsofQuality,forcereals,starchy foods, spices and condiments, sweetening agents, meat and meatproducts,vinegar,sugarandconfectionary,beverages-alcoholicandnonalcoholic , carbonated water etc., Milk and milk products, oils and fats ,Cannedfoods,fruitsandvegetablesproducts.

UnitII

Foodlawsandregulation:Mandatoryandvoluntaryfoodlaws,International quality systems and standards like ISO and Food Codex, BRC;Internationaltrades&federalagencies,Indianact-FoodSafetyandStandardsAct,2006.

UnitIII

Variousfoodacts-PFA,FPO,AGMARK,MMPO,MFPO,edibleoil acts,standardweightacts.HACCPANDWTO(briefly).

UnitIV

Conceptofquality:qualityattributes:physical,chemical,nutritionalandmicrobialevaluationandmeasurement.Sensoryevaluation-Typesofsensoryevaluation.

UnitV

Microbial quality control- determination of microorganisms in foods bycultural, microscopic, physical, chemical methods. Food adulteration-Definition,typesofadulterationandtoxicconstitutes.

Reference

1. Siddappaa,G.S.,GirdhariLalandTandon,G.L.1998.PreservationofFruitsandVegetables.ICAR,NewDelhi
2. Sivasankar, B. 2002. Food Processing and Preservation. PHI LearningPvt.Ltd.Delhi
3. Srilakshmi. 2010. Food Science. New age International 978-81-224-2724-0.
4. Srivastava,R.P.&SanjeevKumar.2002.FruitsandvegetablePreservation–PrinciplesandPractice.International BookDistributingCo.,Lucknow.
5. Swaminathan,M.1988.HandbookofFoodScience&ExperimentalFoods.Bappcopublishers,Bangalore
6. U.D.ChavanandJ.V.Patil.2013.IndustrialProcessingoffruitsandvegetables.AstralInternationalPvtLtd.NewDelhi.
7. Vijay,K.2001.Text BookofFoodSciencesandTechnology.ICAR,NewDelhi.

SEMESTERV	
Core/MajorCourseV	**NutritioninLifeCycle**
PaperCode:	**Theory:5hrs/week**

CourseLearningOutcomes:

1. Toapplyknowledgeofthescienceofnutritiontohumanhealthacrossthelifespan.
2. Relatefoodsandnutrientstothebiologicalrequirementsofhumansatdifferentstagesofthelifecycle.
3. Explain,compareandcontrastthenutritionalrequirementsofhumansduringdifferentstagesofthelifecycle.
4. Apply collaboration and team work skills through shared learning innutritionaldiseasetopics.
5. Toformulateadietaryinterventionplantoaddressnutritionaldeficienciesorexcessesaccordingtothehealthneedsofindividualsrelativetoage,developmentalanddiseasestatus.

Unit-I

Menuplanning– Objectives,planningbalanceddiets,foodexchangelists.

Nutrition in pregnancy– Food and nutrient requirements, physiologicalchangesduringpregnancy,developmentalstagesoftheembryo,physiologicalcostofpregnancyandcomplicationsinpregnancy.

Nutritioninlactation– Foodandnutrientrequirements,physiologyoflactation,compositionofbreastmilk,influenceofmother'sdieton thequalityandquantityofmilkproduction.

Unit-II

Nutrition during infancy – Growth and development during infancy, foodand nutrient requirements, advantages of breast feeding, artificial feeding,preterm baby –nutritional requirements, weaning- types of weaning foodsandsupplementaryfoods,problemsinweaning.

UnitIII

Nutrition during preschool age – Food and nutrient requirements, eatinghabitsandbehaviour,growthanddevelopmentandfactorsinhibitinggrowth.

Nutrition for school going children – Food and nutrient requirement, growthpattern,packedlunches,schoollunchprogrammes.

UnitIV

Nutrition during adolescence – Food and nutrient requirements, changes ingrowthpattern,puberty,menarche,changesinfoodhabits,bingeeatingdisorder,predispositiontoosteoporosis,anaemia,undernutrition,premenstrualsyndrome,malnutritionduetoearlymarriage,nutritionalprogrammes.

UnitV

Nutritioninadulthood–

Foodandnutrientrequirements,changesinconsumption pattern - physical, mental and social changes influencing mealpattern.

Nutritioninoldage– Foodand nutrient requirements, physical,physiological,biologicalandpsychologicalchangesinfluencingmealpattern.

Reference

1. Wardlaw G.M, Hampi J.S, DiSilvestro R.A, Perspectives in Nutrition,6thedition,McGrawHill,2004.
2. ChadhaRandMathurP,Nutrition:ALifecycleApproach.OrientBlackswan NewDelhi,2015.
3. SethVandSinghK,DietPlanningthroughtheLifeCycle:Part1Normal Nutrition. A Practical Manual. Elite Publishing House Pvt. Ltd.NewDelhi,2006.
4. Robinson,Normalandtherapeuticnutrition.:MacmillanPub.Co mpanyNewYork,2006.
5. Sumati R. Mudambi,M.V. Rajagopal., Fundamental of food, nutritionanddiettherapy.Newageinternationalpublishers, NewDelhi,2015.
6. SrilakshmiB.,Dietetics,Newageinternationalpublishers,NewDelhi,2014 .

SEMESTERV	
Core/MajorCourseVI	**AdvancedDietetics**
PaperCode:	**Theory:5hrs/week**

CourseLearningOutcomes:

1. Integrate knowledge of research principlesand methods associatedwithnutritionanddieteticspractice.
2. Useeffectiveandappropriatecommunicationskillsinprovidinginformation, adviceand professionalopinion to individuals,groupsandcommunities.
3. Collect, organize and assess data relating to the health and nutritionalstatusofindividuals,groupsandpopulations.
4. Demonstrateinitiativeandjudgmentusingaprofessional,ethicalandentrepreneurialapproachadvocatingforexcellenceinnutritionanddietetics.
5. Independentlyplanandexecutearesearchprojectinregardtonutritionanddieteticspractice.

CourseContent

Unit-I

Conceptsindiettherapy-GrowthandScopeofDietetics,PurposesandPrinciples of Therapeutic Diets, Modifications of Normal Diets, ClassificationoftheTherapeuticDiets.

