AMRITA VISHWA VIDYAPEETHAM
DEEMED TO BE UNIVERSITY
School of Engineering

AMRITAPURI,BENGALURU,COIMBATORE,CHENNAI

DEPARTMENT OF SCIENCES

B. Sc. Food Science and Nutrition

CURRICULUM AND SYLLABI(2021)

GENERAL

INFORMATIONABBREVIATIONSUSEDINTHECURRICULUM

L – Lecture
T – Tutorial
P –
Practical
Cr–Credits
LO–Learning Objective
CO- Course Outcome
PO–Programme Outcome
PEO -Programme Education Objective
PSO –Programme Specific Outcome
HUM-Humanities(includingLanguagesandothers)
SCI-Basic Sciences(includingMathematics)
CSE– Computer Science Engineering
CUL-Cultural Education
CES–Centre for Environmental Studies
CIR-Corporate and Industrial Relationship

Course Outcome (CO) – Statements that describe what students are expected to know, and are able to do attheendofeachcourse.Theserelatetotheskills,knowledgeandbehaviorthatstudentsacquireintheirprogressthroughthecourse.

Program Outcomes (POs) – Program Outcomes are statements that describe what students are expected to know and be able to do upon graduating from the Program. These relate to the skills, knowledge, attitude and behaviour that students acquire through the program. NBA has defined the Program Outcomes for each discipline.

PROGRAMMEEDUCATIONOBJECTIVE(PEO):

FoodSciencegraduateswill beableto:

PEO1:Confidentlypursuehigherstudiesandresearch

PEO2: Serve in core food industry, which leverages diverse food science domains including food chemistry,productdevelopment,safety&qualitycontrol.

PEO3:Becomeanentrepreneurconfidently

PEO4:Performwellinappliednutrition fieldsincludingpublichealthandclinicalnutrition

PEO5:Contributetothemanpowerrequirementinthisfield soastoaddresssocietal&nationalneeds

PROGRAMOUTCOME(PO):

1. **ScientificKnowledge**:Applytheknowledgeofbiologicalsciencesasabasisforunderstandingtheroleoffoodand nutrientsinhealthanddiseases.
2. **Design/development ofsolutions**: Design solutionsforhealthandnutritional problems anddesignproducts that meet the specified needs with appropriate consideration for the public health and safety, andthecultural, societalandenvironmentalconsiderations.
3. **Environment**

andsustainability: Understandtheimpactoffoodprocessingandpreservationsolutionsinsocietalandenvironmentalcontexts,anddemonstratetheknowledgeandneedforsustainabledevelopment.

4. **Ethics:**Apply ethical principles and commit to professional ethics andresponsibilities and norms ofthenutritionandhealthcarepractice.
5. **Individualandteam:**Functioneffectivelyasanindividual,andasamemberorleaderindiverseteams,andinmulti disciplinarysettings.
6. **Communication:**Communicateeffectivelyonnutritionalandhealthburdenswiththescientific communityandwithsocietyatlarge,suchas,beingabletocomprehendandwriteeffectivereportsanddesigndocu mentation,makeeffectivepresentations,andgive andreceiveclear instructions.
7. **Life-longlearning:**Recognizetheneedfor,andhavethepreparationandabilitytoengageinindependentandlife-longlearninginthebroadestcontextofhealthcaremanagement.

PSO FORB.SC.FOODSCIENCEANDNUTRITION

PSO1: Understand thesignificanceofdiversefood groupsinrelation to health.

PSO2: Comprehend theassociation betweennutrientswith physiology,diseasesanddietarysolutions.

PSO3: Associatethetheoreticalknowledge and skillsacquiredto thefood industry.

PSO4: Apply knowledge and technical skills in assessing,evaluating and providing health care solutions forindividualsandcommunities.

SEMESTER I

FOODSCIENCE

SemesterI	**HoursofInstruction/week–4**
CourseCode:21FSN101	**No.ofCredits–**
L-T-P–C 3-1-0-4	**4Total60**

Prerequisite: BasicFoodGroups,cookingmethods,effectsofcooking

CourseObjectives:

1. Toobtain knowledgeon foodgroupsand itsnutritionalcomposition
2. Tounderstandtheimpactofcookingonthestabilityofnutrients.
3. Toanalyzethechangesduringprocessingandstorageonthenutritional compositionoffoods.
4. Tostudy thefactorsinfluencing thecooking qualityofdifferentfoods.

CourseOutcomes:

CO1:Acquireknowledgein thecompositionoffood groups.

CO2: Gain knowledge on nutritive value of different foods, cooking methods, factors influencing andchangesincookingquality.

CO3:GainhomescaleprocessingandstorageskillstoretainnutrientsCO4:Deve lopculinaryskillstosatisfysensoryandnutrientneeds.

Skills:

- Developskillsonvariouscookingmethodsandmediumofcooking.
- Acquireskillsinprocessingandstorageoffoods.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	-	-	-	3	2	1	-	-
CO2	2	1	-	-	-	-	3	2	-	2	-
CO3	2	2	-	-	-	-	3	2	-	2	-
CO4	2	1	-	-	-	-	3	2	-	2	-

Syllabus:

UnitI-IntroductionofFoodGroupsandCookingMethods **12hrs.**

Foods,Classification,Functions,Foodgroups,BalancedFood,Foodpyramid,Myplate

Cooking-
ObjectivesofCooking,Preliminarypreparation,cookingmethods,Dryheat,Moistheat,MeritsandDemerits.

UnitII-Cereals,Pulses,NutsandOilSeeds,FatsandOils

12hrs.

Structure, Composition and Nutritive Value, Changes in Nutritive Value during Cooking, Processing andstorage, cookingquality

Cereals- Cerealcookeryconcepts,fermentedproducts,non-fermentedproducts,breakfastcereals

Pulses-Factorsaffectingcookingqualityofpulses,storageandinfestation,toxicconstituents,pulsecookery.
Nutsand oilseeds-Nutsandoilseedscookery,toxinsinnutsandoilseeds
Fats&Oils-Processingandrefiningoffats,Specificfats,Roleoffats/oilincookery,Emulsion,smokingpoint, rancidity.

UnitIII-VegetablesandFruits **12hrs**

Vegetables-Classification,CompositionandNutritive Value,Selection,Vegetablecookery-pigments,Changes in Nutritive Value, Ripening of Fruits, Storage of vegetables and Fruits, fungi and algae as foods**Fruits** - Classification, Composition and Nutritive Value, post-harvest change, enzymatic and non-enzymaticbrowning, vegetables and fruits as functional foods, Ripening of Fruits,Pectic substances and gel formation,StorageofFruits.

UnitIV-Meat,Poultry,DairyandFish **12hrs.**

Milk –CompositionandProperties ofmilk,Nutritive Value,effectofheat,acid,enzymes,phenoliccompounds and salts. Microorganisms, Processing, Milk Products, Milk Substitutes, Role of milk and milkproductsincookery
Egg-Structure, Composition and Nutritive Value, Quality ofeggs,Egg cookery, Buying and Handling,preservation,
Roleofeggsincookery.
FleshyFoods-Structure,CompositionandNutritivevalueofmeat,SelectionandStorage–Effectofcookingon colour, Texture and flavour. Ageing of meat, Curing of Meat, Tendering Meat, Cuts and grades of meat,Meatcookery.
Poultry-Classification,Processing,Compositionand Nutritivevalue,Preservationandstorage
Fish-Classification,Composition,Selection,Fishcookery,Spoilage,Preservationandstorage.

UnitV-Sugars,Beverages,SpicesandCondiments

12hrsS

ugars-
Nutritivevalue,Properties,Stagesofsugarcookery,SugarRelatedProducts,SugarCookeryandArtificialSweetener
.
Beverages-Classification,Nutritivevalue–Coffee,Tea,Cocoa,Chocolate,FruitBeverages,SoupsVegetable Juices,MilkBasedBeverages,Malted Beverages,Aerated andNon-Alcoholic Beverages,MiscellaneousBeverages,AlcoholicBeverages.

SpicesandCondiments: Types,Functionalproperties,Roleofspicesincookery.

TextBooks:

1. Srilakshmi.B.FoodScience,NewAgeInternationalPvtLtdPublishers,3rdEdition,2005.
2. Shakuntala Manay,Shadaksharaswamy. MFoods,Factsand Principles, New Age International Pvt LtdPublishers, SixthEdition,2015.
3. *UshaChandrasekhar,FoodScienceandApplicationinIndianCookery*,PhoenixPublishingHouseP.Ltd.,NewDelhi,2002.
4. Foodscience,ChemistryandExperimentalfoodsbyM.Swaminathan.
5. Swaminathan,M. : HandBookofFoodScienceandExperimentalFood

ReferenceBooks:

1. *Brow,A.,UnderstandingFood,*ThomsonLearningPublications,Wadsworth,2000.
2. *Mehas,K.Y.andRodgers,S.L.FoodScienceandYou,*McMillanMcGrawCompany,NewYork,2000.
3. *Parker,R.IntroductiontofoodScience,*Delmer,ThomsonLearningCo.,Delma,2000.

EvaluationPattern

Assessment	Nterna l	xternal emester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

PrinciplesofNutrition

SemesterI	**HoursofInstruction/week–4**
CourseCode:21FSN102	**No.ofCredits–**
L-T-P–C3-1-0-4	**4Total60hrs.**

Prerequisite: Nutrients,Sources,Functionsand metabolism.

CourseObjectives:

1. Acquireanunderstanding ofnutritionscienceforhealthpromotionanddiseaseprevention
2. Gainknowledgeonfunctions,metabolism,requirementsandeffectsofdeficiencyofnutrients.
3. Gainscientificknowledgeaboutthevitallinkbetweennutritionandhealthofindividuals.

CourseOutcomes:

CO1: Understandbasicphysiology andbiochemistryofnutrients.
CO2:Gainknowledgeontheroleofnutrientingrowthandmaintenanceof physicalstructureandmetabolismofthebody.
CO3:Comprehendthevariousnutritionaldisordersandcuringtheeffectofmalnutrition
CO4:Evaluate nutritioninformationbasedonscientificreasoningforclinicalandcommunityapplication

Skills: Learnskillsindevelopingabalanceddiet basedonindividual requirements**.CO-**

POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	-	-	1	3	2	-	-
CO2	3	-	-	-	-	-	1	2	1	-	-
CO3	3	1	-	-	-	-	1	3	3	-	1
CO4	3	1	-	-	-	-	1	3	2	-	1

Syllabus:

Unit I: Energy **12hrs.**

Energy,UnitsofEnergy, MeasurementofCalorificValue, Physiologicalfuelvalues,Determinationofenergyrequirements-Direct andIndirect calorimetry, Relation between Respiratory quotientandEnergy output,Specificdynamicactionoffoods(DietInducedThermogenesis)definition,determinationofbasalmetabolism
-BenedictsRothApparatus,FactorsAffectingBMR,determinationofenergymetabolismduringwork-Energyrequirementsforvariousagegroups.

UnitII:Carbohydratesandproteins **12hrs.**

Carbohydrates - Classification, composition, sources, functions, digestion, absorption, glycemic index andmetabolism, Requirements (RDA) and deficiency. Dietary fiber – definition, sources, functions and types -SolubleandInsolubleFiber.

Proteins-

Classification,composition,sources,functions,digestion,absorptionandmetabolism,Requirements(RDA)anddef iciency.Aminoacid-classificationandfunctions.Evaluationofproteinquality-PER, NPU, NDPER, BVandChemicalscore.

UnitIII:LipidsandWater **12hrs.**

Lipids and fats- Classification, composition, Sources, Essential fatty acids,functions, digestion, absorption,metabolismandRequirements

WaterandelectrolyteBalance-Distributionofwaterandelectrolytes,Functions,Requirements,Sources, waterbalance.

Unit IV: Minerals **12hrs**

Macrominerals-

Classification,Distributioninthebody,Functions,Source's,absorption,storage,metabolism,storage,requirements ,deficiencyandtoxicity-Calcium,Phosphorus,Magnesium.

Microminerals-

Classification,Distributioninthebody,Functions,Sourcesabsorption,metabolism,storage,requirements,deficiencyandtoxicity-Sodium,Potassium,Copper,Iron,Zinc,IodineandFluorine,selenium

UnitV:Vitamins **12hrs.**

Fatsoluble vitamins-Chemistry,Functions, Sources,absorption,transport, metabolism,Requirements,Deficiencyandtoxicity.

WaterSolubleVitamins-Chemistry,Functions,Sources,absorption,transportandmetabolism,Requirements, Deficiencyandtoxicity.

Antioxidants-Freeradicalsdamage,Oxidant defensesystem,Antioxidantsindiseases,Sources.

TextBooks:

1. *Srilakshmi,B.,NutritionScience,NewAgeInternational*(P)Ltd.,NewDelhi,2017.
2. *Mahtab,S,Bamji,KamalaKrishnasamy,G.N.V.Brahmam,TextBookofHumanNutrition,ThirdEdition,* OxfordandIBHPublishingCo.P.Ltd.,NewDelhi,2015
3. *Swaminathan,M.,AdvancedTextbookonFoodandNutrition*,Vol.1,SecondEdition,BangalorePrintingandPublishingCo.Ltd., Bangalore,2015.

ReferenceBooks:

1. *DietaryGuidelinesforIndians,ICMR,NationalInstituteofNutrition*,Hyderabad,2011.
2. *Gordon M. Wardlaw, Paul M.Insel, Perspectives in nutrition* 11th edition,Mosby-yearBook,Inc.St.Louis,Missouri,2019
3. *Krause,M.V.andHunesher,M.A.,Food,NutritionandDietTherapy*,14thEdition,W.B.SaundersCompany, Philadelphia, London,2016.

EvaluationPattern:

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

IntroductiontoPhysicalChemistryofFoods

SemesterI **CourseCode:21FSN103** **L-T-P–3-0-0-3**	**HoursofInstruction/week–3** **No.ofCredits–3Total-45hrs.**

Prerequisite: BasicsofBonding,thermodynamics,kineticsandsurfacechemistry.

CourseObjective: Toimpartknowledgeonthebasicphysicalchemistryaspectswithrespecttofood

CourseOutcomes:

CO1:Torelatetheapplicationofthermodynamicsinunderstandingthechemistryoffood
CO2:Tounderstandtheconceptofsolutionsof
solidinliquidandliquidinliquidandthepropertiesrelatedtotheconcentrationofsolute.
CO3:Togainknowledgeonthecolloidsandthespecialpropertiesofcolloids
CO4:Tounderstandthebasicsonsurfaceactivityandsurfacereactions
CO5:Toprovideknowledgeontherheologicalproperties,itsmeasurementanditsapplicationtofood

Skills: Develop skillsintheapplication ofphysicalpropertiesoffoodsinproductdevelopment

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	-	-	-	-	-	-	-	-	-
CO2	1	-	-	-	-	-	-	1	-	-	-
CO3	1	1	-	-	-	-	-	-	-	-	-
CO4	1	-	-	-	-	-	-	-	-	-	-
CO5	1	1	-	-	-	-	-	-	-	-	-

Syllabus:

UnitI:Thermodynamics **12hrs**

Systemandsurrounding,homogenousandheterogeneoussystem,Intensiveandextensiveproperties,Entropy,Enthalpy, Gibb's free energy, stable- unstable systems. Heat capacity, specific heat capacity- measurement ofspecificheatcapacityusingBombcalorimeter

UnitII:Solutions **12hrs**

Solubility-relative solubility, Concentration of solutions, Solutions ofsolid inliquid, Factors influencingsolubility, Energy of hydration, Solvation, solutions of liquid in liquid. Colligative properties-Lowering ofvapour pressure,elevationof boilingpoint,depressionof freezingpointandosmoticpressure.

Unit III:Colloidalchemistry **12hrs**

Types of colloids-Lyophilic and Lyophobic colloids, classification of colloids, stability of lyophobic andlyophilic sol, emulsification, foaming, light scattering, destabilization of emulsions and foams. Isoelectricpoint,protectionofcolloids-
protectivecolloids,GoldNumber,Hofmeisterseries,coagulationorflocculation,

coacervation,sensitization,micelleandcriticalmicellationconcentration,applicationofcolloids.Sedimentation, Coalescence, gelatinization.

UnitIV:Surfacechemistry **12hrs**

Surface tension, interface tension,capillary effects, surfaceactivity, surfactants,wetting, contact angle,adsorption- typesandmechanism, catalysis-biocatalyst-enzymes,self-assemblyofmacromolecules,thermodynamicsofself-assembly.

UnitV:Rheology **12hrs**

Rheologicalclassificationoffoods.Rheologyofsolidfoods,rheology ofliquidfoods,Hooke'slaw,Newtonianflow,non-Newtonianflow,gelflow-viscoelasticity,methodsofviscoelasticity.Factorsinfluencingrheologicalproperties,measurementofrheology,application ofstudyofrheologyinfoodindustry.

TextBooks:

1. Physicalchemistryoffoods-PieterWalstra,MarcelDekkerIncorporation,TheNetherlands,2003.https://www. dekker.com
2. Principlesoffood chemistry,JohnMDeman,3rdedition,An Aspen publication,Maryland,1999

Referencebook

1. Introductiontothephysicalchemistryoffood,ChristosRitzoulis,1stedition,CRCpress,2013

EvaluationPattern

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

FOODSCIENCE(Practical-I)

SemesterI	**HoursofInstruction/week–2**
CourseCode:21FSN181	**No.ofCredits– 1**
L-T-P–0-0-2-1	**Total30hrs.**

Prerequisite: Foodgroups,nutrients,cookingskills,cookingmethods.

CourseObjectives:

1. Understanddifferentfoodgroups,theirnutritivevalueandroleinday'sdiet.
2. Trainingindifferentrecipesapplyingvariouscookingmethods.
3. Calculatenutritivevalueforselectedfoods

CourseOutcome:

1. Gainhandsonskillsthroughdifferentrecipesandvariouscookingmethods
2. Understandtheconceptoffoodselectionbasedonnutrientsources
3. Developingskillstocalculatenutritivevalueforselectedfoods

Skills: Develop skillsin variouscooking methodsininvolved

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	1	-	3	3	-	-	-
CO2	3	-	-	-	1	-	3	3	-	-	-
CO3	3	-	-	-	2	-	3	3	-	-	-

Practical's: **30hrs.**

1. Cerealsandcerealcookery

a. Preparationof cerealproductsusingRice,Wheat,Ragi,Thinai,Samai,Varagu etc.
b. Experimentalcookeryoncereals.

2. Pulses

a. Preparationofpulsebasedrecipes.
b. Experimentalcookery.

3. VegetablesandFruits

a. Effectofcookingonvegetablespigments.
b. Preparationofvegetablecurries,andfruitssalad.

4. MilkCookery

Preparation oficecreamsand milkproducts

5. Egg

Preparationof

a. Scrambledegg.
b. Poachedegg
c. OmeletteandExperimentalcookery.

6. FatsandOils

Preparationofdeep fatfoodproducts.

7. Beverage

PreparationofCoffees,Tea,Cocoadrinksandvariousmilkbasedfruit juicebeverages.

References:

1. Swaminathan,M. :HandBookofFoodScienceandExperimental FoodText.
2. Gopalan.C&Ramasastri:NutritivevalueofIndian Foods
3. Hughes.O.1971 :IntroductoryFoods.
4. Peckham,C.G.1969 :FoundationofFoodPreparation
5. Love,P.1967 :ExperimentalCookery
6. Swaminathan,M.1976 :EssentialsofFoodandNutritiveVol.I
7. Potler,N. :FoodScience.

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

BasicsofComputerApplications

SemesterI	**HoursofInstruction/week–2**
CourseCode:21FSN104	**No. of Credits – 2Total-30hrs.**
L-T-P–2-0-0-2	

Prerequisite: Basicsofcomputerusage, Windows,Microsoftoffice

CourseObjectives:

1. Tolearnthecomputerperipherals intheoperationofcomputers
2. Tounderstandthe computernetworkinsharingofinformationthroughcomputers
3. Toacquire theskillsinthe applicationsofwindowsindocumentation,dataanalysisandpresentation

Course Outcomes:

CO1:Gainknowledgeonhistoricaldevelopmentsandcomputerperipheralsintheoperationofcomputers.
CO2: Understand the computer networks in efficient utilization of internet and intranet connection in digitalcommunication.
CO3:Elicitmultimediapresentationfocusingonutilizationof authorizingtools.
CO4:Abletoapplycomputerapplicationsinmealmanagement practicesandexplorethenutritionalsoftwaresandejournalsinprofessionalandacademicendeavors.

Skills: Acquire the skills inexploring windows applications in development of documents, data analysis inspreadsheetandpowerpointpresentation

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	1	-	-	2	1	-	-	2	2
CO2	1	-	1	-	-	2	1	-	-	2	2
CO3	1	-	1	-	-	2	1	-	-	2	2
CO4	1	-	1	-	-	2	1	-	-	2	2

Syllabus:

UnitI-IntroductiontoComputers **6hrs.**

HistoryofDevelopmentofComputers,TypesofComputes-MainFrame,Minis,MicrosandSuperComputerSystems, Binary numbers, Bits, Bytes, CPU, Input and Output Devices, Main and Auxiliary Stage Devices,SoftwareandHardware

UnitII-OperatingSystemsandMSOffice **6hrs.**

Introduction toOperating Systems, Windows Applications MSWord, MSExcel. MSAccess andMSPowerPoint

Practical

MSWord,Excel, AccessandPowerPoint

UnitIII-ComputerNetworks **6hrs.**

LAN,WAN,Intranet,Extranet,Servers,Modem,FibreOpticsBasicsofHTML,WWW,URL,TCP/IP

Practicals

IntroductiontoComputerNetworks

UnitIV-Multimedia **6hrs.**

Introductionofmultimedia,BasicElements,Hardware,Applications ofMultimedia,AuthorizingTools

Practicals

IntroductiontoMacroFlashPlayer, AdobePhotoshop, CorelDraw

UnitV-ApplicationofComputersinFoodScienceandNutrition **6hrs.**

MicrosoftOfficeApplications-NutritionEducationandCounseling,PowerPointpresentation,excelssheetsin Nutrient and Diet calculations, Use of SPSS, Accessing Digital Library, e-Journals in Food Science andNutrition,RelevantNutritionsoftware's,ApplicationsandWebpages.

Practicals

DevelopingMiniProjectsinFoodScienceandNutritionusingMSWord,MSExcelandMSPowerPoint

Textbooks:

1. Balagurusamy.E(2008)ComputingFundamentalsandCProgramming,TataMcGrawHillEducationPrivateLimited,NewDelhi.
2. Bansal.S.K(2014)TextBookofInformationTechnology,APH,PublishingCorporation.

ReferenceBooks:

1. AndrewS.Tanenbaum(2009)IVEdition,ComputerNetworks,PearsonEducationandDorlingKindersleyPublishers,Delhi.
2. JamesF.KuroseandKeithWRoss(2008)IIIEdition,ComputerNetworking.ATop-DownApproach FeaturingtheInternet, PearsonEducationandDorlingKindersleyPublishers, Delhi.
3. Ralf Steinmetz and KlaraNahrstedt (2011) Multimedia- Computing, Communications and Applications,PearsonEducationandDorlingKindersleyPublishers,Delhi.