Unit-II

DietTherapyinObesity,UnderweightandDiabetesMellitusEtiology,Pathophysiology, Clinical symptoms, metabolic alterations,Assessment/Indicators,Lifestyle&Dietaryguidelinesforthefollowingconditions-Obesity(BariatricSurgery:types,Management),Underweigh,DiabetesMellitus(AcuteandChronicComplicationsofDiabetesDietModifications,UseofFoodExchangeLists,Insulin-TypesandUse,OralHypoglycemicAgents,Carbohydratecounting,GlycemicIndex,GlycemicLoad).

Unit-III

DietTherapyinGastrointestinalDisordersandDiseasesoftheliverEtiology,Pathophysiology,ClinicalSymptoms,Assessment/Indicators,Lifestyle&Dietaryguidelinesforthefollowingconditions-
Diarrhea,Dysentery,Constipation,PepticUlcer,Jaundice,Hepatitis,FattyLiver,Cirrhosis.

UnitIV

DietTherapyinDiseasesoftheCardioVascularSystemandKidneyDiseases
Etiology, Pathophysiology, Clinical Symptoms, Lifestyle & Dietaryguidelinesforthefollowingconditions-
Atherosclerosis,Hyperlipidemia,Hypertension,NephroticSyndrome,Nephrolithiasis,Acuteand ChronicRenalFailure,DialysisandKidneyStones.

Unit-V

DietTherapyforFever-Acuteandchronicinfectiousdisease-
Typhoid,TuberculosisAndHIVandAIDSa.Guidelinesformanagementoftuberculosisandinfectiousdiseases.Cancer-Etiology,Metabolicalterations, Types of Cancer, Dietary Recommendation for Cancer Survivors.NutritionaltherapyforCancer.

Reference

1. Srilakshmi,B.Dietetics,NewAgeInternationalP.Ltd.,NewDelhi,2018.
2. Dietary Guidelines of Indians – A Manual, National Institute ofNutrition,Hyderabad,2015
3. Garg,M.Diet,NutritionandHealth,ABDPublishers,2006.•Krause,M.V.andMahan,L.K.Food,NutritionandDietTherapy,9thEd.,W.B.SaundersCompany,Philadelphia,2019.
4. MaimunNisha, DietPlanning for Diseases, KalpazPublishers,2016.•DietaryGuidelinesofIndians–AManual,NationalInstituteofNutrition,Hyderabad,2011.
5. Brown, J (2014).Nutrition now (7thed). Wadsworth, USA, ISBN-13:978-1-133-93653-4,ISBN10:1-133-93653-9•NelmsM,Sucher K (2015). Nutrition Therapy and Pathophysiology. (3rdedition)CengageLearning,USA.ISBN-13:978-1305111967,ISBN-10:130511196

SEMESTERV	
Core/MajorPracticalV	**NutritioninLifeCycle**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1.Nutritioninlife cyclefocuses on food management throughproperplanning, preparation, monitoring, implementation and supervisionofdifferentagegroupsandtodevelopbasiccounselingskillsas dietitian.

CourseContent

1. Display raw and cooked food materials according to exchangelistsgivenbelow.Recordtheirnutritivevalue.Milkexchangelist, Meatexchange list, Pulse exchange list, Cereal exchange list, Vegetable-Aexchange list, Vegetable-B exchange list, Fruit exchange list and Fatexchangelist.
2. Prepare and display one serving of common cooked foods given below.Record theirweight and nutritive value. Cereal preparations, pulsepreparations,vegetablepreparations,friedsnacks,nonvegetarianpreparations,bakeryproducts,chutneysandsweets.
3. Planning, preparing and serving a meal for low income family,middleincomefamilyandhighincomefamily.
4. Planning, preparing and serving a meal for a pregnant woman in firstsecondandthirdtrimesters.
5. Planning, preparing and serving a meal for a lactating woman (0-6monthsand6-12months).
6. (a). Planning, preparing and serving a meal for an infant.(b).Planningandpreparinganindigenousweaningmixes.
7. Planning,preparingandservingamealforapreschooler.
8. Planning,preparingandservingamealforaschoolgoingchild(aboyandagirl).
9. (a).Planning,preparingandservingamealforanadolescent.

(b).Planningandpreparationofanyfivepackedlunches.

10. Planning,preparingandservingamealforanadult(sede ntary, moderateand heavyworker).
11. Planning,preparingandservingamealforanoldageperson.

Reference

1. Srilakshmi,B.Dietetics,NewAgeInternationalP.Ltd.,NewDelhi ,2018.
2. DietaryGuidelinesofIndians– AManual,NationalInstituteofNutrition,Hyderabad,2015.
3. DietaryGuidelinesofIndians– AManual,NationalInstituteofNutrition,Hyderabad,2011

SEMESTERV	
ElectiveCourseI	**PublicHealthNutrition**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Finally, the concepts and knowledge required for the deliveryofcommunitynutritionserviceswill beapplied to programplanning,interventionandprogramevaluation.
2. Gainingknowledgeonnutritionalprogrammesandpoliciesovercomingmalnutrition.
3. Understandingthenational,internationalandvoluntarynutritional organizationstocombatmalnutrition.
4. Able to organizecommunity nutrition education programmewiththeapplicationofcomputers.
5. Applyimmunologicalinterventionprogrammestoovercomeepidemicofcommunicablediseases.

CourseContent

Unit-I

Introduction to public health nutrition a National development-Meaningand Scope of Public Health Nutrition,Rolesand responsibilities of publichealthnutritionists,Definitionsofoptimumhealth,malnutrition(undernutrition,overweight,obesity,micronutrientdeficiency),nutritionalstatus,nutritionintervention,foodandnutrientsupplements,,nutritioneducation,morbidity,mortalityrates.

Malnutrition-EcologyConsequencesandofMalnutrition,StrategiesToOvercomeMalnutrition.Relationofnutritiontonationaldevelopment,Nutritionandfoodsecurity.

Unit-II

NutritionalassessmentIntroduction,DefinitionofNutritionalStatus,Instruments,StandardofReference,AgeAssessment,MeasurementTechniques,Weight, LinearMeasurement/Height,Circumferences,SoftTissueSubcutaneousFat,ObjectiveandClassificationofnutritionalassessment Methods Overview of nutritional status assessment methods:Direct Nutritional Assessment parameters -Anthropometry, clinical signsand symptoms, dietary assessment and biochemical parameters. IndirectNutritionalAssessmentparameters-

a)VitalStatistics:AgeSpecificMortality Rate, Morbidity and Cause of Specific Mortality, b) Ecologicalvariables including crop production and c)Economic factors i.e. per capitaincome,populationdensity&socialhabits

Unit-III

Social&behaviorchangecommunicationConcepts,componentsandprocess of communication for nutrition health promotion • Definitions ofFormal–non-formalcommunication,Participatorycommunication•Components of BCC(Sender, Message, Channel, Receiver) • Various types ofcommunication – interpersonal, mass media, visual, verbal/ non-verbal. •needofSBCCinIndia.•Trainingworkersinnutritioneducationprogrammes•Methodsofeducationwhentoteach,whomtoteach.

Unit-IV

National, international and voluntary organizations to combat malnutritionRole of Nutrition in Achieving Global Targets • Optimal Infant and YoungChildFeeding:Significanceofthefirst1000daysoflife• Improvingmaternal, infant and young child nutrition– WHO Global Targets 2025 •Nutrition Intervention programmes in India –ICDS , Mid-Day Meal (MDM)program. Fortification program National Programs to Combat MicronutrientMalnutrition:NIPI,VAPPandNIDDCP.

Nationalandinternationalagenciesincombatingmalnutrition:International-WHO,FAO,UNICEF-Aimandfunctions.National-ICAR,ICMR,NIN,NFI,FNB,CFTRI,NNMB,NSI,DFRL-Aimandfunctions.

Unit-V

Epidemiologyofcommunicablediseases•Definition,causes,signsandsymptoms, treatment and prevention of communicable diseases, Respiratoryinfectionsandintestinalinfections,•Otherinfections-dengue,Flu•Typesofimmunity-active,passiveandherd-groupprotection• Immunizationagents-vaccines,immunoglobulin•Immunizationschedules-NationalandWHO Expanded Programme on ImmunizationUniversal Passive, Combined,Chemoprophylaxis,non-specificmeasures.

Reference

1. ParkA.(2007),Park'sTextbookofPreventiveandSocialMedicineXIXEdition M/S Banarasidas,Bharat Publishers,1167,PremNagar,Jabalpur,428001(India)
2. BamjiM.S,PrahladRaoN,ReddyV(2004).TextbookofHumanNutritionIIEdition,OxfordandPBHPublishingCo.Pvt.Ltd,NewDelhi
3. BhattD.P(2008),HealthEducation,KhelSahityaKendra,NewDelhi•Gibney MJ, Margetts BM, Kearney JM, Arab L (2004) Public HealthNutritionBlackwellPublishingCo.UK
4. SwaminathanM(2007),EssentialsofFoodandNutrition.AnAdvanced TextbookVol.I,TheBangalorePrintingandPublishingCo.Ltd,Bangalore
5. UNICEF.https://www.unicef.org/
6. WHO.http://www.who.int/
7. NationalGuidelinesonInfantandYoungChildFeeding.wcd.nic.in
8. WHO Non-communicable diseases and risk factors.http://www.who.int/ncds/en/
9. NationalNutritionMission–ICDS.icds-wcd.nic.in•Ministryof Health&FamilyWelfare,www.mohfw.nic.in
10. Field guide to designing communication strategy, WHO publication-2007
11. CommunicationforDevelopment(C4D)CapabilityDevelopmentFramework,UNICEFand3DChange,2009

SEMESTERV	
ElectiveCourseII	**BasicinReaserch Methodology**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Basicknowledgeontheroleandimportanceofresearchinscience.
2. Critically analyse research methodologies identified in existingliterature.
3. Understandingthecomplexissuesinherent inselectingaresearchproblem,selectinganappropriateresearchdesign,andi mplementingaresearchproject.
4. Developaresearchproposalorindustryprojectplan.
5. Searchfor,selectandcriticallyanalyseresearcharticlesandpaper

CourseContent

UnitI

Research- Meaning, Definition, Characteristics, Objectives, MotivationImportance and types. Research Methods and Research Methodology,Criteriaofagoodresearch.

UnitII

Literaturereview-Definition,PurposeandImportance.

ResearchDesign-Definition,Essential,Element,CharacteristicsandTypes.

UnitIII

SampleDesign-

DefinitionandTypes.DataCollection-

DefinitionandTypes.**UnitIV**

ProcessingofData-Editing,Coding,ClassificationandTabulation.

Analysisi of Data(Theory)- A)Measures of central tendency-Mode, MedianandMean. B)Measuresofdispersion-
Range,MeanDeviationandStandardDeviation.

UnitV

LayoutoftheResearchReport-PreliminaryPage,MainTextandEndMatter.

TypesofReports-

TechnicalandPopularOralPresentation-

StructureofPresentation.

SampleResearchProposalinScience-Introduction,ProblemStatement,Objectives,PreliminaryLiteratureReview,MethodologyandReference.

Reference

1. Kothari,C.R.,(2004),ResearchMethodology,MethodsandTechniques,SecondRevisedEdition,NewAgeInternationalPublishers,NewDelhi.
2. Ranjit Kumar, (2011), Research Methodology: a step-by-step Guide forBeginners,ThirdEdition,SAGEPublications,NewDelhi.
3. BeverleyMoriarty,(2018),ResearchSkillsforTeachers–FromResearchQuestiontoResearchDesign,Allen&UnwinPublishers,Australia.
4. Rajendra Kumar, C. (2008), Research Methodology, APH PublishingCorporation,NewDelhi.
5. PagadalaSuganda Devi (2017), Research Methodology: A HandbookforBeginners,NotionPress,Chennai.
6. VijayalakshmiPonnurajandSivaprakasam,C.(2008),ResearchMethods: TipsandTechniques,MJPPublishers.

SEMESTERV	
SBECIII	**BakeryScience**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. Resizerecipestomeetproductionneedsandequipmentcapacities.
2. Scale,mix,mold,proofandbakeyeastraisedgoods.
3. Prepare cookies using various common dividing and panningtechniques.
4. Prepareproductfinishessuchaswashes,glazes,icingsandfillings.
5. Todevelopskillsforsettingupabakeryunit.Andtoenhanceentrepr eneurialskillsinbakeryandconfectionery.