Evaluationpattern

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

CommunicativeEnglish

SemesterI	**HoursofInstruction/week–4**
CourseCode: 21ENG103	**No. of Credits –**
L-T-P–2-0-1-3	**3Total-60hrs.**

CourseObjectives:

Tohelp students obtain an ability tocommunicate fluently in English; toenable andenhance thestudents'skillsinreading,writing,listeningandspeaking;toimpartanaestheticsenseandenhanceactivity.

CourseOutcomes:

CO1:Demonstratecompetencyinallfourlinguisticskillsviz.listening,speaking,readingandwritingCO2:Applydifferentstylesof communicationinprofessionalcontext
CO3:Participateindifferentplannedandextemporecommunicativeactivities CO4:Interpretanddiscussfactsandinformationinagivencontext
CO5: Developanappreciationforhumanvalues

CO-POMAPPING:

	PO1	PO2	PO3	PO4	PO5	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	-	-	3	3	-	-	-	-	-
CO2	-	-	-	-	-	3	3	-	-	-	-	-
CO3	-	-	-	1	2	3	3	-	-	-	-	-
CO4	-	-	-	-	-	3	3	3	-	-	-	-
CO5	-	-	-	-	-	3	3	3	-	-	-	-

Syllabus:

UnitI

Kindsofsentences, usageofpreposition, useofadjectives, adverbsfordescription,determiners,subject-verb/pronoun, collocation,phrasalverbs,Modifiers,Linkers/Discoursemarkers,QuestionTags

UnitII

Paragraphwriting
EssayWriting-DescriptiveandNarrative

UnitII

LetterWriting-Personal(Congratulation,invitation,felicitation,gratitude,condolenceetc.)
Official(Principal/HOD/Collegeauthorities,BankManager,EditorsofNewspapersandMagazines)

UnitIV

ReadingComprehension-Skimmingandscanning-inferenceanddeduction-Readingdifferentkindsofmaterials-Speaking:Narrationofincidents/stories/anecdotes-Currentnewsawareness

UnitV

John Holt's Three Kinds of Discipline
(Detailed)MaxBeerbohm'sTheGoldenDrugget(Detai
led)
OgdenNash-ThisisGoingtoHurtJustaLittleBit(Detailed)
RobertKroetsch-
IamgettingOldNow(Detailed)LangstonHughes(IToo)WoleSoyinkaTelephoneC
onversation(Non-detailed)
KamalaDasTheDanceoftheEunuchs(Non-
detailed)EdgarAllanPoeTheBlackCat(Non-detailed)
RuskinBondTimeStopsatShamili(Non-detailed)

References

1. Bond,Ruskin.TimeStopsatShamili andotherStories,PenguinBookIndiaPvt.Ltd,1989
2. Martinet,Thomson.A PracticalEnglishGrammar,IVEd.OUP,1986
3. Murphy,Raymond,.Murphy'sEnglishGrammar,OUP,2004
4. OnlineSources

EvaluationPattern

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

TAMILI

SemesterI	**HoursofInstruction/week–2**
CourseCode:21TAM102	**No. of Credits –**
L-T-P-C–2-0-0-2	**2Total-30hrs.**

தமிழ்பாடதிட்டம்101

நோக்கம்:

இலக்கியம்மறற்ோம்படைப்பிலக்கியதட்டதஅறிமோகப்படோத்Fதல்
(சங்கஇலக்கியம்,காபியங்கள்
நீதிஇலக்கியங்கள்மறற்ோம்இக்காலஇலக்கியங்கள்).மாணவரகளினி
கரோத்Fபரிமாறற்ோதிறட
ன
மனனதத்திறடனயோம் அதிகரிக்கச் சசயத்தல், தமிமிழினி
அடிப்படை
இலக்கணக்கோறோகடளயோம்அதன்பயன்பாைட்டையோம்அறிம
ோகப்படோத்Fதல்.

CourseOutcomes:

CO1 இலக்கியம்,சங்கஇலக்கியம்அறிமோகப்படோத்Fதல்
CO2 படைப்பிலக்கியதட்டதஅறிமோகப்படோத்Fதல்
CO3 பகதிஇலக்கியதட்டதஅறிமோகப்படோத்Fதல்
CO4 மாணவரக்ளினிகரோத்Fபரிமாறற்ோதிறடனமனனதத்திறடனயோம்அதிகரி
க்கசச்சயத்தல்
CO5 தமிமிழினிஅடிப்படைஇலக்கணக்கோறோகடளயோம்அதன்பயன்பாைட்டை
யோம்அறிமோகப்படோத்Fதல்.
CO6 படைப்பூரோவாகக்ோதல்

CO-POMAPPING:

S.No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	1	1	2	-	-	-	-	-
CO2	-	-	-	1	1	3	-	-	-	-	-
CO3	-	-	-	1	1	2	-	-	-	-	-
CO4	-	-	-	1	1	3	-	-	-	-	-
CO5	-	-	-	1	1	2	-	-	-	-	-
CO6	-	-	-	1	1	2	-	-	-	-	-

அலகு1

சங்கஇலக்கியம்:கோறுநச்தாைக;(2,6,8,40பாைலக்கள்)–
போறநானோறு(74,112,184,192
பாைலக்கள்)–திரோகக்கோறள்(இடறமாைசி,அடமசசோ)

அலகு2

காப்பியஇலக்கியம்:சிலப்பதிகாரம்மFடரக்காண்ைம்(வழக்க
ோடறக்காைத50-55) ஆனமிகஇலக்கியம்:திரோப்பாைவ(3,4)–
ததவாரம்(மாசிலவீணயோம்)
இைைக்காலஇலக்கியம்:பாரதியரக்ண்ணன்பாைடு(எனவிைளய
ாைடுபிள்ைள)–

பாரதிதசன்கூடும்பவிளக்கு(தாயின்தாலாட்டு).

அலகு3

பூதினம்:செயகாந்தன்“கூரும்பீம்”கைடூடர:அண்ணா“ஏதாழ்நந்ததமிழகதம”

அலகு4

சமயமுன்தனாடிகள்: திருஞானசம்பந்தர் – திருநாவுக்கரசர் – சுந்தரர் – மாணிக்கவாசகர்– ஆண்ைடாள்–திருமூலர்–குலதசகரஆழ்வார்–சீத்தடலச் சாதத்தனாரத்சதாைரப்பானசசயத்திகள்,தமற்தகாளத்களமற்றும்சிறபபுபச பயரகள்

அலகு5

தமிழ்இலகக்கணம்:சசால்வடககள்–தவற்றுடமஉருபுகள்– வலலினம்மிகுமிைம
மிகாயிைம்-சந்தி(புணரச்சி)-இலகக்கணக்குறிப்பு.

அலகு6

படைப்புஉருவாகக்குதல்(தகைைல்,தபசுதல்,எழுFதல்,வாசித்தல்)

பாடநூல்கள்,

1.சஜயகாந்தன்“குருபீைம்”மீனாைசிபுத்தகநிடலயம்,1971.
2.அண்ணா“ஏதாழ்ந்ததமிழகதம”நக்கீரனபபளிதகஷன்ஸ்.
3.சபான்மணிமாறன்“அதைான்தமிழ்இலகக்கணம்“அதைான்பபள ிஷிங்குரூப், வஞ்சியூர்,திருவனந்தபுரம்,2007.
4.சகத்திதாசன்சுப்ரமணியன் “நல்லகுறுந்சதாடகமூலமும்உடரயும்”முல்டலபதிப்பகம், 2008.
5.புலியூரகத்தகசிகன்“புறநானூறு”ஸ்ரீசசண்பகாபதிப்பகம்,2010
6.புலியூரகத்தகசிகன் “குறுந்சதாடகமூலமும்உடரயும்”சாராதபதிப்பகம்,2010.
7.நா.பாரதசாரதி“புறநானூறுசிறுகடதகள்”தமிழ்புபுத்தகாலயம்,1978, 2001
8.http:/www.tamilvu.org/libirary/libindex.htm.

EvaluationPattern

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

MALAYALAMI

SemesterI	**HoursofInstruction/week–2**
CourseCode:21MAL102	**No.ofCredits–**
L-T-P–2-0-0-2	**2Total30hrs.**

CourseObjectives:

ToteachMalayalamforeffectivecommunicationindifferentspheresoflife:-
Socialcontext,Education,Research&Media.

CourseOutcomes:

CO1 Inculcate philosophical thoughts and
practice.CO2Understandthepostmoderntrendsofliteratu
re.
CO3Understand theliterary
culturaleraofaparticularregionCO4FamiliarizewiththeMalayalamli
terarymaestro.
CO5Expansionofideasinwriting

CO-POMAPPING

S.No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	3	1	2	1	-	-	-	-
CO2	-	-	-	1	1	2	1	-	-	-	-
CO3	-	-	-	1	1	2	1	-	-	-	-
CO4	-	-	-	1	1	2	1	-	-	-	-
CO5	-	-	-	1	1	2	1	-	-	-	-
CO6	1	-	-	1	1	2	1	-	-	-	-

Syllabus:

UnitI

Ancient poet trio:*Adhyatmaramayanam,LakshmanaSwanthanam (Lines: valsasoumitre…mungikidakayal),*Ezhuthachan-Medievalperiodclassics–*Jnanappana(Lines:201to298*),Poonthanam.

UnitII

ModernPoet trio:*EnteGurunathan,*VallatholNarayanaMenon-Criticalanalysisofthepoem.

UnitIII

Short stories from period 1/2/3: *Poovanpazham*-Vaikaom Muhammed Basheer-Literary & Cultural figures ofKeralaandabouttheirliterarycontributions.

UnitIV

LiteraryCriticism:*BharathaParyadanam-VyasanteChiri*–Ithihasastudies-KuttikrishnaMararu-Outline ofliteraryCriticisminMalayalamLiterature-
IntroductiontoKuttikrishnaMararu&hisoutlooktowardsliterature&life.

UnitV

Error-freeMalayalam:**1**.Language;**2**.Clarity ofexpression;**3**.Punctuation-Thettillatha

Malayalam – Writing-**a**. Expansion of ideas; **b**. Precis Writing; **c**. Essay Writing; **d**. Letter writing; **e**. RadioSpeech; **f**. Script/Feature/Script Writing; **g**. News Editing; **h**. Advertising; **i.** Editing; **j.** Editorial Writing; **k**.Criticalappreciationofliteraryworks(Anyoneortwoasanassignment).

References:

1. Leelavathy.M,MalayakaavidhaSahithiyasaritraam,KeralasahityaAkademi,Thrissur;2015thedition
2. Tarahan.K.M,NovelSahithiya CHARITRAM,KeralaSastrasahityaParishad,2015
3. UlloorS.ParameshwaraIyer,KeralaSahithiyaCHARITRAM.,WorldeBookLibrary,2010
4. AutobiographyofGandhiji,EnteSathyanweshanaPareekshanaKatha

EvaluationPattern

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

HINDII

SemesterI	**HoursofInstruction/week–2**
CourseCode:21HIN102	**No.ofCredits–**
L-T-P–2-0-0-2	**2Total30hrs.**

CourseObjectives:

ToteachHindiforeffectivecommunicationindifferentspheresoflife:-

CourseOutcomes:

CO1: Gain knowledge about the origin and development of Hindi language.CO2:Understandthegrammaticalstructuresof classesof words.
CO3:Applythemechanicsofwriting.
CO4:Appreciatedifferentgenresofliterary texts.
CO5:Demonstratelinguisticcompetenceinwrittencommunication.CO6:Creatingdifferentformsof literarywriting

CO-POMAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	1	3	-	1	-	-	-
CO2	-	-	-	-	1	3	3	-	1	-	-
CO3	-	-	-	-	1	3	-	-	-	-	1
CO4	-	-	-	-	1	3	3	-	-	1	-
CO5	-	-	-	-	1	3	-	-	-	-	1
CO6	-	-	-	-	1	3	2	-	-	1	-

Syllabus:

Unit-I

a) Introduction to Hindi Language, -other Indian Language's, Official Language, linkLanguageTechnicalterminology.
b) Hindialphabet:ParibhashaAurBhed.
c) Shabda:ParibhashaAurBhed,RoopantharkiDrishtise
d) Sangya-ParibhashaAurBhed,SangyakeRoopanthar-ling,vachan,karak
e) Sarvanaam-ParibhashaAurBhed.

Unit-II

a) CommonerrorsanderrorcorrectionsinPartsofSpeech–withemphasisonuseofpronouns,Adjectiveandverbindifferenttenses–gender&number
b) Conversations,Interviews,Shortspeeches.

Unit-III

a) Letterwriting–ParibhashaAurBhed,Avedanpatra(requestletter)&Practice
b) Translation-ParibhashaAurBhed,EnglishtoHindi

Unit- IV

Poem:

a) Maithilisharangupth:sakhivemujsekahakarjaate
b) Suryakanthtripatinirala:Priyatam
c) Mahadevivarma-adhikaar
d) Shiyaramsharangupth:ekphoolkichah

Unit-V

Kahani

a) Kafan-Premchand,
b) RajasthankiEkGaavkeetheerthyatra- Beeshmasahni
c) Raychandrabhai:ByMahathmaGandhi-Sathyakeprayog
d) Rajani-MannuBhandari

TextBooks:

1. PremChandKiSrvashresthaKahaniyam:PremChand;DiamondPubLtd. NewDelhi, HindiSamay.com.
2. Vyavaharik HindiVyakaran,Anuvadthaha Rachana: Dr.H.Parameswaran,RadhakrishnapublishingHouse,NewDelhi
3. KamthaPrasadGuru:HindiVyakaran,BestBookpubHouse,NewDelhi
Poetry:KavyaGanga-Ed:Chandrashekar–SumanPrakashan;Mysore,kavyaSargam-Ed;Dr.SanthoshKumarChathurvedi–LokbharathiPrakashan

EvaluationPattern:

Assessment		**Total External**
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50
Total	100	

*CA–CanbeAssignment,Projects,andReports

CULTURALEDUCATION-1

SemesterI	**HoursofInstruction/week–2**
CourseCode:21CUL101	**No.ofCredits–**
L-T-P-C-2-0-0-2	**2Total30hrs.**

CourseObjectives:

Thecourseisdesignedasanintroductoryguidetothevariegateddimensionsof Indianculturalandintellectualheritage, to enable students to obtain a synoptic view of the grandiose achievements of India in diverse fields.It will equip students with concrete knowledge of their country and the mind of its people and instil in themsomeofthegreatvaluesofIndianculture.

CourseOutcomes:

CO1: Beintroduced to the cultural ethosofAmrita VishwaVidyapeetham, and Amma's life andvision ofholisticeducation.
CO2:UnderstandthefoundationalconceptsofIndiancivilizationlikepuruśārtha-s,lawofkarmaandvarṇāśrama.
CO3: Gain a positive appreciation of Indian culture, traditions, customs and practices.CO4: Imbibe spirit of living in harmony with nature, and principles and practices of Yoga.CO5:Getguidelinesforhealthyandhappylivingfromthegreatspiritualmasters

CO-POMAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	2	3	-	3	-	-	-	-
CO2	-	-	-	1	3	-	3	-	-	-	-
CO3	-	-	-	1	3	-	3	-	-	-	-
CO4	-	-	-	3	3	-	3	-	-	-	-
CO5	-	-	-	1	3	-	3	-	-	-	-

Syllabus:

UnitI

Introduction to Indian culture; Understanding thecultural ethosof Amrita VishwaVidyapeetham; Amma'slifeandvisionofholisticeducation.

UnitII

GoalsofLife–Purusharthas; IntroductiontoVarnasramaDharma; LawofKarma; PracticesforHappiness.

UnitIII

SymbolsofIndianCulture;FestivalsofIndia;LivinginHarmonywithNature;RelevanceofEpicsinModernEra;LessonsfromRamayana;LifeandWorkofGreatSeersofIndia.

TextBook:Cultural EducationResourceMaterialSemester-1

ReferenceBooks:

1. TheEternalTruth (Acompilation ofAmma'steachingson Indian Culture)
2. Eternal ValuesforaChangingSociety.SwamiRanganathananda.BharatiyaVidyaBhavan.
3. AwakenChildren(Dialogueswith MataAmritanandamayi)Volumes1to 9
4. MyIndia,IndiaEternal.SwamiVivekananda.RamakrishnaMission.

EvaluationPattern

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

SEMESTERII

NutritionthroughLifespan

SemesterII	**HoursofInstruction/week–4**
CourseCode:21FSN111	**No.ofCredits–4**
L-T-P–3-1-0-4	**Total60hrs.**

Pre-requisite: Growth,Development,Demand fornutrition,Differentstagesoflife

CourseObjective:

Thiscourse will give you an on insight how nutrient needsvary during the lifespan-nutrition duringpreconception, pregnancy and lactation, infant nutrition, childhood and adolescent nutrition, as well as adultandolderadultnutrition.

CourseOutcomes:

CO 1: Applytheknowledgeofnutritionsciencetohumanhealthacrossthelifespan.
CO2: Measurethenutritionalneedsfornormalhealthyhumanthroughouttheirlifecycleonthephysiologicalbasis.
CO3: Comprehendtheknowledgeonnutritionalproblemsandcomplications.
CO4: Assessandcomparedietandnutritionalrequirementsrelativetoage,developmentalanddiseasestatus.**CO 5:**Evaluatenutritionproductsforcomposition,quality,andappropriatenessofuse(e.g.,infant formulas,supplementsandspecialtyfoods)andformulatedietaryinterventionstoaddressnutritionaldeficiencies.

Skills:Toprovidewideknowledgeanddevelopskillinplanningthenutritionalneedsofallagegroupsbyunderstandingtheir growthanddevelopment,requirementsandnutritionalproblems.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	1	-	-	2	1	-	-	-
CO2	2	-	-	1	-	-	1	2	-	-	-
CO3	1	-	-	-	-	-	1	1	-	-	-
CO4	1	2	-	-	-	-	1	1	1	-	-
CO5	1	2	-	1	-	-	1	1	1	1	-

Syllabus:

UnitI:IntroductiontoRDAandBalancedDiet **12hrs.**

Basics forRecommending theDietary Allowances, Acceptable Dietary Intake, PurposesofRDA, FactorsAffectingRecommendedDietaryAllowances,RequirementsandRecommendedDietaryAllowances,Growthchart, Uses of ICMR RDA in planning balanced diet, Consumption Units. Reference Man and Woman, FoodandNutritionalRequirementsforAdultsdoingDifferentActivities.

UnitII:Maternalnutrition **12hrs.**

Nutritioninpregnancy:

Maternalnutrition andoutcome,Importance ofpreandpericonceptionalnutrition during pregnancy;Prepregnancyweightandfetaloutcome.Fetalweightgain.Nutritionalassessmentandguidanceinprenatalcare.

- Physiological changes during pregnancy, expansion in blood volume, hormonal profile in pregnancy, organfunctions, placental transfer of nutrients and resulting complications in pregnancy. Other nutrition relatedconditions; pregnancy in obese women, gestational diabetes, preeclampsia, alcohol and caffeine abuse. -Maternal nutrient metabolism and recommended intakes in pregnancy. Maternal weight gain in pregnancy.Intrauterine growth retardation. High risk pregnancies and common concerns during pregnancy. Importanceofantenatalcare.

Nutritioninlactation:

Nutritional needs for lactation. Breast feeding biology, Psycho - physiological aspects of lactation. Factorsaffectinglactationcapacity.Managementoflactation,exclusivebreastfeeding,Breastsupportandcounseling.Effectofbreastfeedingonmaternalhealth.

UnitIII:Nutritionforinfant **12hrs.**

Infantgrowthandphysiologicaldevelopment.Norms/standardsforgrowth.Growthmonitoringandpromotion. Failure to thrive. Infant nutritional needs and concerns. Nutrition and brain development. Infantfeeding, volume and composition ofbreast milk, human milk Vs.artificial formula.-Development andnutritionalqualityofinfantfood:Moderninfantformula,complementaryandsupplementaryfeeding.Dietarymanagement issues in infant feeding. Food allergies in infancy. -Preterm and LBW infants: Consequences,implications for feeding and management. Neonatal infant mortality and child mortality, IMR. Governmentpolicies, schemesandentitlements.

UnitIV:Nutritioninchildhoodand adolescence **12 hrs**

Childhood:Growthanddevelopment,physiologicaldevelopment.Nutritionalneedsandfeedingforpreschoolchildren. Micronutrient malnutrition among preschool children. Child health, morbidity, mortality and underfivemortality rate(U5MR).-Nutritional requirements andRDA.Feedingschoolchildren,behavioralcharacteristics and feeding problems. Dietary patterns, planning a school lunch, factors to be considered.Implicationsofchildhoodobesityandothernutritionalconcerns.Healthyfoodchoicesduringchildhood.

Adolescence: Growth during adolescence, nutritional requirements, hormonal influences, age of menarche-factorsaffecting,physiologicalproblemsandnutritionalissuesinadolescence.Governmentpolicies, schemesandentitlements

UnitV:Nutritionforadulthoodandoldage **12hrs.**

Nutritional requirements for adultman andwoman. Nutritional concernsanddiet. Nutrition and workefficiency. -Physiological changes in aging, effects of aging on nutritional health of elderly. RDA, nutritionalguidelines. Modification in diet, feeding old people. Nutritional concerns in old age and their management.Governmentpolicies, schemesandentitlements

ReferenceTextbooks:

1. ChernoffR.GeriatricNutrition,TheHealthprofessionalsHandbook.4thEdition,JonesandBartlettLearning, Burlington. 2013.

2. EdelsteinSandSharlinJ.LifeCycleNutrition:AnEvidenceBasedApproach,JonesandBarlettpublishers,USA. 2009.

3. GhaiOP.EssentialPediatrics,2ndedn,Interprint,NewDelhi.1990.

4. JohnEMandDavidRT.GeriatricNutrition.CRCPress.Taylor& Francisgroup.BocaRaton.2007.

5. KathleenMLandEscottS.Krause'sFood,NutritionandDietTherapy,9thedn,W.B.SaundersCompanyPennsylvania. 2000.

6. MahtabS.Bamji,KamalaKrishnaSwamyandGNVBrahmam.TextbookofHumanNutrition.OxfordandIBHPub

lishing, NewDelhi. 2009.

SuggestedReadings:

1. ParkK.TextBookofPreventiveandSocialMedicine.21stedn,BanarsidasBhanotPublishers,Jabalpur,India. 2011.

2. Shills ME, Olson JA, Moshe S and Ross CA. Modern Nutrition in Health and Disease, 9 thedn, LippincottWilliamsandWilkins. 2006.

3. SethVandSinghK.Dietplanningthroughlifecycle:Part1.Elitepublishinghousepvtltd,NewDelhi.2006.

4. SmolinandGrosvenor.NutritionScienceandApplications,3rdedn,SaundersCollegePublishing,Philadelphia. 2000.

EvaluationPattern

Assessment	Internal		External
Periodical1(P1)	15		
Periodical2(P2)	15		
*ContinuousAssessment(CA)	20		
EndSemester			50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

HumanPhysiology

SemesterII	**HoursofInstruction/week–4**
CourseCode:21FSN112	**No.ofCredits–4**
L-T-P–3-0-1-4	**Total60hrs.**

Pre-requisite: Basicbiology,Humanbody,Organsandsystems,functions.