CourseContent

Unit-I

Baking:Meaning,processandscientificprinciplesinvolved.Basicplanandlayout ofabakeryunit.

Equipmentsusedinbakery:Largeequipments,smallequipmentsandtools;types ofovens.

Ingredients used in bakery: Functional classification of ingredients-structurebuilders,tenderizers,moisteners,driersandflavors.

Unit-II

Flour:Composition,types and qualitycharacteristics.

Sugar:Sources,usesandtypesofcommerciallyavailablesugars.

Fats: Fatsusedas shortenings-

Butter,margarineemulsifiedfatsandflavoredoils;propertiesandusesofshort enings.

Unit-III

Leaveningagents:Definitionandclassification-physical;chemical-bakingpowderanditstypes,bakingsoda;biological-yeast-typesandroleinbaking.

Moisturizingagents:Egg,waterandmilk-theirroleinbaking.

Unit-IV

Bread:Ingredientsused,stepsinbreadmakingprocess,processingmethods,characteristicsofgoodbread(externalandinternal),faultsinshape,texture,crustandflavorofbread.

Cakes:Ingredients,types,cakemakingmethods,testfordoneness,characteristicsofgoodcake(externalandinternal),cakefaultsandremedies.
Icing:Meaning,types,ingredientsusedandpreparationguidelines.

Unit-V

Cookies:Characteristics,preparationmethodsandproblemsincookiemaking.
Biscuits:Stepsinvolvedinbiscuitmaking.Pastries
:Typesandmethodofpreparation.

Reference

1. NeelamKhetarpaul,RajBalaGrewalandSudeshJood,Bakerysciencecandcerealtechnology,Dayapublishinghouse.2013.
2. JohnKingslee,Aprofessionaltextto BakeryandConfectionary,NewAgeInternational(P)Limited.2014.
3. NIIR Board of consultants and engineers, The complete technologybookonbakeryproducts,secondedition,NationalInstituteofIndustrialResearch,Delhi.2009.
4. ManayShakunthala, NandShadaksharaswamyM. Food Factsand Principles, New Age International (P) Ltd Publishers, Reprint2005.
5. VijayaKhader, Text book of Food Science and Technology, IndianCouncilofAgriculturalResearch,NewDelhi,2001

SEMESTERV	
SBECIVPracticalI	**FoodPreservationandBakery**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. Applymajor foodpreservationtechniquesandexplainunderlyingprinciples.
2. Designcommonbakeryandconfectioneryrecipes.

CourseContent

1. PreparationofJam,JellyandMarmalade.
2. PreparationofFruitjuicesandSquashes.
3. PreparationofPickles.
4. PreparationofFruitpreserves– Tuityfruitywithpapaya,pethawithwhitepumpkinandmurabhawithginger.
5. Preparationofvathalandvadagam.
6. Preparationbread,bun,cakes,biscuits,cookies,pastryandicing.
7. Preparationofsandwichesanddesserts.

SEMESTERV&VI	
Core/MajorCourseVII	**InstitutionalTraining**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. Explorecareeralternativespriortograduation.
2. Integratetheoryandpractice.
3. Developworkhabitsandattitudes necessaryfor jobsuccess.
4. Develop communication, interpersonal and other critical skills in thejobinterviewprocess.
5. Buildarecordofworkexperience.

CourseContent

It is compulsory for all the students to complete the 2 given institutionaltraining programs in a reputed institution for a period of 15 days each. Atthe end of the final year, each student has to submit a report of the trainingandundergoavivavoceexamination.Markingsystemisasfollows:

Component	**Marks**
Internal Evaluation (Report writing partsandviva)**	40
External Evaluation(Two Questions(20 marks***), TrainingReports(20 marks)andvivavoce(20marks))	60
Total	**100**

**Internalmarkswillbeawardedbythefacultyofthedepartment.

***ExternalExaminerwillsetthequestions

Aspectstobecoveredintheinstitutionaltrainingprograms

(A) Dietaryinternshiptraining

1. Assessingthenutritionalstatusanddiethistoryofpatients.
2. Planningdietsheets,preparingandprovidingguidanceinthepro ductionoftherapeuticdiet.

3. Supervisingthepreparationofdiets.
4. Supervisingthedeliveryoftraystothepatient.
5. Gettingfeedbackfrompatientsregardingdiets.
6. Understandingthelayoutofhospitaldietaryunit.
7. Acquiringpracticalknowledgeindietcounseling.
8. Undertaking2casestudiesathospitalsituation.

(B) Foodprocessingtraining

1. Studyingthetypeofprocessingtechniquesused bytheindustry.
2. Gainingknowledgeonequipmentsusedinprocessing.
3. Understandingthe packagingprocess.
4. Obtainingexperienceinqualitycontroloperations.
5. Studyingthewastedisposalmethods.
6. Marketsurveyforthedemandfortheproductinthemarket.

SEMESTERVI	
Core/MajorCourseVIII	**FoodMicrobiology**
PaperCode:	**Theory:6hrs/week**

CourseLearningOutcomes:

1. Explaintheinteractionsbetweenmicroorganismsandthefoodenvironment,andfactorsinfluencingtheirgrowthandsurvival.
2. Explainthesignificanceandactivitiesofmicroorganismsinfood.
3. Describe the characteristics of food borne, waterborne and spoilagemicroorganisms,andmethodsfortheirisolation,detectionandidentification.
4. Understandtheroleofmicroorganismsinenvironment.
5. Applypreservationtechniquestoavoidfoodspoilage.

CourseContent

Unit-I

Microorganismsimportantinfoodmicrobiology–Mold,Fungi,Algae,Bacteria and Virus – general characteristics. Contamination of foods – greenplantsandfruits,animals,sewage,soil,water,airduringhandlingandprocessing.Spoilage– cause,classification,factorsaffectingkindsandnumbersofmicroorganismsinfood.

Unit-II

Spoilage of different groups of foods – cereal and cereal products, vegetablesand fruits, meats and meat products, fish and other sea foods, eggs, poultry,milkandmilkproductsandcannedfoods.

UnitIII

Foodpreservation–Methodsandprinciplesoffoodpreservation,delayofmicrobial decomposition, preventionof microbial decomposition, removal ofmicroorganisms.

Preservation by use of high temperatures – Factors affecting heat resistanceofmicroorganisms,commercialheatpreservationmethods– sterilization,canning,pasteurization,blanching.

Preservation by use of low temperatures – Growth of microorganisms at lowtemperatures,lowtemperaturesstorage–cellar,chillingandfrozen.

UnitIV

Preservationbydrying-
Methodsofdrying,factorsincontrolofdrying,treatmentsoffoodsbeforeafterdrying.
Preservationbychemicals,

Preservation by Irradiation – Microware radiation, Ultraviolet radiationandionizingradiation.

UnitV

FoodborneIllness–
Foodhazards,significanceoffoodbornedisease,incidenceoffoodborneillness,riskfactorsassociatedwithfoodborneillness.

Bacterial agents of food borne illness – Clostridium botulinum, Escherichiacoli, Salmonella, Shigella and Staphylococcus- The organism, pathogenesisandclinicalfeaturesandassociationwithfoods.

Reference

1. AdamsM.R., MossM.O., FoodMicrobiology,Newage internationalpublishers,NewDelhi,2015.
2. William CFrazier., Dennis C Westhoff., Food Microbiology, McGrawHilleducationprivatelimited,Newdelhi,2014.
3. Sivasankar.,FoodProcessingandPreservation,PHILearningprivatelimitedNewdelhi,2015.
4. BranenA.L.andDavidson,P.M..AntimicrobialsinFoods.MarcelDekker,NewDelhi,1983.
5. Jay J.M.,Modern Food Microbiology. 3rd Edn. VNR, New York.utta.19809thEdition,PrismBooksPvt.Ltd.,1986

SEMESTERVI	
Core/Major CourseIX	**QuantityFoodService PhysicalFacilities**
PaperCode:	**Theory:6hrs/week**

CourseLearningOutcomes:

1. Managethehumanresourceswithinafoodservicesorganizationordepartment.
2. Communicateappropriatelywithclients,staffandmanagement.
3. Applyfoodservicestechnologyandoperateindustryequipment.
4. Developnutritionalmenusforfoodserviceproduction.
5. Designandrunaquantityfood serviceestablishment.

CourseContent

Unit-I

Quantityfoodservice:Meaningandevolution.Classificationoffoodserviceinstitutionsaccordingtoa).Function:Profitoriented,serviceorientedandpublichealthfacility orientedb)Processingmethod:Conventionalsystem,commissarysystemandfastfodservicesystems.c)Serviceof food: Selfservice,trayserviceandwaiter-waitressservice.

Unit-II

Space organization: Kitchen- Size and type; developing kitchen plan; worksimplification- work area, worker's area of reach, work space, equipmentmaterials and supplies and movement at work; features to be considered indesigningkitchen;kitchenlayout.

Storage space: Location, planning, lay out, safety and security. Service area:Location,planning,dimensionsanddecor.

Equipments:Classification,selection,design,installation,operation, careandmaintenanceofcommonlyusedequipments.

Unit-III

Foodpurchasing:Foodbuyer- Knowledge,qualityandfunctionsof afoodbuyer;methodsofbuyingfood.
Receivingandstorageoffood:Deliverymethods, delivery procedure;Receiving;Storage-
organizationofstorages,generalprocedureforstorage;Storekeeping-storerecords,orderformandgoodsreceivedbook.

Unit-IV

Menuplanning:Menu-
Definition,functions,needforandfactorstobeconsideredinmenuplanning,procedureforwritingmenu,typesandconstructionofmenu,menudisplay.

Standardization of recipe: Definition, methods of standardization, standardrecipeformatanduses.
Standardportionsizes:Definition,portioningequipmentsandportioncontrol.

Unit-V

Food production: Meaning, types of food production system, process of foodproduction (briefly), large quantity cooking techniques, use of leftover foodandholdingtechniques.
Foodservice:Meaning,styles-waiterservice,selfserviceandvending.

Reference

1. MohiniSethiandSurjeetMalhan,Cateringmanagement-Anintegratedapproach,Thirdedition,NewAgeInternationalpublishers.2015.
2. MohiniSethi, Institutional food management, Second edition, NewAgeInternationalpublishers.2016.
3. Kinton,RandCesarani,V.,TheTheoryofCateringELBS, VIIEdition,1992.
4. Lillicap, D.R and Cousins, J.A. Food andBeverage Service, ELBS,IVEdition,1994.

SEMESTERVI	
CorePracticalVI	**Dietetics**
PaperCode:	**Theory:3hrs/week**

CourseLearningOutcomes:

1. Understanding of the conditions where nutrition plays a significantroleindiseasemanagement.
2. Developtheknowledgetoprovidenutritionanddieteticcareforindividuals, groups and populations who have or already are at risk ofdevelopinglong-termhealthconditions.

CourseContent

1. Preparation of any 5 recipes for the following therapeutic hospital diets-clearliquid,fullliquid,semisolid,bland,softandregulardiets.

2. Planning and preparation of diets for the following conditions using SOAPformat for nutritional management. [Students have to analyze the given casehistory, prepare SOAP note, plan a day's menu and calculate the nutritionalrequirements. Record must include Food plan (total exchanges/ day), mealpatternandmenu(distributionofexchangeintomealsandsnacks)].

a. Obesityandunderweight
b. Gastrointestinaldisorders–Pepticulcer,diarrhoeaandconstipation

c. Febrilecondition-typhoidandTB

d. Diseasesofliverandgallbladder-Hepatitisandcirrhosis.

f. Diabetes mellitus

g. Diseasesofcardiovascularsystem–AtherosclerosisandHypertension

h. Diseasesofkidneyandurinarytract–
Nephrolithiasis,Nephroticsyndromeandkidneystones

i. CancerandAIDS.

ReferenceV.Vimala,Advancesin diettherapy-Practicalmanual,NewAgeInternationalPublishers,2010.