CourseObjectives:

1. Understand the Composition and Functions of Blood, Haemostasis, Homeostasis, Blood Coagulation,Anemia, BloodTransfusionandBloodGroups
2. ComprehendthestructureandfunctionsofCardiovascularandRespiratorySystems
3. UnderstandtheAnatomyand PhysiologyoftheDigestiveand ExcretorySystem
4. Comprehendthe StructureandFunctionsofthe EndocrineGlands
5. UnderstandtheAnatomyandPhysiologyofMaleandFemaleReproductiveSystems
6. ComprehendtheStructureandFunctionsoftheNervoussystemandsenseorgans

CourseOutcomes:

CO1: Understand the Anatomy and Functions of the various organs and organ systems of the body.CO2:ComprehendtheMechanismofactionofOrgans.
CO3:RelatethePhysiology ofthehuman body with Food and Nutritionalrequirements
CO4: RecognizetheClinical SymptomsofNutritionalDeficienciesbasedonanatomicalconsiderations

Skills: Developskillstoassessphysicalandclinicalsymptomsbasedonthephysiologicalchanges

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	-	-	-	1	1	1	-	-
CO2	2	-	-	-	-	-	1	1	1	-	-
CO3	3	-	-	-	-	-	1	1	1	-	-
CO4	3	-	-	-	-	-	1	1	1	-	1

Syllabus:

UnitI-Blood,HeartandCirculation **10hrs.**

Blood- Composition,functions,RBC–Structure,functions,erythropoiesis,Haemoglobin,WBC–Structure,functions,Classification.

BloodPlatelets -Structure, functions,Reticuloendotheliasystem,Bloodgroups–Rhfactor.Bloodcoagulation, spleen–Structureandfunctions,LymphandLymphaticsystem.

Heartand Circulation-Heart– Anatomyand physiology,Blood vessels–Structure ofartery, vein,capillaries, Cardiac output, Arterial Blood pressure, clinical measurement of blood pressure, properties ofcardiacmuscle,originandconductionofheartbeat,cardiaccycle,Regulationof theHeart'saction.

UnitII-Respiratoryand ExcretorySystem **10hrs.**

RespiratorySystem-Structure of respiratory organs, Mechanicsofrespiration, subdivisions oflung air,Chemistryofrespiration.Artificialrespiration,controlofrespiration,oxygensaturation,pulsoximeter.

ExcretorySystem-
StructureofExcretorySystem.Kidney,Nephrons,UrineFormationCompositionofUrine,Micturition.

UnitIII-DigestiveSystemandMusculoskeletalSystem

10hrs.Dig

estive System -General anatomy ofdigestive system– Digestive inthe mouth, stomach and intestines.Movementsofsmallintestine.Roleofpancreas,Liver–Structureandfunction.

MusculoskeletalSystem: GeneralAnatomyofMuscularsystem-Functionsofmuscles,Ligaments, Tissues,Skeletalsystem, BonesandJoints

Unit–IV-EndocrineandReproductivesystem **10hrs.**

Endocrinology - Structure and functions of thyroid, pituitary, parathyroid, adrenals, islets of Langerhans ofpancreas,sexglands.

Reproductive System - Anatomy of Male and Female Reproductive Organs, Physiology of Menstruation,PregnancyandAssociatedChanges, Placenta, mammaryGlandandLactation-Structure,lactationandprocessofreproduction,fertilization,developmentofembryo,pregnancyandparturition.

UnitV-NervousSystemandSenseOrgans **10 hrs.NervousSystem:**

Spinal cord-Structureandfunctions.Ascendinganddescendingtracts,reflexaction.
Brain-Structureandfunctionsofcerebrum,opticthalamus, midbrain,ponsmedullaoblongata, Hypothalamus,cerebellum.
Autonomicnervoussystem,sympatheticandparasympathetic.

SpecialSenses.

Eye - Physiology of vision, Structure of eye, dark and light adaptation, accommodation of the eye,visual fields, common problems due to abnormalities – presbyopia, cataract, Astigmatism, Blindness.**Ear**–StructureandPhysiology.
Nose-StructureandPhysiology
TongueStructureandPhysiology.

UnitVI:PracticalExperience: **10hrs**

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1. Bleedingtime
2. Clottingtime
3. Identificationoftissues
4. Bloodgroups –identification
5. MeasurementofHemoglobin
6. MeasuringPulseRate
7. MeasuringBloodPressure
8. Measurementof height,weightandcalculationofBMI
9. Physicalfitnesstest

TextBooks:

1. ChatterjeeC.C(2016),Human Physiology 11thEdition,MedicalAllied Agency,Kolkata
2. Sembulingam,K.(2012)EssentialsofMedical Physiology,6thEdition,JaypeeBrothersMedicalPublishers(P)Ltd., NewDelhi.
3. SathyaNarayana,EssentialsofBiochemistry(2000)
4. SarathaSubramanian,TextofHumanPhysiology(2000).
5. StuartIra Fox,HumanPhysiology(2015)

ReferenceBooks:

1. BestandTaylor,(2011)13thEditionThePhysiologicalBasisofMedicalPractice,SaundersCompany.
2. Chaudhri, K. (2016)7thEdition Concise Medical Physiology, New Central Book Agency (Parentral)Ltd.,Calcutta.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FoodMicrobiology

SemesterII **CourseCode:21FSN113** **L-T-P–3-0-0-3**	**HoursofInstruction/week–3** **No.ofCredits–3** **Total45hrs.**

Pre-requisite: Basicknowledge-microorganisms,food-basedmicrobes.

CourseObjective:

1. Toobtainknowledgeonmorphologyofmicroorganismsandtypesofmicroscopy
2. Tounderstand thefactorsinfluencing thegrowth ofmicroorganisms
3. Toapplythepreservationprinciplesandmethodstopreservethefoodsfrommicrobialcontamination
4. Toexplorethebeneficialeffectsofmicroorganismsin thedevelopmentoffoodproducts.

CourseOutcomes:

CO1: Knowthedifferenttypesandmorphology ofmicroorganismsandmagnification capacityofdifferenttypesof microscopes.
CO2: Understandthefactorsaffectingthegrowthincontrollingthegrowthcurveofmicroorganisms.
CO3: Abletopreservetheperishablefoodsfromdifferenttypesofmicrobialspoilage
CO4: Ableto preservethenon-perishablefoodsfrommicrobialcontamination andspoilage.
CO5: Explorethebeneficialeffectsofmicroorganismsintheprocessinganddevelopmentoffermentedfoods

Skills:Developskillsinidentification,testingandcontrolofmicroorganismsinrelationtofoodsafety.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	-	-	-	-	-	-	-	-
CO2	2	-	1	-	-	-	-	-	-	1	-
CO3	2	-	-	-	-	-	-	-	-	1	-
CO4	2	-	-	-	-	-	-	-	-	1	-
CO5	2	1	-	-	-	-	-	-	-	1	-

Syllabus:

Unit I:Introduction to Microbiology, Morphology and Growth factors of Microorganisms12 hrs. Definition and History, Microscopy, Light and electron Microscopy,General Morphology of MicroorganismsBacteria,Fungi,Algae,YeastandVirus-Bacteriophage,MicrobialBiomass,GrowthCurve,DefinitionofBatchandContinuousculture,FactorsAffectingGrowth-IntrinsicFactors,NutrientContent,pH,RedoxPotential,Antimicrobial,BarrierandWaterActivity.,ExtrinsicFactors: RelativeHumidity,TemperatureandGaseousAtmosphere,Enumerationstrategyofmicroorganisms,Simplemicrobial test-sampling,counting

UnitII: MicrobiologyofPlantbasedFoods 12 hrs. Outline of Contamination, Spoilage and Preservation of Vegetables and Fruits, Cereals and Cereal Products,Pulses, Nutsandoilseeds,SugarandSugarProducts

UnitIII: MicrobiologyofAnimal basedFoods 12 hrs. Outline of Contamination, Spoilage and Preservation of Milk and Milk Products, Canned Foods, Meat andMeatProducts, EggandPoultry

UnitIV:BeneficialEffectsofMicroorganisms 12hrs.
FermentedFoods–Curd,Cheese,Sauerkraut,Meat,SoyBasedFoods,AlcoholicBeveragesandVinegar

UnitV:Food Intoxication and Food Infection 12 hrs. FoodBorneDiseases–Classification-Intoxication –BotulismandStaphylococcalintoxication-Infection–Salmonellosis, Clostridium Perfringens illness, Bacillus cereus, Ecoli, Shigellosis, Yearsinia andStreptococcusfaecalis–Foodsinvolved,Disease'soutbreak,Preventiveandcontrolmeasures.

ReferenceTextbooks:

1. JayM.J(2015)ModernFoodMicrobiology,FourthEdition,CBSPublishersandDistributors,NewDelhi
2. Ramesh,K.V(2012)Food Microbiology,MJPPublishers,Chennai.
3. Tamine,A (2015)ProbioticDairyProducts,BlackwellPublishing,USA.
4. WilliamC.Frazier(2014)FoodMicrobiology,TataMcGrawHillsPublishingCompanyLimited,Chennai.

SuggestedReadings:

1. Adams,MRandMoss,MO(2015)FoodMicrobiology,NewAgeInternational(P)Ltd.,NewDelhi.
2. CappuccinoG.JandSherman,N(2008)Microbiology–ALaboratoryManual,PearsonEducationPublishers, USA,.
3. JayM.J(2015)ModernFoodMicrobiology,FourthEdition,CBSPublishersandDistributors,NewDelhi.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FoodChemistry

SemesterII	**HoursofInstruction/week–3**
CourseCode:21FSN114	**No.ofCredits–**
L-T-P–3-0-0-3	**3Total45hrs.**

Prerequisite: Basicsofchemistry-water,carbohydrates,proteinsandfats.

Courseobjective:
Toprovideadeeperknowledgeonthechemicalconstituents,theirstability,changes-indifferentmediumandtheirapplications

Courseoutcomes:
CO1:
Gainclearunderstandingoftheinteractionofwaterwithfoodandtheroleofwaterinfood CO2:Understandthechemistryofsugarsandstarchandtheircontributioninthefoods
CO3: Gain knowledge on the types of proteins, properties and the action of chemicals on it.CO4:Recognizethecharacteristicsoffatsandoils
CO5: Familiarizewiththepigmentsinfood,spicesandcondiments,enzymesadditivesandtoxicsubstances.

Skills: Developskillsin thechemistrybehindfoodsduring processing

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	1	-	-	-	-	-	-	-	-	-
CO2	-	2	-	-	-	-	-	-	-	-	-
CO3	-	1	-	-	-	-	-	-	-	-	-
CO4	-	1	-	-	-	-	-	-	-	-	-
CO5	1	1	-	-	-	-	-	-	-	-	-

Syllabus:

UnitI:Sols,GelsandSolutions **12hrs**
MoistureinFoods,HydrogenBonding,BoundWater,Waterandits interactionwithfoodcomponentsand food stability, Water Activity in Foods, Determination of Moisture Content in Foods, TrueSolutions,Dispersions,Sols,Gels,Foams,ColloidsandEmulsions.

UnitII:Carbohydrates-ChemicalpropertiesforFoodApplications **12 hrs**
Carbohydrates- Starch - granule structure and properties, native and modifiedHeteropolysaccharides-pecticsubstancesandseedgums,Sweeteners,EffectofSugar,Acid, Alkali,FatandSurface Active AgentsonStarch, Typesof Candies,Chemistryof Milk Sugar,Non Enzymatic Browning,SwellingofStarchGranules,GelFormation,Retrogradation,Syneresis.

UnitIII:Proteins-Chemical propertiesforFoodApplications **12**

hrsProteins-

Aminoacidchemistry,Proteinstructure,ComponentsofWheatProteins,Structure,GlutenFormationEffectofSoaking,FermentationandGerminationonPulseProteins.PropertiesofEggProtein,

ChemistryofMilkProtein,ChangesinMilk,EggandMeatProteinsduringHeating,ActionofHeat,Acid,Alkalisonvegetables ProteinsandanimalProteins

UnitIV:FatsandOils-ChemicalpropertiesforFoodApplications 12 hrs

Lipids-Fattyacidsandtriglycerides, Phospholipids,PhysicalandChemicalPropertiesofFatsandOils, Lipidoxidation-Rancidity, hydrolytic andoxidative Hydrogenation-mechanisms andcatalysts,Winterization,Decomposition of Triglycerides, Shortening Power of Fats, Changes in Fats and Oils during Heating, Factorsaffectingfatabsorptioninfoods

UnitV:ChemistryofPecticSubstances,PlantPigments,Spicesandcondiments 12 hrs

Pectins,Phenolic Components,Enzymatic Browning inFruits andVegetables,VolatileCompounds fromCooked Vegetables,Different TypesofPlant Pigments –Water- andFat-Soluble Pigments, Properties andActivePrinciplesofSpicesandCondiments,Coloursandcolorants,Foodadditives,Flavours,Acid-basechemistryoffoodsandcommonadditives, Toxicsubstances.

Textbooks

1. ShakuntalaManay,Shadaksharaswamy.M(2017)Foods,FactsandPrinciples,NewAgeInternationalPvtLtdPublishers,2nd Edition
2. Chandrasekhar,U.FoodScienceandapplicationsinIndianCookery(2002)PhoenixPublishingHouse, NewDelhi.
3. Swaminathan,M.FoodScience,(2015)ChemistryandExperimentalFoods,BappcoPublishers,Bangalore

References

1. Meyer,L.H,FoodChemistry,(2004)CBSPublishersandDistributors,4th edition
2. Paul,P.C.andPalmer,H.H.FoodTheoryandApplications(2000)JohnWileyandSons,NewYork,(RevisedEdition)
3. ChopraH.K,Panesar,P.S,FoodChemistry(2010)NarosaPublishingHouse,NewDelhi
4. “Fennema´sFoodChemistry“4thed.Damodaran,Parkin&Fennema(2008),CRCPress,BocaRaton, USA

Evaluationpattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

NutritionthroughLifespan(Practical-II)

SemesterII	**HoursofInstruction/week–2**
CourseCode:21FSN182	**No.ofCredits–1**
L-T-P–0-0-2-1	**Total30hrs.**

Prerequisite: StagesofHumandevelopment,Food&NutritionalRequirements

CourseObjectives:

1. Get familiarwithweights,measuresofbothrawingredientsandcookedfoods
2. Understandbasicsofplanning menuand preparefood itemsfordifferentage&incomegroups
3. Understandtheroleofadietitianindietplanningandhomemakerinfamilymealplanning

CourseOutcomes:

1. Understandthebasicconceptofmealmanagement,mealplanningforallagegroups
2. Developskillsinplanningbalanceddietvarietyfoodpreparation usingfivefoodgroupsaday
3. Applythe knowledge inpreparingnutrientsdense value-addedfoods
4. Developingcompetence inefficientproductionandcookingmethods

Skills: Developskillsinplanningandevaluatingmenuplansthroughoutdifferentstagesoflifespan

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	1	-	-	-	3	1	2	-	-	-
CO2	2	1	-	-	-	3	1	2	-	-	-
CO3	2	1	1	-	-	3	1	2	-	-	-
CO4	3	1	-	-	-	3	1	2	-	-	-

Practical: **30hrs.**

S.No	Practicals
1	Planning,PreparingandEvaluatingMenuDuringPregnancy
2	Planning,PreparingandEvaluatingMenuDuringLactation
3	Planning,PreparingandEvaluatingMenuforInfants(SupplementaryFoods)
4	Planning,Preparing and EvaluatingMenu forPreschoolers
5	Planning,Preparing and Evaluating Menu forSchoolGoing Children
6	Planning,PreparingandEvaluatingMenuforAdolescents
7	Planning,Preparing and Evaluating MenuforAdults
8	Planning,PreparingandEvaluatingMenuforElderly

Referencebooks:

1. DietaryGuidelinesforIndians,ICMR,NationalInstituteofNutrition,Hyderabad,2013.
2. Gopalan,C.RamaSastriB.V.andBalasubramanian,NutritiveValueofIndianFoods,NIN,ICMR,Hyderabad, 2014.
3. Srilakshmi,B.,Dietetics,NewAgeInternational (P)Ltd.,NewDelhi,2013.
4. Swaminathan,M.,AdvancedTextbook onFoodandNutrition,Vol.1,SecondEdition,BangalorePrintingandPublishingCo.Ltd.,Bangalore,2012.

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

FoodChemistry(Practical–III)

SemesterII	**HoursofInstruction/week–2**
CourseCode:21FSN183	**No.ofCredits–**
L-T-P–0-0-2-1	**1Total-30hrs.**

Prerequisite: Chemistrybehindfoods,Effectsofcooking,changesduringcooking

CourseObjectives:

1. ToenablethestudentstoStudythephysio-chemicalchangesthatoccurinfoodsduringcooking.
2. ToGainknowledgeaboutthechemistryunderlyingthepropertiesandreactionsofvariousfoodcomponents.
3. ToUnderstandthevariouspropertiesexhibitedbystarchandsugars,proteins,fatsandoils,pecticsubstancesa ndspicesandcondiments

CourseOutcomes:

CO1:Demonstrateproficiencyinunderstandingphysiochemicalchangesoccurringinfoodsduringcooking.
CO2: Describethebasicprinciplesandpropertiesofstarch proteins, fats and oils, pectic substancesandspicesandcondiments.
CO3: Gain sufficient knowledge about chemistry of starch proteins, fats and oils, pectic substances.**Skills:** Develop products with minimum nutritional loss based on the knowledge of food chemistry.CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO5	PSO1	PSO2	PSO3	PSO4
CO1	3	2	-	-	-	3	1	2	-	1	-
CO2	2	2	-	-	-	3	1	2	-	1	-
CO3	2	2	1	-	-	3	1	2	-	1	-

Practical's: **30hrs.**

1. GelatinizationofStarch
2. MicroscopicExamination ofuncooked andgelatinized Starch
3. Retrogradation and Syneresis
4. GlutenFormation
5. StagesofSugarCookery
6. PreparationofFondant,Fudge,Carameland Toffee
7. Scumformation
8. Boilingoverandscorchingofmilk
9. GlutenFormation
10. EffectofSoaking,germinationandfermentationofPulsesCoagulationofeggwhiteandeggyolk
11. Boiled Egg, Poached Egg, Omlettes, Custards, Cake and Mayonnaise Coagulation and precipitationofmilkproteins.
12. SmokingTemperatureofDifferentFats,FactorsAffecting AbsorptionofFats
13. Effect ofacids,alkali andheat onwater& fat-solublepigments,EnzymaticBrowning,prevention

TextBooks:

1. ShakuntalaManay,Shadaksharaswamy.M(2017)Foods,FactsandPrinciples,NewAgeInternationalPvtLtdPublishers, 2nd Edition
2. Chandrasekhar,U.FoodScienceandapplicationsinIndianCookery(2002)PhoenixPublishing House, NewDelhi
3. Swaminathan,M.FoodScience,(2015)ChemistryandExperimental Foods,BappcoPublishers,Bangalore.

ReferenceBooks:

1. Meyer,L.H,FoodChemistry,(2004)CBSPublishersandDistributors,4th edition
2. Paul,P.C.andPalmer,H.H.FoodTheoryandApplications(2000)JohnWileyandSons,NewYork,(Revised Edition).
3. ChopraH.K,Panesar,P.S,FoodChemistry(2010)NarosaPublishingHouse,NewDelhi.

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

ProfessionalCommunication

SemesterII	**HoursofInstruction/week–2**
CourseCode:21ENG111	**No. of Credits – 2Total30hrs.**
L-T-P–1-0-2-2	

CourseObjectives:

1. Toconveyand documentinformationin aformalenvironment
2. Toacquiretheskill ofself-projectioninprofessional circles
3. Toinculcatecriticalandanalyticalthinking

CourseOutcomes:

CO1: Demonstratecompetencyinoralandwrittencommunication
CO2: Applydifferentstylesofcommunicationinprofessionalcontext**CO3:**Partic ipateindifferentplanned&extemporecommunicativeactivities**CO4:**Interpretan ddiscussfactsandinformationinagivencontext
CO5: Developcritical andanalyticalthinking

Skills: Developskillsincritical andanalyticalthinking

CO-POMAPPING:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	-	-	-	3	-	-	-	-	-
CO2	-	-	-	-	-	3		-	-	-	-
CO3	2	-	-	-	-	3	-	-	-	-	-
CO4	-	-	-	2	-	3	-	-	-	-	-
CO5	-	-	-	-	-	3	2	-	-	-	-

Syllabus:

UnitI

VocabularyBuilding:Prefixes andSuffixes; One-wordsubstitutes,Modalauxiliaries, Error Analysis:PositionofAdverbs,Redundancy,misplacedmodifiers**,**Danglingmodifiers–ReportedSpeech

UnitII

Instruction,Suggestion& Recommendation-SoundsofEnglish: Stress,Intonation -Essaywriting:AnalyticalandArgumentative

UnitIII

Circulars,Memos–BusinessLetters-e-mails

Unit IV

Reports:Tripreport,incidentreport,eventreport-SituationalDialogue -Group Discussion

UnitV

ListeningandReadingPractice- BookReview

Unit-VI

Practicalsessions

Text books:

1.Kenneth,Anderson,TonyLynch,JoanMacLean.StudySpeaking.NewDelhi:CUP,2008.2.Marks,Jonathan.EnglishPronunciationinUse.NewDelhi:CUP,2007.

3. Syamala,V.EffectiveEnglishCommunicationforYou(Functional Grammar,Oral andWritten Communication):Emerald,2002.

Referencebooks:

1. FelixaEskey.*TechTalk*,UniversityofMichigan.2005
2. MichaelSwan.*Practical EnglishUsage*,Oxford UniversityPress.2005
3. Anderson,Paul.*Technical Communication:AReaderCenteredApproach*,VEdition, Hercourt,2003.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	20	
Periodical2(P2)	20	
ContinuousAssessment(CA)	40	
EndSemester		20

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

TAMILII

SemesterII	**HoursofInstruction/week–2**
CourseCode:21TAM112	**No.ofCredits–**
L-T-P–2-0-0-2	**2Total30hrs.**

நோக்கம்:

தமிழ் இலக்கிய வரலாறு அறிதல்.நடையியல்ஆய்வு, ஒப்பீட்டுறிதல், சமூாழிப்பயிற்சி, மாணவரகளின் கருத்துரிமாற்றுதிறடனயும படைப்புத்திறடனயும்அதிகரிக்கச்சயல்தல்,தமிமிழினஅடிப்படைஇலக்கணக் கூறுகடளயும்அதனபயனபாட்டையும்கணினிவழிஅறிமுகப்படுத்துதல்.

CourseOutcomes:

CO1தமிழ்இலக்கியவரலாறுஅறிதல்

CO2நடையியல்ஆய்வு,ஒப்பீட்டுறிதல்

CO3திடணஇலக்கியமும்நீதியிலக்கியமும்– பதிசனண்கீழ்க்கணக்குநூல்களச்சதாரப்பானபபிறச்சயத்திகடளஅறிமுகப்படுத்துதல்

CO4 தமிழக ளினதமிழ் சதாண்டும் சமுதாய அறிஞரக் சதாண்டையும அறிமுகப்படுத்துதல்.

CO5 தமிமிழினஇலக்கணக்கூறுகடளயும் அதனபயனபாட்டையுமஅறிமுகப்படுத்துதல்.

CO6படைப்புரவாகக்குதல்

CO-POMAPPING

S.No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	2	-	3	2	-	-	-	-
CO2	-	-	-	3	-	3	2	-	-	-	-
CO3	-	-	-	3	-	3	2	-	-	-	-
CO4	-	-	-	2	-	3	3	-	-	-	-
CO5	-	-	-	3	-	3	2	-	-	-	-
CO6	1	-	-	2	-	3	3	-	-	-	-

அலகு1

தமிழ் இலக்கிய வரலாறு: நாட்டுபுறபபாலைகள்,கடதகக்ள், பழசமாழிகள்-சிறுகடதகள்ததாறற்றமும்வளரச்சியும், சிறற்றிலக்கியங்கள்:கலிங்கத்துபபரணி(தபாரப்பாடியது)-முகக்கூற்பளு35. காபபியங்கள்: சிலபபதிகாரம் –

மணிதமகடல நடையியலம் ஆயம்வு
மறம்றுமஜமம் சபரும்–
ஐஞ்சிறுங்காப்பியங்களம்சதாைரம்பானசசயம்திகளம்.

அலகு2

திடணஇலகம்கியமும்ம் நீதியிலகம்கியமும்ம்-
பதிசனண்கீழம்கம்கணகம்கு நூலம்களம்
சதாைரம்பானபிறசசயம்திகளம்-
திரும்கம்கும்றளம்(அனம்பும்,பண்பும்,கலம்வி,ஒழுகம்கம்,நைபும்,
வாயம்டம,தபனம்றஅதிகாரதம்திலம்உளம்ளசசயம்திகளம்.

அறநெலக்கள்:உலகநீதி(1-5)–ஏலாதி(1,3,6).-
சிதத்ரகள்கடசவளிசிதத்ரப்பாைலக்கள்
(ஆனந்தக்களிப்பு–1,4,6,7,8),மற்றம்அகப்தபயச்சிதத்ரப்பாைலக்கள்(1-5).

அலகு3

தமிழ்இலக்கணம்:வாக்கியவடகள்–தனவிடனபிறவிடன– க்கறறு
தநரஅயற்கூற்று

அலகு4

தமிழக ளின் தமிழ் சதாண்டம் சமதாய
அறிஞ சதாண்டம்: பாரதியார்,
ரக
பாரதிதாசன்,பைடகத்தகாைடைகல்யாணசுந்தரம்,சுரதா,சுெதா,சி
ற்பி,தமதத்தா,
அப்Fல்ரகமானன்,ந.பிசடசமெரதத்தி,அகிலன்,கல்கி,ஜீ.யெ.தபாப்,
வீரமாமெனிவர்,
அண்ணா,பரிதிமாற்கடலஞர்,்மடறமடலயடிகள்.

அலகு5

தமிழ்சமாழி ஆய்வில்கணினி பயன்பாடு. - கருத்F பரிமாற்றம் - விளம்பர
சமாழியடமப்பு–பசச-நாைகமப்படைப்பு-
சிறுகடத,கடத,பதினமப்படைப்ப.

பாடநூல்கள்:

மை.வரதராசன்“தமிழ்இலக்கியவரலாறை”சாஹித்யஅகசைமிபப்ள
ிதகஷனஸ்,2012 சபான் மணிமாறன்“அதைான் தமிழ் இலக்கணம் “அதைான்
பப்ளிஷிங்குரூப,வஞ்சியூர்,திருவனந்தபுரம்,2007.

http:/www.tamilvu.org/libirary/libindex.htm.http:/www.gunathamizh.com/
2013/07/blog0post_24.html
நா.வானமாமடல,“தமிழர்நாை்டுப்பாைல்கள்”நியூசசஞ்சுரிபுத்தகசவளியீை்ைகம்
1964,2006
நா.வானமாமடல“பழங்கடதகளும்,பழசமாழிகளும்”நியூசசஞ்சுரிபுத்தகசவளி
யீை்ைகம்,1980,2008

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	20	
Periodical2(P2)	20	
ContinuousAssessment(CA)	40	
EndSemester		20

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

MALAYALAMII

SemesterII	**HoursofInstruction/week–2**
CourseCode:21MAL112	**No. of Credits –**
L-T-P–2-0-0--2	**2Total30hrs.**

CourseObjectives: Tounderstandtheancientcultural languagespecialities

CourseOutcomes:

CO1
Tounderstandthedifferentculturalinfluenceoflinguistictranslation.CO2Toidentif ytheromanticelementsof modernliterature.
CO3Toanalyzetheautobiographicalaspects.
CO4Tocreateawarenessofthehistorical,politicalandsocio-culturalaspectsofliterature.CO5Expansionofideasinwriting

CO-POMAPPING

S.No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	3	-	-	-	-	3	1	-	-	-	-
CO2	-	-	-	1	-	3	-	-	-	-	-
CO3	-	-	-	3	-	3	2	-	-	-	-
CO4	-	-	-	2	-	3	3	-	-	-	-
CO5	-	-	-	1	-	3	2	-	-	-	-

Syllabus:-Unit

I

Ancient poet trio: *Kalayanasougandhikam,(Lines:kallummarangalum… namukkennarikavrikodara)*,KunjanNambiar-Criticalanalysisofhispoetry-AncientDrama:*KeralaSakunthalam*(Act1),Kalidasan(TransilatedbyAttorKrishnaPisharody).

UnitII

Modern/romantic/contemporarypoetry:*Chandanakkattil*–G.Sankarakurupu-Romanticism–modernism.

UnitIII

MemoirsfromModernPoets:*Theeppathi*,BalachandranChullikkadu-literarycontributionsofhistime.

UnitIV

Partof an autobiography/travelogue: *KannerumKinavum*, Chapter: ValarnnuVarunnoratmavu,V.T.Bhattathirippadu-Socio-culturalliterature-historicalimportance.

UnitV

Error-freeMalayalam-**1**.Language; **2**.Clarity ofexpression;**3**.Punctuation-ThettillathaMalayalam-Writing-**a.** Expansionofideas;**b**.PrécisWriting;**c.**EssayWriting;**d**.Letterwriting;**e**.RadioSpeech;**f**.Script/Feature/Script Writing; **g**.NewsEditing; **h.** Advertising;**i**.Editing; **j**.Editorial Writing; **k**.Criticalappreciationofliteraryworks(Anyoneortwoasanassignment)

References:

1. Leelavathy.M,MalayakaavidhaSahithiyasaritraam,KeralasahityaAkademi,Thrissur;2015thedition
2. Tarahan.K.M,NovelSahithiya CHARITRAM,KeralaSastrasahityaParishad,2015
3. UlloorS.ParameshwaraIyer,KeralaSahithiyaCHARITRAM.,WorldeBookLibrary,2010
4. AutobiographyofGandhiji,EnteSathyanweshanaPareekshanaKatha

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	20	
Periodical2(P2)	20	
ContinuousAssessment(CA)	40	
EndSemester		20

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

HINDIII

SemesterII	**HoursofInstruction/week– 2**
CourseCode:21HIN112	**No. of Credits –**
L-T-P–2-0-0-2	**2Total30hrs.**

CourseObjectives:

AppreciationandassimilationofHindiLiteraturebothdrisya& shravyausingthebest specimensprovided.

CourseOutcomes:

CO1:UnderstandthefundamentalsofgrammarCO2:A
pplythemechanicsof writing.
CO3:Developtheircriticalandcreativeskills.
CO4:Appreciatedifferentgenresofliterary texts.
CO5:Demonstratelinguisticcompetenceinwrittencommunication.CO6:Cr
eatingdifferentformsofliterarywritingforMedia.

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	-	-	3	3	1	-	-	-
CO2	-	-	-	-	-	3	3	-	1	-	-
CO3	-	-	-	-	-	3	-	-	-	-	1
CO4	-	-	-	-	-	3	2	-	-	1	-
CO5	-	-	-	-	-	3	2	-	-	-	1
CO6	-	-	-	-	-	3	2	-	-	1	-

Syllabus:

UnitI

a) Visheshan-ParibhashaAurBhed.specialusageofadverbs,changingvoiceandconjunctionsinsentences.
b) kriya-ParibhashaAurBhed,rupantharkidrushtise-
kaalc)padhparichay.
d)VigyapanLekhan (Advertisementwriting),SaarLekhan (Precisewriting).

UnitII

CommunicativeHindi–MoukhikAbhivyakthi–
understandingproperpronunciation,Haptics…etcinInterviews,shortspeeches.

UnitIII

Filmreview,Audio–Visual-MediainHindi–Moviesappreciation
andevaluation.NewsreadingandpresentationsinRadioandTVchannelsinHindi,samvaadhlekhan,

UnitIV

a) Harishankarparasaiyi-SadacharkaThavis
b) Jayashankarprasadh–Mamata
c) Mannubandari-Akeli
d) Habibtanvir-Karthus

UnitV

KavyaTarang

a) Himadrithungshrungse (poet-Jayasankarprasad)
b) Dhabba(poet-kedarnath sing),
c) Proxy(poet-Venugopal),
d) Machis(poet–SuneetaJain),
e) Vakth.(poet –Arunkamal)
f) Fasal(poet-SarveshwarDayalSaxena)

TextBooks:

1. *KavayTarang:Dr.Niranjan,JawaharPusthakalay,Mathura.kavyaSargam-Ed;Dr.SanthoshKumarChathurvedi–LokbharathiPrakashan.*
2. *KahaniKunj:Editor:Shashidar,GovindPusthakalay,Mathura*
3. *VyavaharikHindiVyakaran,AnuvadthahaRachana:Dr.H.Parameswaran,RadhakrishnapublishingHouse,NewDelhi*

EvaluationPattern

Assessment	Total Internal	Total External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester	50	50
Total	100	

*CA–CanbeAssignment,Projects,andReports.

CulturalEducationII

SemesterII	**HoursofInstruction/week–2**
CourseCode: 21CUL111	**No.ofCredits–**
L-T-P–2-0-0-2	**2Total30hrs.**

CourseObjectives:

Thecourseisdesignedtoenablestudentstodeepentheir understandingandfurthertheirknowledgeaboutthedifferentaspectsofIndianculture andheritage.Itwillequipstudentswithconcreteknowledgeoftheircountryandthemindof itspeopleandinstillinthemsomeof thegreatvaluesof Indianculture

CourseOutcomes:

CO1 GetanoverviewofIndiancontributiontotheworldinthefieldofscienceandliteratureCO2Understandthefoundationalconceptsofancient Indianeducationsystem
CO3Learntheimportantconcepts ofVedasand*Yogasutra*-sandtheirrelevancetodailylife
CO4Familiarizethemselveswiththeinspirationalcharactersandanecdotesfromthe*Mahābhārata*and *Bhagavad-Gītā*andIndianhistory
CO5GainanunderstandingofAmma'sroleintheempowerment ofwomen

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	-	1	-	2	-	-	-	-
CO2	-	-	-	-	1	-	2	-	-	-	-
CO3	-	-	-	-	1	-	2	-	-	-	-
CO4	-	-	-	-	1	-	2	-	-	-	-
CO5	-	-	-	-	1	-	-	-	-	-	-

Syllabus:

UnitI

TotheWorldfromIndia;Education SysteminIndia;InsightsfromMahabharata;HumanPersonality.India'sScientificSystemforPersonalityRefinement.

UnitII

TheVedas:AnOverview;OneGod,ManyForms;BhagavadGita– TheHandbookforHumanLife;ExamplesofKarmaYogainModernIndia.

UnitIII

Chanakya'sGuidelinesforSuccessfulLife;RoleofWomen;Conservationswith Amma.

TextBook:

1. HeritageofIndia.R.C.Majumdar.RamakrishnaMissionInstituteofCulture.
2. TheVedas.SwamiChandrashekharaBharati.BharatiyaVidyaBhavan.
3. IndianCultureandIndia'sFuture.MichelDanino.DKPublications.
4. TheBeautifulTree.Dharmapal.DKPublications.
5. India'sRebirth. SriAurobindo. AurovillePublications

EvaluationPattern

Assessment	Total Internal	Total External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester	50	50
Total	100	

*CA–CanbeAssignment,Projects,andReports.

SEMESTERIII

NutritionalBiochemistry

SemesterIII	**HoursofInstruction/week–4**
CourseCode:21FSN201	**No.ofCredits– 4**
L-T-P–3-1-0-4	**Total60hrs.**

Pre-requisite: Schoollevelchemistryofbiomolecules

CourseObjective: Toimpartknowledgeonthebiochemistryandmetabolismofmacronutrientsandmicronutrients.

CourseOutcomes: Attheendofthecourse,thestudentswillbeableto

CO1: Understand thefundamentalconceptsofnutrition andfunctionsofenzymesandhormones.
CO2: Gainknowledge onthechemical/biochemical properties andmetabolicpathways ofcarbohydrates,proteins, lipidsandnucleotides.
CO3: Acquireaclearunderstandingonthesignificanceofnucleicacidsinproteinsynthesis.

Skills:Toprovidewideknowledgeinconnectiontonutritionandbiochemistryinvolvedinthefoodcomponents.

CO-POMappings

	PO1	PO2	PO3	PO4	PO7	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	2	3	-	-	3	3	2	-	-
CO2	0	-	3	3	-	-	-	3	2	-	-
CO3	0	-	3	3	-	-	-	3	2	-	-

Syllabus:

UNITI-Biomolecules **12hrs**

Anoverviewofbio-macromolecules:carbohydrates,lipids,aminoacids,proteinsandnucleicacids

UnitII-Chemistryof EnzymesandHormones **12 hrs**Enzymes - Classification, nomenclature and general properties - Mechanisms of enzyme action, regulation ofenzymeactivity-Roleofcoenzymesandcofactorsinenzymeactivity-Factorsaffectingenzymeactivity-Enzymeinhibition-iso-enzymesandimmobilizedenzymes-Clinicalsignificanceofenzymeassays.Hormones-Classification,secondmessengers,andmechanismofaction-Neuro-endocrine controlofmetabolism-Hormonaldisorders- Counterregulatoryhormones.

UnitIII-ChemistryofCarbohydratesandProteinsandtheirMetabolism **12 hrs**Carbohydrates–Classificationandphysico-chemicalproperties-Aerobicandanaerobicdegradation-Glycogenesis,Glycogenolysis, Gluconeogenesis -HMP shunt pathway -Alcoholic fermentation - Hormonalregulationsofbloodglucose.Proteinsandaminoacids–Classification,structureandphysico-chemical

properties-Proteindegradationandmetabolism -Ureacycle-Glutamineandalaninecycle-Proteinbiosynthesis.

UnitIV -ChemistryofLipidsandNucleotidesandtheirMetabolism 12 hrs Lipids-Classification,chemicalstructure,andproperties–Identificationoffatsandoils(saponificationnumber, acid number, iodine number and Reichert – Miesel number) - Metabolic pathways of triaclyglycerol,fattyacids,cholesterol andlipoproteins - Biosynthesisoffattyacidsandketonebodies.Nucleicacids:Classification-metabolismofnucleicacidcomponents-Biosynthesisofnucleotides.

UnitV-NucleicAcids 12hrs

Chemistryandmetabolism ofnucleic acids:definition, components, nucleosides, nucleotides,structure ofDNAandRNA,typesofRNA,replication,transcription,roleofDNAandRNAinproteinsynthesis. Basicsofmolecularbiologyandgenetics,molecularbasisofmutation,restrictionenzymes,recombinantDNAtechnology, cloningofgenes.

Textbooks:

1. AdvancedNutritionandHumanMetabolism,GropperSS,Smith,JL,andGroffJL,7th Edition,2018.
2. Wardlaw'sPerspectivesinNutrition,CarolByrd-Bredbenner,etal.,9th Edition,2013.
3. Harper'sIllustratedBiochemistrybyMurray,Bender,Botham,Kennelly,Rodwell,andWell(McGrawHill Publishers),29th Edition,

Referencebooks:

1. HandbookofFoodandNutrition,Dr.M.S.Swaminathan,TheBangloreprintingandpublishingCo.Ltd. (Bangalorepress), 2004.
2. Lehninger,PrinciplesofBiochemistry,WHFreeman&Co,2021.
3. LubertStryer,JeremyM.Berg,Biochemistry,WHFreeman,2019.
4. ColorAtlasofBiochemistrybyKoolmanandRoehm.Thieme,2nd edition,2005.
5. IntroductiontoNutritionandMetabolism,David.A.Bender,4th edition,CRCPress,2008.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

ClinicalNutritionandDietetics – I

SemesterIII	**HoursofInstruction/week–4**
CourseCode:21FSN202	**No.ofCredits–**
L-T-P–2-2-0-4	**4Total60hrs.**

Pre-requisite: Dietmanagement&RoleofDieticians

CourseObjective:

1. Understandthetheoreticalaspectsofclinicalnutrition.
2. Gainknowledgeondifferenttherapeutic dietsandtheirpreparation.

CourseOutcomes:

CO1: UnderstandthebasicsconceptsofDietarymanagement.
CO 2: Acquireknowledgeontherolesandresponsibilities,skills,ethicsandopportunitiesforadietician
CO 3: Applyprinciplesofdiet therapy,modificationofnormal dietfortherapeuticpurposes.

CO4: Comprehendthecauses,symptomsanddietarymanagementaddressingtoriskfactors.

Skills:

- Enhanceknowledgeandskillsofnutritionandtodevelopcriticalevaluationskillsthroughanintegrationofnutrition,dieteticsandresearch.
- Applyingtechnicalskills,knowledgeofhealthbehavior,clinicaljudgment,anddecision-makingskillswhenassessingandevaluatingthenutritionalstatusof individualsandcommunities

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	-	1	-	-	1	1	1	-	-
CO2	1	-	-	2	-	-	1	1	1	-	-
CO3	1	3	-	2	-	-	1	1	1	-	-
CO4	1	2	-	2	-	-	1	1	1	-	-

Syllabus:

UnitI:IntroductiontoClinicalnutritionanddieteticsI

12hrs. Defi

nition and history of dietetics- Concepts of a desirable diet for optimum health-Interrelationship betweenfood,nutritionandhealth-Factorsaffectingfoodchoices,Physiologicfactorsregulatingfoodintake-roleofneurotransmittersandnutrientsinhungerandsatiety.
Introduction to diet therapy- Glycemic Index, dietary supplements, adjunct to diet therapy, food nutrition anddruginteraction

UnitII-Roleandresponsibilitiesofdieticians **12 hrs.**Dietician, classification,responsibilities,codeofethics,assessmentanddietplanning, dietcounsellingandnutritioneducation,dieticianinIndia,IndianDieteticAssociation(IDA)

UnitIII-PrinciplesandObjectivesofMedicalnutritiontherapy **12hrs.**

Characteristics of a Regular diet, rationale for modifications in terms of energy and other nutrients, texture,consistency.Translationofdiet ordersintomenu:definingnutrientneeds,desirabledietarypattern,menuplan,useofexchangelist,typesofmenu.Monitoringfoodintake.

Enteral and Parenteral feeding- Indications, types (oral supplements, tube feeding, parenteral feeding, TPN,preandpost-operative diets,immuno nutrition), methodsofadministration, monitoring andassociatedcomplications.

UnitIV-Dietary principlesandmanagementofspecial conditions:

12hrs. Protein**andenergymalnutrition(hospitalanddomiciliarytreatment)-Febrilediseases-classificationoffevers,metabolism, generaldietaryconsiderations- dietinacuteandchronicfevers (typhoid andtuberculosis)-Surgical conditions, Burnsand organ transplants,Infectious diseases(typhoid, malaria, tuberculosis,HIV),arthritis, gout, hypothyroidism

UnitV-Nutritioninadversereactionstofood **12hrs.**

Pathogenesis, food allergens, symptoms, tests for diagnosis, food allergies - pollen food allergy syndrome,latex–fruitsyndrome,fooddependent,exercise-inducedanaphylaxis,foodinducedanaphylaxis,food–proteininducedenterocolitissyndrome,cow'smilkproteinallergy(CMPA).Management-restricteddiets,eliminationdietsandhypo-sensitization.

ReferenceTextbooks:

1. Srilakshmi.B.Dietetics,NewageInternational Publishers,6th Edition,2012
2. DavidsonS,PassmoreR,BreckJFT.HumanNutritionandDietetics,TheEnglishLanguageBookSocietyanddChurchillLivingston,1975.
3. KathleenMLandEscott S.Krause'sFood,Nutrition andDiet Therapy,9thedn,W.B.SaundersCompanyPennsylvania, 2000.

SuggestedReadings:

1. Bemadette. M. MarriottandSydneJCarlson,Nutritionalneedsincoldandhighaltitudeenvironments
2. Cresci, P. D. (Ed.). (2015). Nutrition support for the critically ill patient: A guide toPractice. CRCPress.
3. Escott-Stump,S.(2008).Nutritionanddiagnosis-relatedcare.LippincottWilliams&Wilkins.
4. Gable,J.,& Herrmann,T.(2015).*CounsellingskillsforDietitians*.JohnWiley& Sons.
5. Nelms,M.,& Sucher,K.(2015).Nutritiontherapyandpathophysiology.NelsonEducation

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

FoodProcessingandPreservationTechnology–I

SemesterIII	**HoursofInstruction/week–4**
CourseCode:21FSN203	**No.ofCredits–4**
L-T-P–2-2-0-4	**Total60hrs.**

Pre-requisite: Basicsoffoodprocessing&preservationmethods

CourseObjectives:

1. Gainknowledgeontheprinciplesoffood preservationandprocessing
2. Understandthephysicochemicalpropertiesoffood
3. Understandtheprocessingofvariousfood groupsbasedonitsproperties

CourseOutcomes:

CO1:Comprehend thenatureandpropertiesoffoods
CO2:Understand theprinciplesofthevarious processingmethodsfordifferentfoods.
CO3:Adaptingconventionalpracticesandmoderntechnologytoarriveatefficientprocessing.

Skills: Developskillsinvariousfoodprocessingtechniques

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	-	-	-	1	2	1	3	-
CO2	3	3	-	-	-	-	1	2	1	3	-
CO3	3	3	-	-	-	-	3	2	1	3	-

Syllabus:

UnitI-Introductiontofoodprocessing **12hrs.**

Natureandpropertiesof food,fluidandviscoelasticbehavioroffoods,Principlesof differentfoodprocessingsuch as membrane filtration (ultra, osmosis and reverse osmosis, dialysis), pulsed electric, irradiation, highpressureprocessingandhurdletechnology.Effect offoodprocessingonthenutritional propertiesoffood.

Unit II- Processingof cerealsandmillets **12hrs**

Milling products and by products of wheat, rice, corn, barley, oats, sorghum and other millets, whole wheatatta, blendedflour,fortifiedflour,flaked,puffedandpoppedcereals,maltedcereals,processedfoods-bakeryproducts, pastaproductsandvalue-addedproducts.

UnitIII-Processingoflegumesandoilseeds

12hrs. Mill

ing,processingforanti-nutritionalfactors,processingforproductionofedibleoil,meal,flour,proteinconcentratesandisolates,extrusioncooking technology,snackfoods,developmentoflow-costproteinfoods.