SEMESTERVI	
ElectiveCourseIII	**NutritionforSportsand Fitness**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

Uponsuccessfulcompletionofthecoursestudentsshallbeableto:

1. Explain the principles of physical fitness and nutrition (such as bodycomposition,energyintake,energyexpenditure,andthe acuteandchronicphysicalchangesrelatedtoexerciseandnutrition)compl ement each other in helping to develop physiological well-beingandoverallhealth.
2. Explain the principles of fitness and nutrition (such as setting realisticshort-term behavior change goals and the relationship of exercise anddiet to stress reduction) complement each other in helping to developpsychologicalwell-beingandoverallhealth.
3. Identify some of thesocial and cultural influences on food habits andexercise/activitypatterns.
4. Evaluatecurrentnutritionalinformationwithregardtoitscontributionto Healthandphysicalfitness.
5. Applytheknowledgeacquiredforplanningdietforathletes.

CourseContent

Unit-I

Physicalfitness:Definition;benefitsofphysicalactivity;Physiologyandbiochemistry of exercise: Muscle contraction; weight and body compositionofathletes;adaptationofmuscleandbodyphysiologytoexercise;effecto fexcessivephysicalexerciseoncardiovascularandpulmonarysystem.

Unit-II

Energysourcesformuscleuse-ATP,phosphocreatine,glucose,fatandprotein; anaerobic metabolism for high intensity bursts and power; aerobicmetabolismforendurance.Nutritionalassessmentandcounselingforathletes.

Unit-III

Nutritionalrequirement:Effectofdifferentialintakesofmacronutrients(carbohydrates,proteinand fat) on the athletic endeavor; hydrationstrategiestooptimizephysicalactivitycapacity;importanceoftimingthenutrientandfluidintaketomatchtissuerequirements.

Unit-IV

Nutritional needs and plans for sports requiring power and speed before,during and after exercise; Nutritional needs and plans for sports requiringendurancebefore,duringandafterexercise;Nutritionplanforsportsrequiringcombinedpowerandendurance.

Unit-V

Nutrition needs of male, female, younger and older athletes. Ergogenic aids:Effect of ergogenic aids and other substances on physical activity; sportsdrinks for endurance activities; nutrition supplements available for athletes.**Reference**

1. Gordan.M.Wardlaw,PerspectivesinNutrition,fourthedition,Mc.Graw Hillcompanies.1999.
2. Antia.F.P.andPhilipAbraham,ClinicaldieteticsandNutrition,fourthedition,OxfordUniversityPress.2002.
3. Srilakshmi.B.,Dietetics,seventhedition,Newageinternational(P)Limited.2014.
4. L.KathleenMahan,SylviaEscott-stump,Krause'sFood,NutritionandDiettherapy,ninthedition,W.B.Saunderscompany.,1996.
5. DonBenordot,Advancedsportsnutrition,secondedition,HumanKinetics,2012.

SEMESTERVI	
SBECV	**DietCounselling**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Understanding the diet counseling skills and acquaint them withbasicprinciple.
2. Determine and translate nutrient needs into menus for individualsandgroupsacrossthelifespan,indiverseculturesandreligi ons.
3. Studentswillbeabletointerpretandapplynutritionconceptstoevaluatean dimprovethenutritionalhealthofindividualswithmedicalconditions
4. Produceoralandwrittencommunicationsforagroupeducationses sion.
5. InterviewindividualsfordiethistoriesandCounselindividuals.

CourseContent

UnitI

Dietetitian – Classification, code of ethics, responsibilities. Computer application - Use of computers by dietitian, dietary computations, dietetic management, education/training, information storage and administrations. Teaching aids used by dietitians -charts, leaflets,postersetc.,preparationofteachingmaterialforpatients.

UnitII

DietCounselling-meaning,significance,process,types.
Goalsofcounselling,individuals,groupandfamilycounseling.Basicseq uenceincounselling.
Communicationprocessincounsellingandlinguisticsinclinicaldietarypractic es,problemsincommunication.

UnitIII

Techniques of obtaining relevant information- Retrospective information,DietaryDiagnosis,Assessingfoodandnutrientintakes,Lifestyles,P hysical

activity,Stress,NutritionalStatus.CorrelatingRelevantInformationandidentifyi ngareasofneed.

TheCareProcess-
Settinggoalsandobjectivesshorttermandlongterm,CounsellingandPatientEducation,Di etaryPrescription.
Motivation-HospitalizedpatientsandOutpatients.

UnitIV

Counselling Skills Approaches to counselling – Psycho analytic approach,Behaviouristic, Humanistic approach Pre – Helping phase: Rapport buildingskills,Attendingandlisteningskills.StageIskills:Empathy,respect,Genu inenessandconcreteness.StageIIskills:Advancedempathy,selfdisclosure,Imme diacyandConfrontation.StageIIIskills:Goalsetting,ActionplanProgrammeandB rainstorming.

UnitV

Teaching aids used by dietitians- charts, leaflets, posters etc., preparation ofteachingmaterialforpatientssuffering from Digestive disorders,Hypertension,Diabetes,Atherosclerosis&Hepatitisandcirrhosis.

Reference

1. Gibson,R.L.,Mitchell,M.H.(2005).Introductiontocounsellingandguid ance(6thEd)•
2. Gelso, C.J., Fretz, B.R.(1995). Counselling Psychology, Bangalore,PrismBooksPvtLtd.
3. Sharma,T.C.(2002).ModernMethodsofGuidanceandCounseling,Ne wDelhi,sarup&sons
4. MahanLKandEscottStumpS(2013).Krause'sFood& NutritionTherapy,13thed.Saunders-Elsevier.
5. Stacy Nix (2009). William's Basic Nutrition and Diet Therapy, 13thEdition.ElsevierMos
6. ThomasBriony;(1995).BlackwellManualofDieteticpractise.(2ndEd.)O xford:NewYork.,1995.

SEMESTERVI	
SBECVI	**EntrepreneurshipDevelopment**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Understandtheconceptofentrepreneurship.
2. IdentifywaystoapproachsupportiveInstitutionsandBanksforstarti nganenterprise.
3. Analyzethestepsinproductselectionandformofownership.
4. Focusontheformationofprojectproposalandpracticeeffectiveaccou ntingprocesses.
5. Understandtherequirementstobecomeanentrepreneur.

CourseContent

Unit-I

Entrepreneur:Definition,qualitiesandessentialskillsofanentrepreneur, communication and presentation skill; innovativeness; ideageneration and SWOT analysis. Steps to start a small enterprise, learningjourneyofasuccessfulentrepreneur.