UnitIV-ProcessingofDairyandanimalfoods

12hrs.Dai

ry–Manufactureofdifferenttypesofmilk,dryingofwholeandskimmilk, creamseparation, churningofbutter,processingofdifferenttypesofcheese,Probioticmilkproducts -yoghurt,dahiandice-cream,

indigenousmilkproducts-khoa,burfi,kalakhand,gulabjamun,rasagola,srikhand,channa,paneer,ghee,lassi.
AnimalFoods: Canning,cooking,drying,pickling,curingandsmoking,salami,kebabs,sausages,sliced,minced,corned,wholeeggpowder,eggyolkpowder,fishproteinconcentrateandfishoil

UnitVProcessingofFruitsandVegetables **12 hrs.**Introduction to ripening of fruits and vegetables, processing and preservation of various fruits and vegetables,fruitjuicesconcentratesandpowders,purees,pastes,sugarandsaltpreserves,dehydratedfruitsandvegetables.

Relatedpractical experiences
1. VisittoTNAU
2. Visit toflourmill
3. Visittomilkprocessingunit
4. VisittoFSSAI,CODEX,NABLAccreditationlabs

TextBooks:

1. ShakuntalaManay,N.andShadaksharaswamy, M., (2008)Foods–FactsandPrinciples, 3rdEdition, NewAgeInternational(P)LimitedPublishers,NewDelhi,2013.
2. S.Ranganna,HandbookofAnalysisandQualityControlforFruitandVegetableProducts,McGrawHillEducation, 2017.
3. G.SubbulakshmiandShobaAUdipiFoodProcessingandpreservation,NewAgeInternationalPublishers,NewDelhi, 2008.
4. SivasankarB,(2004)FoodPreservationandProcessing,1stEdition,Prentice–HallofIndiaPrivateLtd.,NewDelhi, 2012.
5. BawaAS,Raju PS,ChauhanOP,(2013)FoodScience,NewIndiaPublishingAgency,NewDelhi,2013.

ReferenceBooks:

1. Fellow,P.,FoodProcessingTechnology(2016)–PrinciplesandPractices,3rdEdition,CRCPressWoodlandPublishers, England.
2. Adams,M.R.andMoss,M.O.,FoodMicrobiology,(2015)NewAgeInternational(P)Ltd.,NewDelhi.
3. Sommers, C.H. andXvetengFan, (2016) FoodIrradiation ResearchandTechnology,2nd Edition,BlackwellPublishing, NewDelhi.
4. ManualofmethodsofAnalysisoffoods,fruitandvegetableProcessing,FSSAI,2016.

EvaluationPattern:

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

FoodSafetyandQualityControl

SemesterIII	**HoursofInstruction/week–3**
CourseCode:21FSN204	**No.ofCredits– 3**
L-T-P–2-1-0-3	**Total45hrs.**

Pre–requisite: Food safety,Consumerawareness,Nutritioninformationandlabelling

CourseObjectives:

1. Knowtheimportanceofqualityassuranceinfoodindustry.
2. Knowtheprinciplesofqualitycontroloffood additives.
3. Knowthestandardsforqualityassessmentandfoodsafetyagainstadulteration forvariousfoods.
4. Familiarizewithcriticalassessmentandcontrolpointsforqualityassurance.

CourseOutcome:

CO1: Understand the principles of quality assurance systems in a food industry.CO2:Applyqualitymanagementsystemstofoodprocessingandevaluation.
CO3: Identify and understand issues pertaining to food safety and quality control.CO4:Assessingthequalityparametersduringfoodproductdevelopment.

Skills: Developskillsinfoodsafetyandfoodqualitymanagement

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	1	-	-	-	-	-	1	-
CO2	2	2	-	1	-	-	-	-	-	1	-
CO3	2	2	-	1	-	-	1	-	-	1	-
CO4	2	2	-	1	-	-	-	-	-	1	-

Syllabus:

UnitI **8hrs.**

Water,Sanitation,Hygiene,Foodquality,Foodselection,FoodSafety,Householdhygiene,Foodsafetymeasuresdur ingfoodproduction,Organizationofqualitycontrolfunctioninthefoodindustry.

UnitII **10hrs.**

PrinciplesofQualitycontroloffood–
Rawmaterialcontrol,processedcontrolandfinishedproductinspection.Leaveningagents, classification, usesandoptimumlevels.
Foodadditives-Preservatives,colouring,flavouring,sequesteringagents,emulsifiersandantioxidants.

UnitIII **8hrs.**

Standardizationsystemsforqualitycontroloffoods-NationalandInternationalstandardizationsystem,Foodgrades, Foodlaws-compulsoryandvoluntarystandards.

Foodadulteration-Commonadulterantsin foodsandteststodetectcommonadulterants.

UnitIV **10hrs.**

Methodsfordeterminingquality-Subjectiveandobjectivemethods.

Sensoryassessmentoffoodquality-appearance,color,flavour,textureandtaste,differentmethodsof sensoryanalysis,preparationofscorecard,panelcriteria,sensoryevaluationroom.

UnitV **9hrs.**

Food safety: The concept of food safety and its definition. Elements of food safety management. Challengesin management of food safety and outlook. Hazards associated with foods – Milk and dairy products; meat,egg and poultry; fruits and vegetables; nuts and oil seeds. Control of hazards and management of safety offoodsatrawandprocessedstage.

Hazard Analysis and Critical Control Point System (HACCP): Introduction, the need for HACCP, Principlesof theHACCPSystemandapplicationof HACCP,microbiologicalcriteriainfoodpackaging.

ReferenceBooks:

1. Food science-Norman potter
2. JayM.J(2015)ModernFoodMicrobiology,FourthEdition,CBSPublishersandDistributors,NewDelhi
3. FoodTechnology-Presscott.S.C.andProcter
4. Foodchemistry-Meyer
5. Foodscience,Chemistryandexperimentalfoods-M.Swaminathan
6. Food chemistry-Lee
7. Food science-Srilakshmi(2001)2nd edition, New age international publishers-(2001)B.Sc. Food Sci&Nut.(2014-15,AnnexureNo.32APage16of 33SCAADt.06.02.2014
8. Rerfus.K.Guthrie-Foodsanitation–3rd edition–VanNostrandReinholdNewyork1988.
9. Mahirdra-S.N.-Foodsafety–Atechno-legalanalysis-TataMcGrawhillpublishers2000.
10. ManoranjanKalia-Foodprocessing andpreservation.
11. Roday-Foodhygiene andsanitation.
12. IndianFoodindustry,2000.Vol19:2

EvaluationPattern:

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

ClinicalNutritionandDietetics–I(Practical-IV)

SemesterIII	**HoursofInstruction/week–2**
CourseCode:21FSN281	**No.ofCredits–**
L-T-P–0-0-2-1	**1Total30hrs.**

Prerequisite: Diet Planning,TherapeuticDiet

CourseObjectives: Toenablethestudentsto

1. Understandthebasicprinciplesindietplanning
2. Developskillsandtechniquesinplanningandpreparation oftherapeuticdietsforvariousdiseaseconditions

CourseOutcomes:

CO1: Understandthebasicprinciplesinvolvedinplanningdietsfordifferent diseaseconditions.
CO2: Plan and prepare diets to meet out the quality and quantity requirements for specific disease conditionsCO3:Acquirepracticalknowledgeof therapeuticdiettomeettherequirement

Skills: Develop skillstoplanandpreparetherapeuticdiet

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	1	-	3	1	2	2	1	1
CO2	2	2	-	1	-	3	1	2	2	1	1
CO3	2	2	-	1	-	3	1	2	2	1	1

Practical's: **30hrs.**

Planning,Preparation ofdietin

a. Soft,clearandfullfluiddiet.
b. Lowandmediumcostdietforprotein–calorie,vitaminA,Irondeficiency.
c. Overweightandunderweightconditions.
d. Feversofshot andlongduration.
e. Diarrhea,dysentery,constipation.
f. PepticUlcer.

TextBooks:

1. Srilakshmi,V.DieteticsNewAgeInternationalP.Ltd.,NewDelhi,2011.
2. DietaryGuidelinesofIndians–AManual,NationalInstituteofNutrition,Hyderabad,2011.
3. Garg,M.Diet,NutritionandHealth,ABDPublishers,2006.

Referencebooks:

1. Krause,M.V.andMahan,L.K.Food,NutritionandDiet Therapy,9thEd.,W.B.SaundersCompany,Philadelphia,2009.
2. MaimunNisha,DietPlanningforDiseases,KalpazPublishers,2006.

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

NutritionalBiochemistry(Practical–V)

SemesterIII	**HoursofInstruction/week–2**
CourseCode:21FSN282	**No.ofCredits–1**
L-T-P–0-0-2-1	**Total30hrs.**

Prerequisite: Basicsonbiochemicalassessments

CourseObjective: To impartknowledgequantitativeestimationofbloodand urineparameters.

Course Outcomes: At the end of the course, the students will be able

toCO1:Understandthefundamentalconceptsbiomolecules.
CO2:Gainhandsonexperienceinquantitativeanalysisofurineandbloodparameters

Skills:Developskillsonbloodandurinaryanalysis.

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	-	-	-	-	2	-	-	-
CO2	2	-	-	-	-	-	-	2	-	-	-

Practicals: **30hrs.**

1. QuantitativeanalysisofUrineforsugar,protein,Bilepigments,Bilesalts,
2. AcetoneandBlood.
3. EstimationofUrineGlucose(Benedict's Method)
4. EstimationofUrineUrea(DAM-TSCMethod)
5. EstimationofBloodGlucose(Folin-WUMethod)
6. EstimationofBloodUrea(DAM-TSCMethod)
7. Estimationofserum cholesterol (Zak'sMethod)
8. Estimationofserumbilirubin.
9. Electrophoreticpatternofbloodproteins(Demonstration).

TextBooks:

1. Varley,H.,Gowenlak,A.H.andHill,M.PracticalClinicalBiochemistry,WilliamItinmaonMedicalBooks, London,2010.

2. Oser, B.L., Harke's Physiological Chemistry XIV Edition Tata McGraw Hill Publishing Company Ltd.,Bombay,2011

ReferenceBooks:

1. Sadasivam,S.andManickam,A.BiochemicalMethod,SecondEdition,NewAgeInternationalP.Ltd.,Publishers, NewDelhi,2013.
2. Raghuramulu,N.,Madhavannair,K.andKalyanaSundaram,NationalInstituteofNutrition,2013,AManualofLaboratoryTechniques,Hyderabad,500007

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

SoftSkillI

SemesterIII	**HoursofInstruction/week–3**
CourseCode:21SSK202	**No.ofCredits–**
L-T-P–1-0-2-2	**3Total45hrs.**

Pre-requisite: TeamSpirit,self-confidenceandrequiredknowledge,basicEnglishlanguageskills,knowledgeofhighschoollevelmathematics.

Course Objective: To help students understand the nuances of leadership, know the importance of workingin teams, face challenging situations, crack interviews, improve communication skills and problem-solvingskills.

CourseOutcome:

CO1:SoftSkills-Attheendofthecourse,thestudentswouldhaveunderstoodtheimportanceandtacticsofworking inteams.Theywould havedeveloped the ability to communicate convincingly and negotiatediplomaticallywhileworkinginateamtoarriveatawin-winsituation.Theywouldfurtherdeveloptheirinter-personalandleadershipskills.Theywouldalsohaveacquiredthenecessaryskills,abilitiesandknowledgetopresentth emselvesconfidently.

CO2: Soft Skills - At the end of the course, the students would have the ability to prepare a suitable resume.They would have the ability to analyse every question asked by the interviewer, compose correct responsesand respond in the right manner to justify and convince the interviewer of one's right candidature throughdisplayingetiquette,positiveattitudeandcourteouscommunication.Theywouldbesure-footedinintroducingthemselvesandfacinginterviews.

CO3: Aptitude - At the end of the course, students will be able to identify, recall and arrive at appropriatestrategiestosolvequestionsongeometry.Theywillbeabletoinvestigate,interpretandselectsuitablemeth odstosolvequestionsonarithmetic,probability,statisticsandcombinatorics.

CO4:Verbal-Attheendofthecourse, thestudentswillhavetheabilitytounderstandandusewords, idiomsandphrases,interpretthemeaningofstandardexpressionsandcomposesentencesusingthesame.

CO5: Verbal - At the end of the course, the students will have the ability to decide, conclude, identify andchoosetherightgrammaticalconstruction.

CO6:Verbal-

Attheendofthecourse,thestudentswillhavetheabilitytoexamine,interpretandinvestigatearguments, use inductive and deductive reasoning to support, defend, prove or disprove them. They will alsohavetheabilitytocreate,generateandrelatefacts/ideas/opinionsandshare/expressthesameconvincinglytothea udience/recipientusingtheircommunicationskillsinEnglish.

Skills: Communication,teamwork,leadership,facinginterviewsandproblem-solving.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	3	3	3	3	-	-	-	-
CO2	-	-	-	3	3	3	3	-	-	-	-
CO3	-	-	-	-	3	3	3	-	-	-	-
CO4	-	-	-	-	3	3	3	-	-	-	-
CO5	-	-	-	-	3	3	3	-	-	-	-
CO6	-	-	-	-	3	3	3	-	-	-	-

Syllabus:

UnitI-SoftSkills

Team Work: Valueofteamworkinorganizations,Definitionofateam.Whyteam?Effectiveteam-building.Parameters for a good team, roles, empowerment and need for transparent communication, Factors affectingteameffectiveness,Personalcharacteristicsofmembersanditsinfluenceonteam.

Leadership,Internalproblemsolving,Growthandproductivity,Evaluationandco-ordination.
Facinganinterview:Importanceofverbal&aptitudecompetencies,strongfoundationincorecompetencies,industryorientation/knowledgeabouttheorganization,resumewriting,beingprofessional.Importance of good communication skills, etiquette to be maintained during an interview,appropriategroomingandmannerism.

UnitII-Aptitude

Geometry:2D,3D,CoordinateGeometry,andHeights&Distance.

Permutations&Combinations: Basics,FundamentalCountingPrinciple,CircularArrangements,andDerangements.

Probability: Basics,Addition&MultiplicationTheorems,ConditionalProbability,andBayes'Theorem.

Statistics: Mean,Median,Mode,Range,andStandardDeviation.

Logical Reasoning: Blood Relations, Direction Test, Syllogisms, Series, Odd man out, Coding & Decoding,CryptarithmeticProblemsandInput-OutputReasoning.

Campus recruitment papers: Discussion ofprevious year question papers of all major recruiters of AmritaVishwaVidyapeetham.

Competitive examination papers: **Discussion of previous year question papers of CAT, GRE, GMAT, andothermanagemententranceexaminations.**

Miscellaneous: InterviewPuzzles,CalculationTechniquesandTimeManagementstrategies.

UnitIII-VerbalSkills

Vocabulary: Createanawarenessofusingrefinedlanguagethroughidiomsandphrasal verbs.
Grammar(Advanced Level): Enablestudentstoimprovesentencesthroughaclearunderstandingoftherulesofgrammar.
ReasoningSkills: FacilitatethestudenttotaphisreasoningskillsthroughSyllogisms,andcriticalreasoningarguments.
ReadingComprehension(Advanced):Enlightenstudentson thedifferentstrategiesinvolvedintacklingreadingcomprehensionquestions.
PublicSpeakingSkills:Empowerstudentstoovercomeglossophobiaandspeakeffectivelyandconfidentlybeforeanaudience.
WritingSkills:Introduceformalwrittencommunicationandkeepthestudentsinformedabouttheetiquettesofemail writing.

References:

1. Adair.J.,(1.986),"EffectiveTeamBuilding:Howtomakeawinningteam",London,U.K:PanBooks.
2. Gulati.S.,(2006)"CorporateSoftSkills",NewDelhi,India:Rupa&Co.
3. TheHardTruthaboutSoftSkills,byAmazonePublication.
4. VerbalSkillsActivityBook,CIR,May2018
5. Nova'sGREPrepCourse,JeffKolby,Scott Thornburg& KathleenPierce
6. TheBBCandBritishCouncilonlineresources

7. OwlPurdueUniversity onlineteaching resources
8. www.thegrammarbook.comonlineteachingresources
9. www.englishpage.com onlineteachingresourcesandotheruseful websites
10. StudentWorkbook:QuantitativeAptitude&Reasoning,Corporate&IndustryRelations,AmritaVishwaVidyapeetham.
11. QuantitativeAptitudeforAllCompetitiveExaminations,AbhijitGuha.
12. Howto PrepareforQuantitativeAptitudefortheCAT,Arun Sharma.
13. HowtoPrepareforDataInterpretation fortheCAT,ArunSharma.
14. HowtoPrepareforLogicalReasoningfortheCAT,ArunSharma.
15. QuantitativeAptitudeforCompetitiveExaminations,RSAggarwal.
16. AModernApproachtoLogicalReasoning,RSAggarwal.
17. AModernApproachtoVerbal & Non-Verbal Reasoning,RSAggarwal.

EvaluationPattern

Assessment	Internal	External
ContinuousAssessment(CA)–SoftSkills	40	
ContinuousAssessment(CA)–Aptitude	10	20
ContinuousAssessment(CA)–Verbal	10	20
Total	60	40

***CA-CanbePresentations,Speakingactivitiesandtests.**

SEMESTERIV
FoodProcessingandPreservationTechnology–II

SemesterIV	**HoursofInstruction/week–4**
CourseCode:21FSN211	**No.ofCredits–4**
L-T-P–3-1-0-4	**Total60hrs.**

Pre-Requisite: Techniquesinvolvedin food processing andpreservation

Objectives:

1. Understandtheimportanceoffoodpreservation.
2. Gainknowledgeonthetypesoffoodspoilage
3. Comprehendtheuseofdifferenttemperaturesin foodprocessing
4. Understand preservation ofvariousfoodsusingsugar,chemicalsandsalt
5. Understand theprinciplesand conceptoffood fermentation

CourseOutcomes:

CO1: Understand the role of microorganisms in food spoilageCO2:Gainknowledgeonhighandlowtemperatureprocessing
CO3:Comprehendchemicalpreservation,sugarpreservationandfermentation
CO4: Apply the knowledge/concepts to develop new products with minimal processing for better retention ofessentialnutrients

Skills:

1. Developskillsinfoodpreservation
2. Developnewproductswithminimalprocessingforbetterretentionofessential nutrients

COPOMappings:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	-	-	-	1	3	-	2	-
CO2	2	2	1	1	-	-	1	3	-	2	-
CO3	2	2	1	1	-	-	1	3	-	2	-
CO4	2	3	-	1	-	-	1	3	-	2	-

Syllabus:

UnitI-Introductionto FoodPreservation **10hrs.**

ImportanceofFoodPreservation,TypesofSpoilage,BasicPrinciplesofFoodPreservation.

UnitII-Preservation bytheUseofLowandHigh Temperature **14hrs.**

a) PreservationbytheUseofLowtemperature-Refrigeration,freezing

Refrigeration, Advantages, Factors to be Considered, Common Spoilages, Freezing, Difference betweenRefrigeration andFreezing,MethodsofFreezing,freezedrying andfreezeconcentration,StepsInvolvedinFreezingCommonFoods, Spoilages,storage.

b) PreservationbytheUseofHighTemperature-Drying,Dehydration

Sun Drying, Solar Drying and Dehydration, Mechanical Dehydration, Merits and demerits, Factors AffectingDrying, Preparation of Foods for Drying, Freeze Drying and Dehydro Freezing – Mechanism andAdvantages, Spray drying, Canning, Steps Involved, Types of Cans, Spoilage Encountered, PasteurizationandSterilization

UnitIII-Preservation byUsingSugar **12hrs.**

Sugar Concentrates – Principles of Gel Formation, Preparation of Jam, Jelly, Marmalades, sauce and squash,Preserves, Candied, GlazedandCrystallizedFruits

UnitIV-PreservationbyUsingChemicalsandSaltsFermentation

12hrs.

Definition, Types of Fermentation, Advantages, Preparation and Preservation of Fruit Juices, RTSPickling–PrinciplesInvolvedandTypesofPickles-IndianPickles,Vinegar,SaltPreservation

Chemical Preservatives–

Definition,RoleofPreservation,PermittedPreservatives,FPOSpecification,Biopreservativesofmicrobialorigin,FSSAI

UnitV-PreservationbyFermentation **12hrs.**

CommonFermentedFoods,WineandCheeseMaking

TextBooks:

1. Sivasankar,B.(2013)FoodProcessingandpreservation2ndedition,prenticeHall,Pvt,Ltd.
2. Srilakshmi, N., (2016) 6th Edition, Food Science, New Age International Private Ltd., New Delhi,2002.
3. BibekRay,Fundamental FoodMicrobiology,CRCPress,2003
4. Swaminathan, M., Food Science, Chemistry and Experimental Foods, Bappco Publishers, Bangalore,2014.
5. Chandrasekhar, U, Food Science and Applications in Indian Cookery, Phoenix Publishing HousePrivateLtd., NewDelhi,2012.

ReferenceBooks:

1. Adams,M.R.andMoss,M.O.,FoodMicrobiology,NewAgeInternational (P)Ltd.,NewDelhi, 2015.
2. Fellow,P.,(2010)Food Processing Technology–Principlesand Practices,3rd Edition,CRCPressWoodlandPublishers, England.
3. Sommers,C.H.andXvetengFan,FoodIrradiationResearchandTechnology,BlackwellPublishing, 2016.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

ClinicalNutritionandDietetics–II

SemesterIV	**HoursofInstruction/week–4**
CourseCode:21FSN212	**No.ofCredits–**
L-T-P–2-2-0-4	**4Total60hrs.**

Pre-requisite: Nutrition&Diseases

CourseObjective:

1. Understandtheroleofnutritionforgoodhealth.
2. Obtainknowledge ondifferenttherapeutic dietsandtheirpreparation.
3. Toacquirerelevantskillstodevelopasadietitian.

CourseOutcomes:

CO1: Understandtheprinciplesbehind variousdietsinpreventionandtreatment ofdiseases.
CO2: Gaincoreknowledgeand skillstoenableindividualstowork inpublichealthand healthpromotion
CO3: Gainexperienceonplanningandpreparation ofvarioustherapeuticdiets.
CO4: Developcapacityandaptitudefortakingupdieteticsasaprofession

Skills:

- Developskillsandtechniquesintheplanningandpreparationofdietsforvariousdiseaseconditions
- Applying principles of diet therapy in planning, preparation and nutrient calculation of hospital diets,therapeuticdietsforvariousdiseases

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	1	-	-	1	1	1	-	1
CO2	2	-	-	1	-	-	1	1	1	-	1
CO3	2	2	-	-	-	-	1	1	1	-	1
CO4	2	-	-	-	-	-	1	1	1	-	1

Syllabus:

UnitI-Introductionto Clinicalnutritionanddietetics 10 hrs. Nutritionalassessmentinclinicalcare–goalsandmethods(SGA).Modificationof normaldiets(normal,softand fluid diets), types and factors to be considered in planning therapeutic diets, generalprinciples of dietarycalculation.
Principle involved in planning menu. Techniques of writing menus, Food service management in hospitals-Types (centralized and decentralized systems of service), management of delivery and service of food indifferentsystems.

UnitII-Dietarymanagementofmetabolicsyndromeandassociated disorders 13hrs.
Metabolicsyndrome: Concept;Pathophysiologyofinsulinresistance.
Obesity- introduction, etiology, clinicalassessment,treatment approaches, consequencesof obesityand itsprevention.

Diabetes mellitus – types,etiology, symptoms and diagnosis, aims of dietary treatments, special dietaryconsiderationfortypeIandIIdiabetics, complicationsofdiabetes

Diseases of the heart and blood vessels- etiology, symptoms and diagnosis; atherosclerosis, lipids and otherdietary factors and coronary heart diseases (CHD). Diet in CHD, hypertension, congestive heart failure andhyperlipidemia.

UnitIII-Dietarymanagementofgastrointestinaltractdisorders 13hrs.

Structureandfunctionofgastrointestinaltract,dietarytreatmentforconstipation, diarrhea,pepticulcer,celiacdisease,tropical enteropathy, tropical sprue,inflammatory bowel disease,irritable bowel syndrome anddiverticulardisease.

UnitIV-Nutritional managementinliverandkidneydiseases 12 hrs. Diseasesoftheliver-functions ofliver,clinical assessmentofliver function.Pathogenesis,signsandsymptoms ofhepatitis,acuteliver failure, cirrhosis andencephalopathy. Nutritionalmanagementinliverdiseases. Dietarymanagementingallbladderdiseases.

Diseases of the kidney - functions of kidney, clinical assessment of kidney function. Pathogenesis, signs andsymptoms of acute and chronic renal failure, nephrotic syndrome and renal calculi. Nutritional managementinkidneydiseasesandduringrenalreplacementtherapy.

UnitV- Nutritionaltherapyinneoplasticdiseases

12hrs. Cancer-

Types,stagesandmarkers.Nutritionintheetiologyofcancer.Nutritionaleffectsofcancerandcancertherapy,nutritionalcareofcancerpatient.Complementaryandalternativenutritiontherapies.

ReferenceTextbooks:

1. Srilakshmi.B,Dietetics,NewageInternational publishers,NewDelhi,2019.Seventh edition,
2. Kathleen MLand Escott S. Krause'sFood, Nutrition and Diet Therapy, 9thedn, W.B. Saunders CompanyPennsylvania, 2000.
3. Davidson S, Passmore R, Breck JFT. Human Nutrition and Dietetics, The English Language Book SocietyandChurchillLivingston, 1975.
4. ThomasB.ManualofDieteticPractice.BlackwellScientificPublications,Oxford,London,1988.
5. RobinsonCH.Normal andTherapeuticNutrition.OxfordPublishingCo,Bombay,1972.

SuggestedReadings:

1. ErdmanJW,MacdonaldIAandZeiselSH.PresentKnowledgeinNutrition,10thedn,InternationalLifeSciencesInstitutePress,WashingtonDC,2012.
2. Shills ME, Olson JA, Moshe S and Ross CA. Modern Nutrition in Health and Disease, 9thedn, LippincottWilliamsandWilkins, 2006.
3. GibneyMJ,MacdonaldIAandRocheHM.NutritionandMetabolism,BlackwellPublishing,UK,2003.
4. GibneyMJ,EliaM,LjungqvistOandDowsettJ.ClinicalNutrition,BlackwellPublishing,UK,2005.
5. ParkK.TextBookofPreventiveandSocial Medicine.21stedn,BanarsidasBhanot Publishers,Jabalpur,India, 2011.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

BakeryandConfectionery

SemesterIV	**HoursofInstruction/week–3**
CourseCode:21FSN213	**No.ofCredits–3**
L-T-P–2-0-1-3	**Total45hrs.**

Pre-requisite: Baking principles&bakery products

CourseObjectives:

1. Understandthescienceandtechnologyofbaking
2. Understandtheroleofdifferentingredientsinbakery
3. Developskillsinplanningandestablishingabakeryunit.

CourseOutcomes:

CO1:Understandingtheroleofingredientsinbakingquality.
CO2: Increased knowledge on the complete process of baking and presentation of baked productsCO3: Improved knowledge on appropriate sanitation, hygiene and safety practices during bakingCO4:Gainknowledgetosetupabakeryunit.

Skills: Learnedvariousbaking skillstobakedifferentproducts

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	2	-	-	-	-	1	1	-	1	-
CO2	1	2	-	-	-	-	1	1	-	1	-
CO3	-	-	1	1	-	-	-	1	-	1	-
CO4	-	-	-	-	-	-	1	-	-	2	-

Syllabus:

UnitI **8hrs.**

Introductiontobaking:

Baking - Definition, History, Principles of baking, classification of baked foods. Types of equipment's inbaking industry, cleaning and sanitizing methods of bakingequipment's, baking temperature of differentproducts, operationtechniquesofdifferentbakingequipment's.

UnitII **8hrs.**

RoleofIngredients:

IngredientsandTheirRoleinBaking-
Flour,Yeast,sugar,egg,butter,salt,bakingpowder,colouring,flavouringagents.Listofstandardcolouringandflavouringagents

UnitIII **10hrs.**

Factorsforsettingupabakeryunit:

FactorstobeconsideredforSettingupaBakeryUnit
Types of Ovens – Construction and Working of Conventional and Modern Ovens, Study and Maintenance

ofMajorandMinor Equipment’s.

BreadMaking–
StepsandMethods,RoleofIngredients,VarietyBreads,QualitiesofaGoodLoaf,BreadFaults,breaddiseases.

UnitIV **10hrs.**

PreparationandDecorationofbakedfoods

CakeMaking–FunctionsofIngredients
CakeMixingMethods,Typesof Cakes,CakeJudging,CakeFaultsandremediesBiscuit,CookieandPastryMaking,
TypesandtechniquesofIcing,
Frostingand fillings.Sensory evaluationofbaked products-objectiveandsubjectivemethods

UnitV **9hrs.**

Confectionery

Processing of Raw Materials -Cocoa and Chocolate. Making of Toffee, Chocolates, Fruit Drops, Hard BoiledCandies (clear, hard, pulled, grained, filled), Soft candies (fondant, modified fondants like toffee, fudge,marshmallows, gums,jellies,chocolates)Bars,ChewingGums,SpecialConfectionery Foods-tablets,Lozenges.

ReferenceBooks:

1. Potter,N.FoodScience,TheAVIPublishingCo.,Inc.,West Port,Connecticut,1975.
2. Baker'sHandbookonpracticalBaking.WheatAssociates,USA,NewDelhi.
3. Dubey,SC,BasicBakingScienceandCraft,Jwalmukhi JobPress,Bangalore,1979.
4. ModernPastryChab,Vol.IandII,AVIPublishingCo.,Inc.,West Port,Connecticut,1977.
5. BakeryJournal

Practicals:(TogainknowledgeaboutBakery-NoExamination)

1. Breads
2. Cakes
3. Biscuitsandcookies
4. Pastries
5. Icing

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FoodBiotechnology

Semester:IV	**HoursofInstruction/week–3**
CourseCode:21FSN214	**No.ofCredits– 3**
L-T-P–C2-1-0-3	**Total45hrs.**

Prerequisite: Geneticengineering,enzymesand microbes,fermentation

CourseObjectives:

1. Tounderstandtheroleofenzymesasatool ingeneticengineeringandbiotechnology
2. Tomakelearnersawareontheprinciplesofgeneticengineering,planttissueultureandmolecularcloning
3. Toenablelearnerstounderstandtheconceptoffermentationbiotechnology
4. Todelineatetheroleofmicrobesintheapplicationofbiotechnology inFoodScienceandNutrition

CourseOutcomes:

CO1: Expand the knowledge of food biotechnology in relation to genetic engineering and plant tissueculture.
CO2:Understanding theroleofenzymesandmicrobesin foodindustry.
CO3: Helpstokeepabreastondevelopment andapplicationsofbiotechnologyinfoodandnutrition.

Skills: Developappropriateskillsinvolvedinfoodbiotechnologyandgeneticengineering

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	-	-	-	-	-	-	-	-
CO2	2	-	-	-	-	-	-	-	-	1	-
CO3	2	-	-	-	-	-	-	-	-	1	-

Syllabus:

UnitI-IntroductionandToolsofGeneticEngineering

10hrs. Defi
nition, enzymesastools-exonucleases,endonucleases,ligases,reversestranscriptaseandalkalinephosphatase, cloningvectors-plasmids, bacteriophage,cosmidsandphasmids

UnitIIGeneticEngineering andPlantTissueCulture

10hrs. Outl
ineofgeneticengineeringinprokaryotes(microbial cells),conceptsofmolecularcloning,planttissueculture, micropropagation,transgenicplants, geneticallymodifiedfoods-goldenrice, flavrsavrtomatoandBtbrinjal;enlistingapplicationsof geneticengineering,isolationof DNAandPlasmids

UnitIII-Fermentation Biotechnology **8hrs.**

Generalstructure ofbioreactorsandlisting types,bacterialgrowth curve,batchandcontinuousculture,environmentalfactors,basicconceptsofdownstreamprocessing,definitionofbi ochipsandbiosensors

UnitIV-UseofMicrobesin FoodIndustry **8hrs.**

Primarymetabolites,secondarymetabolites,synthesisofcitricacid,glutamate,xanthangum,vitaminB12,riboflavina

ndSingleCellProtein –spirulinaandyeastbiomass

UnitV-EnzymeBiotechnology **9hrs.**

Soluble enzymes, immobilization of enzymes – methods of immobilization, role of enzymes in food industry,safetyassessmentoftransgeniccrops

TextBooks:

1. Dubey, R.C., 2014, A Text Book of Biotechnology, 5threvised edition, S. Chand and Company Ltd., NewDelhi.
2. Green,P.J.,2010,IntroductiontoFoodBiotechnology,CRCPress,USA.

ReferenceBooks:

1. DietrichKnorr,2017,FoodBiotechnology,MarcelDekkerInc.,NewYork.
2. Owen,P.Ward,2018,FermentationBiotechnology,Principles,ProcessesandProducts,PrenticeHall,Advanced ReferenceSeries, NewJersey, 07632

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

EnvironmentandSustainability

SemesterIV	**HoursofInstruction/week–3**
CourseCode:21ENV211	**No.ofCredits–3**
L-T-P–3-0-0-3	**Total–45hrs.**

Prerequisite:12thStandard inScience

CourseObjectives:

1. Understand the basicfacts related to the environment including components ofthe environment, nutrientrecycling, biodiversityandecosystemservices.
2. Identifyvariousinteractionsbetweensocietyandtheenvironment,includingoverpopulation,urbanization,resourceexploitation,habitatdestruction,consumerism,environmentalprotection,activism,regulation.
3. Characterizesomeimportantenvironmentalissuesfromenvironmentalandsocialperspectives.
4. Assess integrated approaches for solving socio-environmental problems and sustainable living, includingindigenousandtraditionalapproaches.
5. Identifyattitudinalfactorsandspecifically, theethicalissuethatliesattherootofsocialandenvironmentalproblems andthenecessityforindividual attitudinal changeandsustainableaction toattain globalsustainability.

CourseOutcomes:

CO1: Integrate facts and concepts from ecological, physical and social sciences to characterize somecommonsocio-environmentalproblems.

CO2:Developsimpleintegratedsystemsandframeworksforsolvingcommoninterconnectedsocio-environmentalproblems.

CO3:Reflectcriticallyabouttheirrolesandidentitiesascitizens,consumersandenvironmentalactorsinacomplex, interconnectedworld.

CO4:Identify theethicalunderpinningsofsocio-environmentalissuesin general.

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	1	-	-	-	1	-	-	-	-
CO2	-	-	-	-	-	-	1	-	-	-	-
CO3	-	-	2	-	-	-	1	-	-	-	-
CO4	-	-	1	1	-	-	1	-	-	-	-

Syllabus:

Unit1

State of Environment and Unsustainability, Need for Sustainable Development, Traditional conservationsystemsinIndia,PeopleinEnvironment,Needforanattitudinalchangeandethics, NeedforEnvironmentalEducation,OverviewofInternational TreatiesandConventions,Overview ofLegalandRegulatoryFrameworks.

Environment: Abioticandbioticfactors,SegmentsoftheEnvironment,BiogeochemicalCycles,Ecosystems(associations,communityadaptations,ecologicalsuccession,Foodwebs,Foodchain,ecologicalpyramids), TypesofEcosystems–Terrestrialecosystems,EcosystemServices,Economicvalueofecosystemservices, Threatstoecosystems andconservationstrategies.

Biodiversity: Species, Genetic&EcosystemDiversity,Originoflifeandsignificanceofbiodiversity,Valueof Biodiversity, Biodiversity at Global,National and LocalLevels,India asa Mega-Diversity Nation(Hotspots)&ProtectedAreaNetwork,CommunityBiodiversityRegisters.

ThreatstoBiodiversity,RedDatabook, Rare,Endangered and Endemic Species ofIndia. Conservation ofBiodiversity. People's action.Impacts,causes,effects, control measures,international, legal andregulatory frameworks of: ClimateChange,Ozonedepletion,Airpollution,Waterpollution,Noisepollution,Soil/landdegradation/pollution

Unit2

Linearvs. cyclicalresourcemanagementsystems, needforsystemsthinkinganddesignofcyclicalsystems,circulareconomy,industrial ecology,greentechnology.Specifically applytheseconceptsto: WaterResources, EnergyResources, FoodResources, Land&Forests, Wastemanagement.

Discuss the interrelation of environmental issues with social issues such as: Population, Illiteracy, Poverty,Gender equality, Class discrimination, Social impacts of development on the poor and tribal communities,Conservation movements: people's movements and activism, Indigenous knowledge systems and traditionsofconservation.

Unit3

Commongoodsandpublicgoods,naturalcapital /tragedyofcommons,Cost benefitanalysisofdevelopmentprojects, Environment Impact Assessment(EIA), Environment Management Plan (EMP), Green business,Eco-labeling, Problemsandsolutionswithcasestudies.

Global and national state of housing and shelter, Urbanization, Effects ofunplanned development casestudies, Impacts of the building androad construction industry onthe environment, Eco-homes /Greenbuildings, Sustainablecommunities,SustainableCities.

Ethicalissuesrelatedtoresourceconsumption,Intergenerationalethics,Needfor investigationandresolutionof the root cause of unsustainability, Traditional value systems of India, Significance of holistic value-basededucationfortruesustainability.

TextbooksandReferences

1. https://www.sites.google.com/site/amritaevs/home
2. R. Rajagopalan, Environmental Studies: From Crisis to Cure. Oxford University Press,2011, 358pages. ISBN:9780198072089.
3. Daniel D.Chiras,EnvironmentalScience.Jones&Bartlett Publishers,01-Feb-2012,669 pages.ISBN:9781449645311.
4. AndyJones,MichelPimbertandJaniceJiggins,2011.VirtuousCircles:Values,Systems,Sustainability.IIEDandIUCNCEESP,London.URL:http://pubs.iied.org/pdfs/G03177.pdf
5. Annenberg Learner,TheHabitablePlanet,AnnenbergFoundation2015.URL:http://www.learner.org/courses/envsci/unit/pdfs/textbook.pdf

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar.

CLINICAL NUTRITIONANDDIETEITCS–II(PracticalVI)

SemesterIV	**HoursofInstruction/week–2**
CourseCode:21FSN283	**No.ofCredits–1**
L-T-P–0-0-2-1	**Total30hrs.**

Prerequisite: Diet Planning,TherapeuticDiet

CourseObjectives:

1. Understandthebasicprinciplesindietplanning
2. Gainknowledgeondifferentdiseaseconditionswhichrequiresdietaryrecommendations
3. Developskillsandtechniquesinplanningandpreparation oftherapeuticdietsforvariousdiseaseconditions

CourseOutcomes:

CO1: Understandthebasicprinciplesinvolvedinplanningdietsfordifferentdiseaseconditions.
CO2: Plan and prepare diets to meet out the quality and quantity requirements for specific disease conditionsCO3:Understandthecalculationsofnutritivevaluefor theplannedandpreparеddiet

Skills: Develop skillstoplanand preparedietsforspecificdiseaseconditions

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	3	-	1	-	-	1	2	1	-	2
CO2	2	3	-	1	-	-	2	2	2	-	2
CO3	2	1	-	-	-	-	2	1	1	-	-

Practical's **30hrs.**

1.ModificationsofDietsinLiverDiseases–Jaundice,HepatitisandCirrhosis
2.DietsforNephritis,renalFailureandrenalCalculi,ProteinRestrictedDiets
3. DietsforCardiovasculardiseases– SodiumRestricted,Hypertension,atherosclerosis,FatControlled
4. ModificationofDietsinDiabetesMellitus
5. ModificationofDiet forCancerPatientsandHIVInfectedPerson

TextBooks:

1. Srilakshmi,V.DieteticsNewAgeInternational P.Ltd.,NewDelhi,2011.
2. DietaryGuidelinesofIndians–AManual,NationalInstituteofNutrition,Hyderabad,2011.
3. Garg,M.Diet,NutritionandHealth,ABDPublishers,2006.

Referencebooks:

1. Krause,M.V.andMahan,L.K.Food,NutritionandDietTherapy,9thEd.,W.B.SaundersCompany,Philadelphia,2009.
2. MaimunNisha,DietPlanningforDiseases,KalpazPublishers,2006.

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

FoodProcessingandPreservation(Practical-VII)

SemesterIV	**HoursofInstruction/week–2**
CourseCode:21FSN284	**No.ofCredits–1**
L-T-P–0-0-2-1	**Total30hrs.**

Prerequisite: Foodpreservation,cooking methods.

Courseobjectives:

1. Tolearntheprinciplesbehindthemethodsofpreservation
2. Tounderstandthestagesofcookeryandchemicalcharacteristics infoodpreservation
3. Toableto formulatepreservedproductswithnutritionalvalueaddition
4. Toacquireskillstopreservedifferentfoodgroupsbasedonperishability

CourseOutcomes:

CO1:Knowtheprinciplesoffoodpreservationmethods.
CO2: Acquire skills toformulate preserved products with value addition for nutritional benefits.CO3:Developnewproductswithmaximumretentionof essentialnutrients

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	2	-	1	2	-	2	2	2	3	-
CO2	2	2	-	1	2	-	2	2	2	3	-
CO3	2	2	-	1	2	-	2	2	2	3	-

Skills: Developfood processingand preservationskillsforproductdevelopment

Practicals: **30hrs.**

1.Stagesinsugarcookery,Evaluationofpectinquality,sugarconcentration(Brix),pHand acidcontent
2.Preparationofjam,jelly,marmalades,preserves,candied,Tuttifruity,Glazed, Crystallizedfruits,Toffees
3.Preparationofsquashes,fruitjuiceandRTS
4.PreparationofTomatosauce,Tomatoketchup.
5.Preparationofpickles(oil,vinegarandsaltbased)
6.Preparationofsalted,dehydrated,vegetablespreserves(vathals)
7.Preparationofdehydratedcereal andpulseproducts(vadams),-Rice,Sago,Wheat, Maida,Riceflakes,blackgramdhal,greengramdhal,horsegramdhal.
8.Visit toFruitsandVegetableprocessingindustry.

TextBooks:

1. ***Srivastava R.P. Fruit and vegetable preservation – Principles and Practices***, International BookDistributingCo., (IBDC),NewDelhi.2013

ReferenceBooks:

1. ***MariaParloa(2012),Cannedfruit,preservesandjellies:Householdmethodsofpreparation,*** **PublishedbyUSdepartmentofAgriculture,Washington**
2. ***M.Shafiur,Rahman(2017),Handbookoffoodpreservation***2nd edition,CRCpress.

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

SOFTSKILLSII

SemesterIV	**HoursofInstruction/week–3**
CourseCode:21SSK212	**No.ofCredits–3**
L-T-P–1-0-2-2	**Total45hrs.**

Pre requisite: Willingness to learn, communication skills, basic English language skills, knowledge of highschoollevelmathematics.

CourseObjective:

To help students understand the corporate culture and assist them in improving their group discussion skills,communicationskills,listeningskillsandproblem-solvingskills.

CourseOutcomes:

CO1: Soft Skills - At the end of the course, the students will have a clear understanding of the corporateculture, professional etiquette, professional grooming and would have understood the nuances of smoothtransition from academic to the corporate. They would further develop their inter-personal and leadershipskills.

CO2: Soft Skills - At the end of the course, the students shall learn to examine the context of a GroupDiscussiontopicanddevelopnewperspectivesandideasthroughbrainstormingandarriveataconsensus.

CO3: Aptitude - At the end of the course, the student will be able to interpret, critically analyze and solvequestionsunderarithmetic,algebraandlogicalreasoningandsolvethememployingthemostsuitablemethods.

CO4: Verbal - At the end of the course, the students will have the ability to relate, choose, conclude anddeterminetheusageofrightvocabularyaccordingtothecontext.

CO5:Verbal-At theendofthecourse,thestudentswillhavetheabilitytoutilisepriorknowledgeofgrammartorecognisestructuralinstabilitiesandmodifythem.

CO6: Verbal - At the end of the course, the students will have the ability to comprehend, interpret, deduceand logically categorise words, phrases and sentences. They will also have the ability to theorise, discuss,elaborate, criticiseanddefendtheirideas.

Skills: Communication, etiquette andgrooming, inter-personal skills,listening skills,convincing skills,problem-solvingskill.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PS03	PS04
CO1	-		-	3			3				
CO2	-		-	3			3				
CO3	-		-	-			3				
CO4	-		-	-			3				
CO5	-		-	-			3				
CO6	-		-	-			3				

Syllabus:

UnitI–SoftSkills

ProfessionalGrooming and Practices:Basicsofcorporate culture,keypillars ofbusinessetiquette:socially acceptableways of behavior,body language,personal hygiene,professionalattire and culturaladaptability.Handlingpressure,multi-tasking.Beingenterprising.Adaptingtocorporatelife:

EmotionalManagement(EQ),AdversityManagement,HealthConsciousness.Peopleskills,CriticalThinkingandProblemsolving.

Group Discussions:Advantages of group discussions,Types of group discussionand Roles played in agroup discussion. Personality traits evaluated in a group discussion. Initiation techniques and maintaining theflowofthediscussion, howtoperformwellinagroupdiscussion.Summarization/conclusion.

UnitI–Aptitude

Equations: Basics,Linear,Quadratic,EquationsofHigherDegree,andProblemsonAges.

Logarithms,InequalitiesandModulus: Basics

SequenceandSeries: Basics,AP,GP,HP,andSpecialSeries.

Timeand Work: Basics,Pipes&Cistern,andWorkEquivalence.

Time, Speed and Distance: Basics, Average Speed, Relative Speed, Boats & Streams, Races, and CircularTracks.

LogicalReasoning: Arrangements, Sequencing, Scheduling, Venn Diagram, Network Diagrams, BinaryLogic,andLogicalConnectives,Clocks,Calendars,Cubes,Non-verbalreasoningandSymbol basedreasoning.

UnitI–Verbal Skills

Vocabulary: Helpstudentsunderstandtheusageofwordsindifferentcontexts.
Grammar(MediumLevel): TrainStudentstocomprehendthenuancesofGrammarandempowerthem tospoterrorsinsentencesandcorrectthem.
ReadingComprehension(Basics): Introducestudentstosmartreadingtechniquesandhelpthemunderstanddifferenttonesincomprehensionpassages.
Reasoning:Enablestudentstoconnectwords,phrasesandsentenceslogically.
OralCommunicationSkills:Aidstudentsinusingthegiftofthegabtointerpretimages,doavideosynthesis,tryasonginterpretationorelaborateonaliteraryquote.