Unit-II

Business plan for small enterprises: Importance of business plan, purpose,contentsandbenefitsofbusinessplan;businessplancreationprocess,be nefitsofbusinessplan,preparationofsamplebusinessplan.Businessethicsandet iquettes.

Unit-III

Marketsurvey:Meaning,processofconductingmarketsurvey,pointstobeconsidere dforeffectivemarketresearch;stepstoregisteracompany;regulatoryrequirements.

Unit-IV

Management process and policies: Importance of policy creation, corporategovernance, management process, management functions-production andoperation management, marketing management, financial management andhumanresourcemanagement.
Pricingpolicyandmethodsofpricing.

Unit-V

Marketingmanagement-
Conceptofmarketing,marketassessment,market regulation, market targeting, marketing mix, promotional strategiesandtipsforsuccessfulmarketing.

Financial needs: Types of financial needs- fixed and working capital;methodsofraising capital,workingcapital management,workingcapitalcycle.

Reference

1. Entrepreneurship development- Your gateway to the journeyofentrepreneurship,ICTAcademyofTamilNadu,Chennai.2015.
2. S.S. Khanka, Entrepreneurial development, S.Chand Publications,2007.
3. Vasant Desai, Entrepreneurial development, Vol-1, HimalayaPublishingHouse,2009.

SEMESTERIII	
AlliedCourseII	**GeneralHomeScienceI**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Developan understandingofconceptsandbasicsoftextiles.
2. Understandsand definethekeytextileterms.
3. Understandbasicprinciplesofclothingconstruction.
4. Concept, definition, universality and scope of family resourcemanagement.
5. Practicing knowledge gained on selection of site and buildingprinciplesinreallifesituations.

CourseContent

UnitI

Textile – Definition, Terminology and Classification of textile fibers. Basicunit and Polymer bonds in textile fiber, Physical and Chemical Properties offibers.

ProcessingofManufactureofallNaturalandMan-MadeFibers–Plant,Protein, Man-Made, Cellulosic, Synthetic, Metallic, Mineral and ElastomericFibers.

Unit II

Clothing : Origin of Clothing , Principles of Clothing, Clothing Construction – DraftingflatpatternandDapping.

TextileDesigning,FashionDesigning– InfluenceFactors,FashionCycle,Brokenfashioncycles,Fashionadoptiontheories andBusinessandMerchandizing.

UnitIII

Home Management : Definition, Characteristic of Management , ImportanceofHomeManagement,MotivationFactorsofManagement(Values,Goals,Standards),HomeManagementProcess

UnitIV

FamilyResourceManagement:TypesandCharacteristicsofFamilyResource.
FamilyDecisionMaking–DefinitionandTypesofDecisionMaking.
Housing – Definition, Importance and Functions of a House , Principles ofPlanning,SpaceAllocationandOrganizationinIndependentHouses,Apartments andFlats.
SymbolsusedinDraftingPlans,ReadingPlansandBlueprint.

UnitV

Interior Design: Definition, Principles and

Classification.HouseholdEquipments

Colors–

Definition,Classification,FactorsInfluencingChoiceofColorsFurnitureandLighting–DefinitionandTypes.

Reference

1. SunitaMishra(2018),Selectiveand ScientificBooks,NewDelhi.
2. Bhargava, B. (2001).Family Resource Management and InteriorDecoration,Delhi:UniversityBookHouse.Bhargava,B.(2001).
3. HousingandSpaceManagement.Jaipur:UniversityBookHouseLtd.
4. Seetharaman, P., Batra, S., &Mehra, P. (2005). An Introduction toFamilyResourceManagement.NewDelhi:CBSPublishers&Distributors(ISBN13:9788123911861)
5. Shukul, M., and Gandotra,V . (2006). Home Management and FamilyFinance. New Delhi: Dominant Publishers and Distributors.(ISBN No.81-7888-403-8.

SEMESTERIII&IV	
AlliedPracticalII	**GeneralHomeScience**
PaperCode:	**Theory:3hrs/week**

CourseContent

1. Topreparefirstaidkit.
2. Preparationbudgetforlow,middleandhighincomegroupfamily
3. Learningtofilldifferentbankforms-Fillformtowithdrawanddepositmoney,Openaccountinbank,Recurringdeposit.
4. Drawinghouseplansforlow,middleandhighincomegroups.
5. Drawingkitchenlayoutfordifferentfamilieswithplumbingandwiring.
6. Preparationofanalbumondevelopmentmilestonesofchildren.
7. Marketstudyon–Costofdifferenttypesoffurnitures
8. Designinggreetingcardsfordifferentoccasion(anyfiveoccasions).
9. Tablesetting-Fruitandvegetablecarving.
10. Toidentifyvarioustypesoffibresusing-burningtestandvisualinspection.
11. Basicstitches.
12. Useofwastematerialformakingdecorativeandutilitymaterials.13.Papercuttingfordecoratingahouseforspecialoccasions.
14. Prepare one poster/chart on environmental/personal hygienceandsanitation.
15. Preparationandevaluationoflabel-Evaluationoflabelondifferenttypeoffoodproducts,Preparelabel.
16. Methodsofstrainremoval.
17. Methodsofsoapanddetergentpreparation.
18. Kitchen gardns-use the wastecontainer(any four greens).19.Topreparesimpledishesusingdifferentgerminationmethods (anyfivefood).

SEMESTERIV	
AlliedCourseII	**GeneralHomeScienceII**
PaperCode:	**Theory:4hrs/week**

CourseLearningOutcomes:

1. Providesituationsto understandsignificance offamilyincome andexpenditureandsavingforfuture.
2. Know the importance of early childhood years and significance ofinterventionprogramsforearlychildhooddevelopment.
3. Learnaboutwomen'shumanrightsandlawsrelatedtowomeninIndia.
4. Gain knowledge on consumer protection Laws and Acts and reflectuponpersonalrightsandresponsibilities
5. Learnabouttheconceptofextension,extensionapproachesandmodels

CourseContent

UnitI

Family: Meaning and Characteristics of Family, Types of Family, Family LifeCycle , Family Wants, Family Income , Family Expenditure and House HoldAccounts , Family Budgets , Economics , Consumer Protection – Definition ,Importance,Law,ConsumerEducationandAdvertisement.