References:

1. Adair.J., (1986), "Effective TeamBuilding:How to makea winning team",London,U.K: PanBooks.
2. Gulati.S.,(2006)"CorporateSoftSkills",NewDelhi,India:Rupa&Co.
3. TheHardTruthaboutSoftSkills,byAmazonPublication.
4. VerbalSkillsActivityBook,CIR,May2018
5. Nova'sGREPrepCourse,JeffKolby,Scott Thornburg& KathleenPierce
6. TheBBCandBritishCouncilonlineresources
7. OwlPurdueUniversity onlineteaching resources
8. www.thegrammarbook.comonlineteachingresources
9. www.englishpage.com onlineteachingresourcesandotheruseful websites
10. StudentWorkbook:QuantitativeAptitude&Reasoning,Corporate&IndustryRelations,AmritaVishwaVidyapeetham.
11. QuantitativeAptitudeforAllCompetitiveExaminations,AbhijitGuha.
12. Howto PrepareforQuantitativeAptitudefortheCAT,Arun Sharma.
13. HowtoPrepareforDataInterpretation fortheCAT,ArunSharma.
14. HowtoPrepareforLogicalReasoningfortheCAT,ArunSharma.

15. QuantitativeAptitudeforCompetitiveExaminations,RSAggarwal.
16. AModernApproachtoLogicalReasoning,RSAggarwal.
17. AModernApproachtoVerbal & Non-Verbal Reasoning,RSAggarwal.

EvaluationPattern

Assessment	Internal	External
ContinuousAssessment(CA)–SoftSkills	40	
ContinuousAssessment(CA)–Aptitude	10	20
ContinuousAssessment(CA)–Verbal	10	20
Total	60	40

*CA-CanbePresentations,Speakingactivitiesandtests

Live-inLabI

SemesterV	CourseCode:21FSN290	L-T-P – 0-0-0-3

CourseObjectives

- IdentifyandanalysethevariouschallengeindicatorspresentinthevillagebyapplyingconceptsofHumanCenteredDesignandParticipatoryRuralAppraisal.
- User NeedAssessmentthroughQuantitativeandQualitativeMeasurements
- DesigningasolutionbyintegratingHumanCenteredDesignconcepts
- DevisingproposedinterventionstrategiesforSustainableSocial ChangeManagement

CourseOutcome

CO1: Learn ethnographic research and utilise the methodologies to enhance participatoryengagement.
CO2: PrioritizechallengesandderiveconstraintsusingParticipatoryRuralAppraisal.
CO3: Identifyandformulatetheresearchchallengesinruralcommunities.
CO4: Designsolutionsusinghumancenteredapproach.

CO-POMapping

PO/PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1		3	2	1	3	2	2
CO2		3	2	1	3	2	2
CO3		3	2	1	3	2	2
CO4		3		1	3	2	2

Syllabus

This initiative is to provide opportunities for students to get involved in coming up with technologysolutionsforsocietalproblems.Thestudentsshallvisitvillagesor ruralsitesduringthevacations(after4th semester) and if they identify a worthwhile project, they shall register for a 3-credit Live-in-Labproject, inthefifthsemester.
ThematicAreas

- Agriculture&RiskManagement
- Education &GenderEquality
- Energy&Environment
- Livelihood&SkillDevelopment
- Water& Sanitation
- Health&Hygiene
- WasteManagement &Infrastructure

Theobjectivesandtheprojectedoutcomeoftheprojectwillbereviewedandapprovedbythedepartmentchairpersonandafacultyassignedastheprojectguide.

EvaluationPattern

Assessment	**Marks**
Internal(ContinuousEvaluation)[75marks]	
Workshop(GroupParticipation)	15
VillageVisitAssignments&Reports	15
ProblemIdentificationand Assessment	15
Ideation:DefiningtheNeeds,ProposedDesigns&Review	20
PosterPresentation	10
External[25 marks]	
ResearchPaperSubmission	25
Total	**100**
Attendance(Tobeaddedseparately)	5
GrandTotal	**105**

SEMESTERV

FOOD PRODUCTDEVELOPMENTAND MARKETING

SemesterV	**HoursofInstruction/week–4**
CourseCode:21FSN301	**No.ofCredits–4**
L-T-P–3-1-0-4	**Total60hrs.**

Prerequisite: Productdevelopment,consumerviewonfoodproducts,producttesting,sensoryevaluation

CourseObjectives:

1. Develop newfood productstosupportnutrienterprise.
2. Developentrepreneurshipskillsforsettingupsmall scalefoodindustries
3. Understandsustainablepackagingandlabellingfordifferent foodproducts

CourseOutcomes:

1. Learnthetrendsanddimensionsinfoodconsumptionpattern
2. Understandandapplytheprinciplesinfoodproductdevelopmentanddesign.
3. Gainknowledgeon differentstepsinvolved in foodtesting,evaluation andpackaging
4. Developentrepreneurshipskillsandtoplanfinancialandmarketingstrategies

Skills:

- Developskillsandprocessinnewfoodproduct development.
- DevelopskillsinMarketingofFoodProducts.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	3	1	-	-	3	1	-	-	-	-
CO2	-	3	1	1	-	3	-	-	1	1	-
CO3	-	3	2	-	-	3	-	1	1	1	-
CO4	-	-	-	1	-	3	1	-	-	1	1

Syllabus:

UnitI-Foodconsumptionpattern **10hrs.**

TrendsinFoodConsumptionpattern.Economical,PsychologicalandSociologicalDimensionsof FoodConsumptionpatterns.TrendsinSocialChangeasaBaseforNewProductDevelopment

UnitII-Introduction toFood ProcessingandProductDevelopment

13hrs. Foo dComponents,TypesofFoodProcessing,StatusofFoodProcessingIndustryinIndiaandScopeofGrowthinFuture,P rinciplesandPurposeofNewProductDevelopment,ProductDesignandSpecifications.

UnitIII–DevelopmentofConvenienceFoods

13hrs. Tra

ditional Foods, Weaning Foods, Convenience Foods,RTE, RTS,Extruded foods, IMF Foods, SpecialityProducts,Healthfoods,NutritionalSupplements,FunctionalFoods,NutraceuticalsandDesignerFoods,SportsFoods,
FoodsforDefenceServices,Spacefoods,flightfoods.

UnitIV-Testing,EvaluationandPackagingofProducts

12hrs. Stan

dardization,Portionsize,PortionControl,QuantityCooking,ShelfLifeEvaluation-SensoryandMicrobial Testingof Processed Foods, Nutrient Analysis.Suitable Packaging Materials for Different Foods,SWOTAnalysis,labellinginformationanddesigning,misbrandedfoodsandloss.

UnitVFinancial ManagementandMarketingofFoodProducts

12hrs. Insti

tutionalSupport(TrainingandFinance)forEntrepreneurshipDevelopment.FinancialInstitutions(CentralandState Government)banks/Funding
Agencies, Financial Accounting Procedures, Book Keeping, Market Research, Marketing Strategies, digitalmarketing, Cost Calculation , Advertising Methods, Product sales, Product License, Legal specifications,ConsumerBehaviourandFoodAcceptance, datasciences.

TextBooks:

1. SudhirGupta(2017)HandbookofPackagingTechnology,EngineersIndiaResearchInstitute,NewDelhi
2. Khanaka,S.S.,EntrepreneurialDevelopment,S.ChandandCompanyLtd,NewDelhi,2016.

ReferenceBooks:

1. Suja,R.Nair(2014)ConsumerBehaviourandMarketingResearch,1st Edition,HimalayaPublishers.
2. Hmacfie,(2017)ConsumerledFoodProductDevelopment,WeedheadPublishingLtd.,UK
3. Fuller,Gordon,W(2015)New Food ProductDevelopment,2nd Edition,CRCPress,BocaRaton,Florida,
4. Schaffner.D,J,Schroder,W.R.(2010)Food MarketingandInternationalPerspectives,Web/McGrawHillPublication

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FOODSERVICEMANAGEMENT

SemesterV	**HoursofInstruction/week–4**
CourseCode:21FSN302	**No.ofCredits– 4**
L-T-P–3-1-0-4	**Total60hrs.**

Pre requisite: Food service, food production, menu planning, purchase and storage,institutional foodservice.

CourseObjectives:

1. Tounderstandtheapproaches,tools,managementandresourcesofinstitutionalfoodservice.
2. Tolearnplanningandorganizingspace.
3. Tostudytheprinciplesoffood,personalandhygienemanagement.
4. Togainknowledgeinfinancial managementandmarketingskills.

CourseOutcome:

CO1:Gain experienceinprinciplesand functioning offood serviceinstitutionsCO2:Understandaboutfinancialmanagementandmarketingskills.
CO3: Apply knowledge on personnel management, sanitation and hygiene in food service institutions.CO4:Acquiretechnicalskillstodevelopquantitativeandqualitativecookery.

Skills: Develop skillsinbulk foodproduction and institutionalfoodservice.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	1	-	-	-	-	1	1	-	1	-
CO2	-	-	-	-	-	-	1	1	-	-	-
CO3	-	2	1	-	-	-	-	1	-	-	-
CO4	-	2	-	-	-	-	-	-	-	1	-

Syllabus:

UNITI-IntroductiontoFoodServicesystem **12hrs.**

FoodService

Typesoffoodservicesystems,Approachestomanagement,Principlesofmanagement,Toolsofmanagement, Managementofresources.

Kitchenspace,storagespace,serviceareas.

Equipment:Types,selection,purchase,design,installation,operationandmaintenance

UNITII- FoodManagement **12hrs.**

Foodmanagement-

Characteristicsoffoods,nutritionalknowledge,foodpurchase,inventorymanagement,menuplanning,foodproduction, foodservice,wastemanagement.

Needbasedspecificunits-Dietary,catering,institutionalfoodservice.

UNITIII-PersonalManagementandHygiene

12hrs.Per

sonnelManagement:concepts,staffemployment,employeebenefits,stafftraininganddevelopment,legalaspects ofpersonalmanagement.

Sanitation and safety- Hygiene, Sanitation and Safety in Food Service Institutions: Definition, importance,environmental hygiene and sanitation; hygiene in food handling; personnel hygiene of personnel; importanceofpestandrodentcontrolinfoodservices.

Safety: Accidents in food service establishments, safety procedure, training, Educating, legal responsibilitiesoffoodservicemanager.

UnitIV-Financialmanagementandmarketing

12hrs Defi

nition, application ofmanagement Accountsofcateringoperators,costconcepts,bookkeepingandaccounting– systemsofbookkeeping,bookofaccountmaintenanceofaccountbooks,balancesheets,inventorbudgetarycontrol. Marketingtheproducts,challengesahead

UNITV-Conceptsbehindfoodservice **12hrs.**

Styles of food service – Color, Table service,furnishing, packing services,service stations – hospitals,restaurants,hotels,Motels,foodcourtsandcateringservices.Services-banquetandpartysettingandservices,therapeuticdiets,homeremedies,traditionalcookery,internationalcushiness, currenttrends.

ReferenceBooks:

1. MohiniShetty,Institutionalfoodmanagement,NewageInternationalPublishers,2016.
2. West,BB,Wood"FoodserviceinInstitutions",Johnwiley &Sons,NewYork
3. KhanMA"Foodserviceoperations",AVIpublishingCompanyInc.1987.
4. SethiandMahanS.-CateringManagementandintegratedapproach,Johnwiley&Sons,NewYork.
5. KotasRandDavisB"foodcostcontrol"Billing&SonsLtd,Great Britian,1976
6. Dr.B.K.Chakravati,"A Technical guidetoHotel operation",Metropolitan,NewDelhiIndia.
7. Earl R. Palan and Judity A. Stadler (1986) Preparing for the food service Industry, AVI-Publishing&co
8. MickeyWarner(1989)Recreational foodserviceManagement VanNostrandReinhold,Newyork.
9. J.M.Diwan(1997)CateringandfoodserviceManagement,CommonWealthpublishers.
10. TerselMCandHarger–Professionfoodpreparation,Johnwiley&Sons,NewYork

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA-CanbeQuizzes,Assignment,Projects,andReports,andSeminar

Post-HarvestTechnology

SemesterV	**HoursofInstruction/week–4**
CourseCode:21FSN303	**No.ofCredits– 4**
L-T-P–3-1-0-4	**Total60hrs.**

Pre-requisite: Post-harvestloss,processingmethods,storage,handling,transportationofcommodities.

CourseObjectives:

1. Tounderstand theimportanceand methodsofpost-harvesttechniquesforfoods
2. Togainknowledgeinfoodprocessingandfoodconservation

CourseOutcome:

CO1:Gain understandingon significanceofpost-harvesttechnology.CO2:Understandthefactorsinvolvedinpost-harvestloss
CO3:Gain knowledgeondifferentstoragestructures
CO4:Understandthemethodologiestoinpost-

productiontechniques**Skills:** To develop skills in food processing and

Food conservation**CO-POMappings**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	1	1	1	-	-	-	1	-	1	-
CO2	2	1	1	-	-	-	-	1	-	1	-
CO3	2	-	1	-	-	-	-	1	-	1	-
CO4	2	2	1	1	-	-	-	1	-	1	-

Syllabus:

UNITI **10hrs.**

IntroductiontoPost Harvest Technology-Definition,importanceandproblemencountered.
Buffer stock – definition, quantity of stores available. Governmental measures to augment food production-need for food conservation. Food loss in the post-harvest period, extent of losses, loss in the field, threshingyard, storage, marketingloss.
RoleofPost-HarvestTechnologyin combating malnutritionin India.

UNIT II **13hrs.**

Importance of processing- methods of processing cereals (wheat, rice, maize), breakfast cereals, pulses, fruitsandvegetables, meat, fish,poultry, eggandsugars

UNITIII **13hrs.**

Importanceofprocessing- methodsof processingofoilseeds,milkandmilkproducts, condimentsandspices,Beverages, tea, coffeeandcocoa(SS).

UNITIV **12hrs.**

Agents Causing Food Losses - Physical agents, (moisture, temperature), Chemical losses, biological losses-insects-insects-microorganisms.

Control of Spoilage Agents - Importance and methods of sanitary handling, physical, chemical, biologicaland other means of control of insects, rats and rodents and birds. Insect control methods- Physical methodsandchemicalmethodsincludingfumigationtechniques.

Handling and Transport of Food Commodities - Traditional and improved methods. Nutrient losses inspoiledfoodsandnationalprogramtosavevariousfoodproduce.

UNITV **12hrs.**

Storage - Importance of storage structures- requirements, traditional & modern and underground & abovegroundstorageandtheirimprovements,Coldstorages,FCIgodowns.PDS.AgenciesControllingFoodLosses -RoleofSGC,FCI,CWC,SWC,IGSIincontrollingfoodlosses.

RelatedExperiences:

1. VisittoFCI
2. VisittoProcessingMill(Cereal&Pulse)
3. Foodparkwithcoldstorage

ReferenceBooks:

1. Handlingandstorageoffoodgrains-SVPingaleICAR,NewDelhi,1976.
2. Handlingandstorageoffoodgrainsintropical andsubtropical areas-DWHall,FAD,Rome,1970.
3. FoodScience,N.W.Potter-TheAVIPublishingCo.,TheWestport,1973.
4. FoodTechnology,PrescottandProctor.B.B.McGrawHillBookCo.,NewYork,1937.
5. GordonGBirth,Foodscience,PubinNewYork.
6. RobinsMPhilipConvenience food-Recent Technology1976.
7. TechnologyofcerealsbyNLKentandJADEvers.
8. FoodprotectiontechnologybyCharlesW.,FelixHavisPub.1987.
9. JohnATroller,1983,Sanitationinfoodprocessing,Academicpress

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA-CanbeQuizzes,Assignment,Projects,andReports,andSeminar

PackagingandLabellingofFoodProducts

SemesterV	**HoursofInstruction/week–3**
CourseCode:21FSN304	**No.ofCredits–**
L-T-P–3-0-0-3	**3Total45hrs.**

Prerequisite: Packagingmethods,packagingmaterials,Foodproduct labelling

CourseObjectives:

1. Tounderstandtherelationshipbetweenpackagingdesignandthechemistryofthefoodpackaged.
2. Tounderstandtheinfluenceofoxygeninstoragematerials.
3. Tounderstandthedifferenttypesofmaterialsusedinfoodpackaging.
4. Tounderstandtheprinciplesoflabeling

CourseOutcomes:

CO1:Demonstrateknowledgeofthematerialinvolvedinpackagingwiththechemistryofthefoodpackaged.CO2:Describetheinfluenceofoxygenindifferenttypesofpackagingmaterials.
CO3:Demonstratetheadvantagesanddisadvantagesinvolvedwith differentpackagingmaterial.CO4:Acquireknowledgeonthefactorstobeconsideredwhilelabelingpackedfoods

Skills: Develop skills in food packaging based on the chemistry of food and packaging material's

used**.COPOMapping:**

	PO1	PO2	PO3	PO4	PO5	PO6	PO5	PSO1	PSO2	PSO3	PSO4
CO1	2	-	1	-	-	-	-	-	-	2	-
CO2	-	1	-	-	-	-	-	-	-	2	-
CO3	2	1	2	-	-	-	-	-	-	2	-
CO4	2	-	2	-	-	-	-	-	-	2	-

Syllabus:

UnitI-Packagingdesignandchemistryoffoodproducts **9Hrs**Food Packaging- Definition, Principles of packaging, Importance,relationship between Packaging and food,functional requirements forfood packaging-preservation and protection, transport andstorage, operational,communication, appellative function, persuasive function, informative function, environmental requirements.Integratedfoodpackagingsystems-Types,Foodpackagingandenvironmentalethics,sustainabilityinfoodpackaging, packagingdesign.

UnitII-OxygenscavengingPackaging **9Hrs**
Active Packaging, oxygen scavengers, moisture control, gas permeability control, ethylene scavengers, odourremovers, antimicrobialpackaging, carbondioxideabsorbers.

UnitIII-FoodpackagingMaterials **9Hrs**

Chemicalfeaturesoffoodpackagingmaterials,characteristics,Ceramicpackagingmaterials,metalpackagingmaterials, cellulosicpackaging materials, plasticpackaging materials,multilayer packaging, testingandanalysis.

UnitIVLabelingofFoodProducts **9Hrs**

Components-Nutritional information,factorstobeconsidered,designandgraphics,nutritionfactsLabelling-Purpose,type,regulations,marketsurveyonfoodlabelling

UnitVRegulations **9Hrs**

Lawsandregulatorycompliances,UnderstandingBarcodes-WheretoGetBarcodes,CreatingyourownBarcodes,IncorporatingBarcodes.

References:

1. Giovanni brunazzi,Salvatore ParisiandAminaPereno,Theimportance ofpackagingdesignforthechemistryoffoodproducts,Springer,2014.
2. AaronL.brody,EugeneR.StrupinskyandLauriR.Kline,Activepackagingforfoodapplications,CRC PressLLC,2001.
3. Lucianopiergiovanni andSaralimbo,food packagingmaterials, springerbriefs inmolecularscience-chemistryoffoods,Springer2016.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FoodProductDevelopment(Practical-VIII)

SemesterV	**HoursofInstruction/week–2**
CourseCode:21FSN381	**No.ofCredits–1**
L-T-P–0-0-2-1	**Total30hrs**

Prerequisite: ProductDevelopmentStandardization,OrganolepticEvaluation.

CourseObjectives

1. Todevelopskillsinproductdevelopment
2. Tounderstandthestepsinvolvedincosting
3. Tolearnsalestechniques

CourseOutcomes:

CO1:Identifyandcategorize suitablefoodsfordevelopingproducts

CO2:Understandthestepsinvolvedinthepreparationofanewfoodproduct CO3:Standardizationoffoodproductsfor largescalecooking

CO4:Gain knowledgeonmarketingtechniquesand launchingthedevelopedproducts

Skills: DevelopSkillsfornewfoodproductdevelopmentandstandardization

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	3	-	-	3	-	2	2	2	2	2
CO2	3	3	-	-	3	-	2	1	2	2	2
CO3	3	3	-	-	3	-	2	1	-	2	2
CO4	2	-	-	-	3	-	2	1	2	2	2

Practical's **30hrs.**

ProductDevelopmentandStandardization
CerealandPulseBasedFoods
Fruit Juices,Squash,JamsandPreserves
Pickles,Ketchup,Sauce
WeaningFoods
HealthFoodsandNutritionalSupplements
Conveniencefoods,RTSandRTE foods
MarketingofaFoodProduct
SelectionofaProduct,Preparation,StandardizationandQuantityCooking
SelectionofPackagingMaterial,Labelling,CostCalculationandMarketing
PresentationofReport

TextBooks:

1. SudhirGupta(2007)Handbook ofPackaging Technology,EngineersIndiaResearchInstitute,NewDelhi
2. Khanaka,S.S.,Entrepreneurial Development,S.ChandandCompanyLtd,NewDelhi,2006.

ReferenceBooks:

1. Suja,R.Nair(2014)ConsumerBehaviourandMarketingResearch,1st Edition,HimalayaPublishers.
2. Hmacfie,(2007)ConsumerledFood ProductDevelopment,WeedheadPublishingLtd.,UK
3. Fuller, Gordon, W(2005) New Food Product Development, 2nd Edition, CRC Press, BocaRaton,Florida,
4. Schaffner.D,J,Schroder,W.R.(2010)FoodMarketingandInternationalPerspectives,Web/McGraw HillPublication

EvaluationPattern:

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

FoodServiceManagement(PracticalIX)

SemesterV	**HoursofInstruction/week–2**
CourseCode:21FSN382	**No.ofCredits– 1**
L-T-P–0-0-2-1	**Total30hrs**

Prerequisite: Food service,food production,menu planning,purchase,storage,Institutionalfood service.

CourseObjectives:

1. Understandingtheapproaches,tools,management andresourcesofinstitutionalfoodservice.
2. Tolearnplanningandorganizingspace.
3. Tolearntheprinciplesoffood,personal andhygienemanagement.

CourseOutcome:

CO1:Gainexperienceinprinciples,designingandfunctioningoffoodserviceinstitutions
CO2: Apply knowledge on personnel management, sanitation and hygiene in food service institutions.CO3:Acquiretechnicalskillstodevelopquantitativeandqualitativecookery.

Skills: Develop skillsinbulk foodproduction and institutionalfoodservice.