UnitII

ChildDevelopment:PrinciplesofDevelopment,StagesofGrowthandDevelopment. Life Span Development – Psychodynamic Theory – Psycho – Analytic Theoryof Freud – Erick Ericksons, Psycho – Social Theory , Learning Theory , SocialLearningTheory,CognitiveDevelopmentalTheory,Kohlberg'sMoralReasoningTheory,Information:ProcessingTheory.BronfenBrennersTheory,Life–SpanandLife–CycleTheory.

UnitIII

Early Childhood Care and Education : Emerging Trends – Trends , IssuesandConcern,DevelopmentProblems,MentalSubnormality– MentalRetardation–LearningDisabilities,BehaviorDifficulties– SpeechandLanguage Disorders – Hearing Impairment – Visual Impairment – PhysicalHandicap–Giftedness,GuidanceandCounseling.

UnitIV

Child and Human Development : Early Childhood Care and Development – PrinciplesofDevelopment,TypesofChangeinDevelopment.

Socialization in various Family Contexts Across Different Cultures – Processin Socialization, Social and Non- Social People , Difficulties in Conforming toSocialExpectations,FoundationsofSocialBehaviorlaidbyBabyhood,Behavior patternsinsocialsituationsduringearlychildhood.
Womenstudies-
Women'sEquality,ViolenceagainstWomen,WomenHealth,WomenEmpower ment,WomenandHumanRights.

UnitV

ExtensionEducation:NonFormalEducationandExtensionEducation,History and Development of Home Science Extension, Concepts of ExtensionEducation,PhilosophyofExtensionEducation,PrinciplesofExtension Education, Difference between Formal and Extension Education, ExtensionEducation:ADevelopeddiscipline.

CurriculumPlanningandDevelopment:Objectivesofnonformaleducation ,Planningnonformaleducation Programme,ManagementandAdministration of formal/non formal and extension education, Monitoring ,Supervisionandevaluationformal,nonformalandextensioneducation,Major typesoftest,Qualitiesofagoodtest.

Reference

1. Bhargava,B.(2005).FamilyResourceManagementandInteriorDe coration,Jaipur:ApplePrinterandV.R.Printers.

2. Deacon,R.F.,andFirebaugh,F.M.(1975).HomeManagement:Cont extsandConcepts.Boston:HoughtonMifflinCompany.
3. Nisha,M.(2006).UnderstandingExtensionEducation.NewDelhi:Kal payPublications.
4. Reddy,A.A.(2001).ExtensionEducation.Bapatla:SriLakshmiPress.
5. Singh,U.KandNayak,A.K.(2007).ExtensionEducation.NewDelhi:Com monWealthPublishers.
6. SunitaMishra(2018),Selective andScientificBooks, NewDelhi.

SEMESTERIII(othermajor)	
NMECI	**BasicFoodScience**
PaperCode:	**Theory:2hrs/week**

CourseLearningOutcomes

Thestudentswillbeable to

1. Knowthecompositionofvariousfoods.
2. Understand theeffectsofcookingonnutritivevalue.

UNIT-I

Introduction to Food Science- Functions of food; food guide based onbasicfivefoodgroups,cooking–objectivesandmethods.

UNIT-II

Cereals-
Compositionandnutritivevalueofriceandwheat.Bestmethodofcooking,lossofnutrientsduringcooking;Advantagesofparboiling.

UNIT-III

Pulses-
Composition,nutritivevalue,bestmethodofcooking,lossofnutrientsduringcooking,germinationanditsadvantages.

UNIT-IV

Vegetables-
Classification,nutritivevalue,lossofnutrientsduringcookingandmethodsofreducingnutrientlossduringcooking**.**

UNIT-V

Fruits-Classification,nutritive valueandchangesduringripening.

Fleshyfoods-Meat,fish,eggandmilk:Nutritivevalue.

Reference

1. SumathiR.Mudambi,ShaliniM.Rao,M.V.RajagopalFoodScience,revised second edition, New Age International (p) Limited, PublishersNewDelhi,reprint.2006.
2. N.Swaminathan,FoodScienceandExperimentalfoods,TheBangalorepringandpublishingCo.Ltd.Bangalore,1992.
3. B. Srilakshmi, Food Science, New Age international (P) Ltd, New Delhi,Reprint2006.
4. N.ShakuntalaManay,M.Shadaksharaswamy,Foods–FactsandPrinciples.2nd Edition.NewAgeInternational (P) Ltd, New Delhi,Reprint2005.

SEMESTERIV(othermajor)	
NMECII	BasicNutrition
PaperCode:	Theory:2hrs/week

CourseLearningOutcomes

Thestudentswillbeable to

1. Understandtheprinciplesofnutrition
2. Learnaboutthenutrientsanddeficiency

UNIT-I

Carbohydrate - Classification, functions, blood sugar regulationandsources.Importanceandsourcesoffiber.

Energy: Definition,Unitsformeasuringenergy,Energyvalueoffoodsand RDA.

UNIT-II

Lipids–
Composition,classification,functionsandsources.Roleoflipidsincausingheartdiseases.

UNIT-III

Protein-
Composition,classification(nutritionalandbiological),functions,sourcesandRDA.

UNIT-IV

Minerals

Calcium,Phosphorus,Iron,ZincandIodine–
Functions,sources,requirementandeffectofdeficiency.

UNIT-V

Vitamins

VitaminA,D,E,K,B1,B2&VitaminC-
Functions,sources,requirementandeffectofdeficiency.

Reference

1. MangalaKango Normal Nutrition (Fundamental & Management) RBSAPublishersS.M.SHighwayJaipur–302003L,2003.
2. M.RaheenaBegum,TextbookofFoods,Nutritionand Dietetics,Second Revised Edition, Sterling Publishers Private Ltd, New Delhi,2005.
3. B.Srilakshmi,NutritionScience,NewAgeInternational(P)Ltd, NewDelhi,2002.
4. MahtabS.Bamji,N.PralhadRao,VinodiniReddy,TextBook ofHuman Nutrition Oxford and IBH Publishing Co. Pvt. Ltd, New Delhi,Reprint1999.