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	1	-	3	-	2	1	-	2	-
CO2	2	-	2	1	3	-	1	1	-	2	-
CO3	3	2	-	1	3	-	1	1	-	2	-

Practical's **30hrs.**

1. Layoutplanningfordifferentfoodservicesystem.
2. Learntosetupdifferentstylesoffoodservice
3. Familymeal&functionsmenu &serviceplanning
4. Layoutplanforhospitaldietaryservice
5. Quality standardsand control
6. Processofstandardization ofrecipes
7. Portioncontrol:Managementofleft-overfoods.
8. Creatinggoodambianceinfoodservice(Interiordecoration)
9. Informalandformalservicestyles(TableService)
10. Traditionalfoodservicesystems
11. RolesandResponsibilitiesoffrontofficeandhousekeeping

ReferenceBooks:

1. MohiniShetty,Institutionalfoodmanagement,NewageInternationalPublishers,2016.
2. West,BB,Wood“FoodserviceinInstitutions”,Johnwiley &Sons,NewYork
3. KhanMA“Foodserviceoperations”,AVIpublishingCompanyInc.1987.
4. SethiandMahanS.-CateringManagementandintegratedapproach,Johnwiley&Sons,NewYork.
5. KotasRandDavisB“foodcostcontrol”Billing&SonsLtd,Great Britian,1976
6. Dr.B.K.Chakravati,“A Technical guidetoHotel operation”,Metropolitan,NewDelhiIndia.
7. Earl R.PalanandJudityA.Stadler(1986)PreparingforthefoodserviceIndustry,AVI-Publishing&co
8. MickeyWarner(1989)Recreational foodserviceManagement VanNostrandReinhold,Newyork.
9. J.M.Diwan(1997)CateringandfoodserviceManagement,CommonWealthpublishers.
10. TerselMCandHarger–Professionfoodpreparation,Johnwiley&Sons,NewYork

EvaluationPattern

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

SoftSkill III

SemesterV	**HoursofInstruction/week–3**
CourseCode:21SSK302	**No.ofCredits– 3**
L-T-P–1-0-3-2	**Total45hrs.**

Prereq uisite: TeamSpirit,self-confidenceandrequired knowledge,basicEnglish knowlelanguageskills,dgeofhighschoollevelmathematics.

Course Objective:

Tohelpc studentsunderstand thenuancesofleadership,knowtheimportanceofworking halleng inteams,faceingsituations,crackinterviews,improvecommunicationskillsandproblem-solvingskills.

Course Outcomes:

CO1:S **oftSkills-**
workin
diplom Attheendofthecourse,thestudentswouldhaveunderstoodtheimportanceandtacticsofinteams.Theywouldh
ersonap avedevelopedtheabilitytocommunicateconvincinglyandnegotiateaticallywhileworkinginateamtoarrivea
esent**C** tawin-winsituation.Theywouldfurtherdeveloptheirinter-
O2:S landleadershipskills.Theywouldalsohaveacquiredthenecessaryskills, abilitiesandknowledgeto
They themselvesconfidently.
wand **oft Skills -** At the end of the course, the students would have the ability to prepare a suitable
resdispl resume.ould have the ability to analyse every question asked by the interviewer, compose correct
ayithen responsespond in the right manner tojustify and convince the interviewer ofone's right candidature
sel**CO3** throughngetiquette,positiveattitudeandcourteouscommunication.Theywouldbesure-
:A footedinintroducingvesandfacinginterviews.
strategi **ptitude -**At the end ofthe course, studentswill beable to identify, recall and arrive at
o appropriateestosolvequestionsongeometry.Theywillbeabletoinvestigate,interpretandselectsuitablemet
solve**C** hodsquestionsonarithmetic,probability,statisticsandcombinatorics.
O4:V **erbal-**Attheendofthecourse, thestudentswillhavetheabilitytounderstandandusewords, idiomsases,
andphr interpretthemeaningofstandardexpressionsandcomposesentencesusingthesame.
CO5:V **erbal -** At the end of the course, the students will have the ability to decide, conclude, identify
choose andtherightgrammaticalconstruction.
CO6:V **erbal-**Attheendofthecourse,thestudentswillhavetheabilitytoexamine,interpretandinvestigatents, use
argume inductive and deductive reasoning to support, defend, prove or disprove them. They will alsoability to
have create, generate and relate facts / ideas / opinions and share / express the same
thetothe convincinglyudience/recipientusingtheircommunicationskillsinEnglish.
a

Communication,teamwork,leadership,facinginterviewsandproblem-solving.

Skills:C Mappings
O-PO

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	-	3	3	3	-	-	-	-
CO2	-	-	-	-	3	3	3	-	-	-	-
CO3	-	-	-	-	3	-	3	-	-	-	-
CO4	-	-	-	-	-	-	3	-	-	-	-
CO5	-	-	-	-	-	-	3	-	-	-	-

CO6	-	-	-	-	-	-	3	-	-	-	-

Syllabus:

UnitI–SoftSkills

TeamWork: Valueofteamworkinorganizations,Definitionofateam.Whyteam?Effectiveteam-building.Parameters for a good team, roles, empowerment and need for transparent communication, Factors affectingteameffectiveness,Personalcharacteristicsofmembersanditsinfluenceonteam.

Leadership,Internalproblemsolving,Growthandproductivity,Evaluationandco-ordination.

Facinganinterview:Importanceofverbal&aptitudecompetencies,strongfoundationincorecompetencies,industryorientation/knowledgeabouttheorganization,resumewriting,beingprofessional.Importance of good communication skills, etiquette to be maintained during an interview,appropriategroomingandmannerism.

UnitII–Aptitude

Geometry:2D,3D,CoordinateGeometry,andHeights&Distance.

Permutations&Combinations: Basics,FundamentalCountingPrinciple,CircularArrangements,andDerangements.

Probability: Basics,Addition&MultiplicationTheorems,ConditionalProbability,andBayes'Theorem.

Statistics: Mean,Median,Mode,Range,andStandardDeviation.

Logical Reasoning: Blood Relations, Direction Test, Syllogisms, Series, Odd man out, Coding & Decoding,CryptarithmeticProblemsandInput-OutputReasoning.

Campus recruitment papers: Discussion ofprevious year question papers of all major recruiters of AmritaVishwaVidyapeetham.

Competitive examination papers: **Discussion of previous year question papers of CAT, GRE, GMAT, andothermanagemententranceexaminations.**

Miscellaneous: InterviewPuzzles,CalculationTechniquesandTimeManagementstrategies.

UnitII–VerbalSkills

Vocabulary: Createanawarenessofusingrefinedlanguagethroughidiomsandphrasal verbs.

Grammar(Advanced Level): Enablestudentstoimprovesentencesthroughaclearunderstandingoftherulesofgrammar.

ReasoningSkills: FacilitatethestudenttotaphisreasoningskillsthroughSyllogisms,andcriticalreasoningarguments.

ReadingComprehension(Advanced):Enlightenstudentsonthedifferentstrategiesinvolvedintacklingreadingcomprehensionquestions.

PublicSpeakingSkills:Empowerstudentstoovercomeglossophobiaandspeakeffectivelyandconfidentlybeforeanaudience.

WritingSkills:Introduceformalwrittencommunicationandkeepthestudentsinformedabouttheetiquettesofemail writing.

References:

1. Adair.J.,(1.986),"EffectiveTeamBuilding:Howtomakeawinningteam",London,U.K:Pan Books.
2. Gulati.S.,(2006)"CorporateSoftSkills",NewDelhi,India:Rupa&Co.
3. TheHardTruthaboutSoftSkills,byAmazonePublication.
4. VerbalSkillsActivityBook,CIR,May2018
5. Nova'sGREPrepCourse,JeffKolby,Scott Thornburg& KathleenPierce
6. TheBBCandBritishCouncilonlineresources

7. OwlPurdueUniversityonlineteachingresources
8. www.thegrammarbook.comonlineteachingresources
9. www.englishpage.com onlineteachingresourcesandotheruseful websites
10. StudentWorkbook:QuantitativeAptitude&Reasoning,Corporate&IndustryRelations, AmritaVishwaVidyapeetham.
11. QuantitativeAptitudeforAllCompetitiveExaminations,AbhijitGuha.
12. Howto PrepareforQuantitativeAptitudefortheCAT,Arun Sharma.
13. How toPrepareforDataInterpretationfortheCAT,ArunSharma.
14. HowtoPrepareforLogical ReasoningfortheCAT,ArunSharma.
15. QuantitativeAptitudeforCompetitiveExaminations,RSAggarwal.
16. AModernApproachtoLogicalReasoning,RSAggarwal.
17. AModernApproachtoVerbal & Non-Verbal Reasoning,RSAggarwal.

EvaluationPattern

Assessment	Internal	External
ContinuousAssessment(CA)–SoftSkills	40	
ContinuousAssessment(CA)–Aptitude	10	20
ContinuousAssessment(CA)–Verbal	10	20
Total	60	40

***CA-CanbePresentations,Speakingactivitiesandtests.**

21FSN390	LIVE-IN-LABII	L-T-P-C:0-0-0-3

CourseObjective:

- Proposal writing in order to bring in a detailed project planning, enlist the materials requiredandproposebudgetrequirement.
- UsetheconceptofCoDesigntoensureUserParticipationintheDesignProcessinordertorightlycaptureuser needs/requirements.
- Building and testing a prototype to ensure that the final design implementation is satisfies theuserneeds, feasible,affordable, sustainableandefficient.
- Real time project implementation in the village followed byawareness generation and skilltrainingoftheusers(villagers)

CourseOutcome

CO1: Learnco-designmethodologiesandengageparticipatorily to finaliseasolution
CO2: Understandsustainablesocial changemodelsandidentifychangeagentsinacommunity.
CO3: LearnProject Management toeffectivelymanagetheresources
CO4: Labscaleimplementationandvalidation
CO5. Prototypeimplementationofthesolution

CO-POMapping

PO/PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2	3	3		3		3
CO2	2	3	3		3		3
CO3	2	3	3		3		3
CO4	2	3	3		3		3
CO5	2	3	3		3		3

Syllabus

The students shall visit villages or rural sites during the vacations (after 6th semester) and if theyidentify a worthwhile project, they shall register for a 3-credit Live-in-Lab project, in the fifthsemester.
ThematicAreas

- Agriculture&RiskManagement
- Education &GenderEquality
- Energy&Environment
- Livelihood&SkillDevelopment
- Water& Sanitation
- Health&Hygiene
- WasteManagement &Infrastructure

EvaluationPattern

Assessment	Marks
Internal(ContinuousEvaluation)[63marks]	
1.ProposedImplementation PresentationRound1	**2**
2.ProposalSubmission+Review	**6**
3.Co-design	**6**
i. Village Visit I (Co-DesignFieldWorkAssignments)	4
ii. Presentation of Co-designAssessment	2
4.PrototypeDesign	**14**
i. PrototypeDesign	4
ii. PrototypeSubmission	8
iii. SustenancePlan	2
5.Implementation	**35**
i. Implementation PlanReview	3
ii. Implementation	24
iii. Testing& Evaluation	4
iv. Sustenance ModelImplementation	4
External[37 Marks]	
6.ResearchPaper	**18**
7.FinalReport	**15**
8.PosterPresentation	**4**
Total	**100**
Attendance	5
Grand Total	**10**

SEMESTERVI

CommunityNutritionandPublic Health

SemesterVI	**HoursofInstruction/week– 4**
CourseCode:21FSN311	**No.ofCredits –4**
L-T-P–3-1-0-4	**Total60hrs.**

Prerequisite: Publichealthproblems,foodsecurity,nutritioninterventionprogrammes,nutritionindicators

CourseObjectives:

1. Understand thesignificanceofpublichealthnutrition
2. Gainknowledgeonprevailingepidemiology,food andnutritionsecuritystatus inpublichealth
3. Developskillstoassessthenutritionalstatusofthecommunity

CourseOutcomes:

CO1:Developcomprehensiveskillsinpublichealthnutrition CO2:Acq
uireknowledgeinepidemiologicalaspects
CO3:Excelinassessmentofnutritionalstatusonthecommunity
CO4:CreatingfieldexpertstotheGovernmentandNon-GovernmentOrganizations

Skills: Developskillsinassessinghealthandnutritionalstatusofthecommunity

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	1	1	-	3	1	1	-	-	1
CO2	1	-	1	1	-	-	1	1	-	-	1
CO3	-	-	1	-	3	3	1	1	-	-	1
CO4	-	-	1	1	3	3	1	1	-	-	1

Syllabus:

UnitI-IntroductiontoPublicHealthnutrition

10hrs. Und
erstandingthecommunity,publichealthnutrition,publichealthnutritioncycle,nutritionalstatusofcommunity.Publi
chealthnutritionandnationaldevelopment,sustainabledevelopmentgoals,assessmentofpublichealthandnutrition
al statusofthecommunityat theglobal,national,regionalandcommunitylevel.

Unit II- HealthandNutritionalAssessmentof Community

13hrs. Dire ctparameters-Anthropometry,biochemical,clinicalanddietarymethods–definition,instrumentsandtools, standardofreferenceandmeasurementtechniques
Indirectparameters–vitalstatistics,nutritionalandhealthindicators,HDIindex,socio-economicindices,KAP, psychosocialfactors, ecologicalfactors

UnitIII-FoodandNutritionalSecurity **13hrs.**
Introduction and definition of food and nutritional security, factors affecting food and nutritional security,NationalandInternational approaches toimprove foodsecurity Environmental impact-biodiversity, Econutrition. Dietarydiversity-percapitaavailabilityandconsumption

UnitIV -EpidemiologyinPublicHealth **12hrs.**
Introductionanddefinitionofepidemiology,roleofepidemiologyinpublichealthEpidemiologyofcommunicable diseases and non- communicable diseases-causes, signs, symptoms, treatment and prevention.Immunization-typesofimmunity,immunizationagents, schedules. NationalandInternationalprogrammesonimmunization

UnitV-Strategiesfor PromotingPublicHealthNutrition

12hrs. Nati onal and state level health and Nutrition intervention programmes and policies, FNHW interventions.International andNationalOrganizationsandagenciesinvolvedinpublichealthinterventions-WorldPublicHealth Nutrition Association(WPHNA), WHO,UNICEF, ICMR,Ministry of Health andFamily Welfare-National Institute of Health and Family Welfare Public Health Foundation of India (PHFI), Indian Institute ofPublicHealth

TextBooks:

1. Park.A.(2007),Park'sTextbookofPreventiveandSocialMedicineXIXEditionM/SBanarasidas,BharathPublishers, 1167,PremNagar,Jabalpur,428001(India)
2. Balmji.M.S, Prahlad Rao N, Reddy.V (2004). Text Book of Human Nutrition, II Edition, oxford and PBHPublishingCo.Pvt.Ltd, NewDelhi
3. GibneyMJ,MargettsBM,KearneyJM,ArabL(2004)PublicHealthNutritionBlackwellPublishingCo.UK
4. Brahman,G.N.V.,Lakshmaiah,A.,Rao,M.andReddy,G.(2005)MethodologyonAssessmentofDietandnutritionalStatusofCommunity,NationalInstituteofnutrition,Hyderabad.

ReferenceBooks:

1. Rayner.G,LangT.PublicHealthandNutriton.OurVision:Wheredowego?[Commentary]WorldNutritonApril 2012,3,4,92–118
2. ReportsoftheStateofWorld'sChildren,WHOand UNICEF,OxfordUniversity.
3. ReportsofNationalFamilyHealth Survey,InternationalInstituteforPopulationScience,Mumbai.
4. IndianJournalofMedicalResearch,ICMR,NewDelhi,
5. IndianJournal ofPediatrics,ValleyNicro,Missouri,U.P.
6. Indian Journal of Nutrition and Dietetics, Avinashilingam Institute for Home Science and HigherEducationforWomen,Coimbatore.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

AnalyticalInstrumentationinfoodAnalysis

SemesterVI	**HoursofInstruction/week– 2**
CourseCode:21FSN312	**No.ofCredits– 2Total30hrs.**
L-T-P– 2-0-0-2	

Prerequisite: Basicknowledgeon instrumentsusedinfoodanalysis

CourseObjectives:

1. Gainknowledgeondifferentanalyticaltechniquesusedinfoodanalysis
2. Understandtheprinciplesandapplicationsofvariousanalytical instrumentsusedinfoodanalysis.

CourseOutcomes:

CO1: Familiarized to various conventional and modern food analysis techniquesCO2:Familiarizewithvariousprincipleunderwhicheachtechniqueswork.
CO3:Understand theapplicationsofinstrumentsforappropriatenutrientsand activecompounds.

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	-	-	-	1	-	-	3	1
CO2	2	-	-	-	-	-	1	-	-	3	1
CO3	2	1	-	-	-	-	1	-	-	3	1

Syllabus:

UnitI-Introductionto FoodAnalysis **5hrs.**

Needforfood analysis,needforInstrumentation inFoodAnalysis,Criteria forSelectingaTechnique,InstrumentalTechniquesinFoodAnalysis, Transitionoffoodanalysis.

UnitIIChromatographicTechniques **7hrs.**

Gaschromatography,Liquidchromatography,ThinLayerChromatography,HighPerformanceThinLayerChromatography–Principlesandapplications

UnitIII HyphenatedTechniques **6hrs.**

GasChromatography-MassSpectrometry(GC-MS),LiquidChromatography-MassSpectrometry (LC-MS)-–Principlesand applications-Principlesand applications

UnitIV-SpectroscopicTechniques **6hrs.**

VisibleSpectroscopy,Atomic-Absorption Spectroscopy(AAS), Inductively CoupledPlasma–OpticalEmmission Spectrophotometry (ICP- OES/MS), Nuclear Magnetic Resonance Spectroscopy (NMR), FourierTransformInfraredSpectroscopy(FT-IR)–Principlesandapplications.

UnitVThermalMethodsofAnalysis **6hrs.**

Thermogravimetry, DifferentialThermalAnalysis(DTA),DifferentialScanningCalorimetry(DSC)–principlesandapplications

Text books:

1. ManualinInstrumentation inFood Analysis**,**IGNOUUniversity

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA-CanbeQuizzes,Assignment,Projects,andReports,andSeminar

NutritionEducationandCommunication

SemesterVI	**HoursofInstruction/week–2**
CourseCode:21FSN313	**No.ofCredits –2**
L-T-P– 2-0-0-2	**Total30hrs.**

Prerequisite: Nutrition&counseling.

CourseObjectives:

1. Exposeonthemethodsofnutritioneducation
2. UnderstandthesignificanceofInformationEducationandCommunication(IEC)toolsfornutritioneducation
3. Developskillsonhowtoplan,executeandevaluateanutritioneducationprogramme.

CourseOutcomes:

CO1:Appropriateskillsfordevelopingnutritioneducationmaterials

CO2:Gainknowledgeonmasscommunication,mediaandaidtoolsfornutritioneducationCO3:Util izedifferentcommunicationtoolsfornutritioneducation

CO4:Gained knowledgeonapproaches,strategiesandto organizenutrition educationprogrammes

Skills: Developskillsinorganizingnutritioneducationprogrammes

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	-	1	3	3	-	1	-	-	1
CO2	1	-	-	1	3	3	-	1	-	-	1
CO3	1	-	-	1	3	3	-	1	-	-	1
CO4	1	-	-	1	-	-	-	1	-	-	1

Syllabus:

UnitI- NutritionEducation **6hrs.**

Nutrition Education Meaning, nature and importance of nutrition education to the community and the lessonsto betaught. Training workers innutrition education programs, integration ofnutrition education witheducationandextensionwork.Principlesofplanning,executingandevaluatingnutritioneducationprograms,pr oblemsofnutritioneducation,Nutritioneducationapproaches

Methodsof Nutrition Education -Direct and Indirect Methods,Individual and Group Contacts,Types,Methods, MeritsandDemerits

UnitII-MassCommunicationinNutritionEducation

6hrs.

Definition,MeritsandDemerits,Types–
PrintMedia,Newspapers,Magazine,Leaflets,Pamphlets,Radio,Television, Films, FilmStrips

UnitIII-ToolsinNutritionEducation **6hrs.**

IEC Materials - Significance of IEC materials, types, Advantages and Limitations, Design and developmentofIECmaterials
RelatedExperiences
Preparationofchartorposterorleaflets
DigitalHealthInterventions:MobileHealth,MobileApp,onlinecommunication,Dietarysurvey,Websources

UsesofFolkMediainNutritionEducation-
TypesofFolkMedia,MeritsandDemeritsRelatedExperiences
PreparationofSkitsorPuppetShowsorVillupattu

UnitIV -OrganizingProgrammesinNutritionEducation

6hrs.

Introduction – Selection of Theme, Planning the Programme, Executing the Programme, Evaluation of theProgramme

UnitVApproachesandStrategiesforimproving nutritionalstatusandhealth

6hrs.

ApproachesandStrategiesforimprovingnutritionalstatusandhealth,Health–basedinterventions,Food–basedinterventionsincludingfortificationandgeneticimprovementoffoods,supplementaryfeeding,Nutritioneducationforbehaviourchange,environmentalsanitation,FoodNutritionandhealthWASHinterventions,Nationalandstategovernmentalnutritioneducationinterventionprogrammes.

Text books:

1. ***AdiviReddy,A.Extension Education***,SrilakshmiPress,Bapatla,2001.
2. ***Srilakshmi,B.,NutritionScience***,6thEdition,NewAgeInternational (P)Ltd.,NewDelhi,2017.

Referencebooks:

3. ***JohnAntony,D.SkillsofCounseling,MicroSkillModel***,IncludesKineticsandFocusing,AnugrahaPublications,2003.
4. ***Venkataiah,S.E.D,NewDimensionsofExtensionEducation***,Anmol Publications,NewDelhi,2001.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	

EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FoodProductEvaluation

SemesterVI	**HoursofInstruction/week–2**
CourseCode:21FSN314	**No.ofCredits–2**
L-T-P–1-1-0-2	**Total30hrs.**

Prerequisite: Basicknowledgeonfoodproductevaluation

CourseObjectives:

3. Gainknowledgeaboutdifferenttechniquesforfoodproductdevelopmentandevaluation
4. Learnvariousmethodsofevaluatingthequalityandsafetyoffoods.

CourseOutcomes:

CO1:Gain knowledgeon theimportanceoffood gradingand qualityCO2:Identifythesensorycharacteristicsofdifferentfoods
CO3: Interpret the evaluation techniques and tests used in analyzing food qualityCO4:Ascertaintheroleofmicroorganismsinfoodquality

Skills: Developskillsinfoodproductdevelopmentand evaluation

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	3	-	1	-	-	-	1	-	1	1
CO2	1	3	-	1	-	-	-	1	-	1	1
CO4	1	3	-	1	-	-	-	1	-	1	1
CO5	1	3	1	1	-	-	1	1	-	1	1

Syllabus:

UnitI-Introductionto FoodEvaluationQuality **5hrs.**
Definition,ObjectivesandNeed forEvaluation ofFood Quality
FactorsAffecting theEvaluationofFood Quality–PsychologicalandPhysiological

UnitIIMethodsofEvaluationofFoodQuality– SubjectiveMethods

8hrs. Sensor yCharacteristicsofFood-Appearance,Colour,Flavour,Taste,TextureandConsistency,ConductingSensoryTests–TrainingPanelMembers,TestingLaboratory–PreparationofSamples,TechniquesofSmellingandTasting,Testingtime, DesignofExperiment,

ReasonsforTestingFoodQuality
Tastingprocedures-Chewing,nibbling,slurping,mouthrinsing

OrganolepticEvaluation-Flavour,Colour,Clarity,Viscosity,texture,smellingprocedures

UnitIII SensoryTestsused forFood Evaluation **6hrs.**

Types of Tests,Difference Tests,Rating Tests,Sensitivity Tests,Descriptive Tests,Interpretation of scores,Applicationofsoftwaresininterpretingscores
Thresholdtests-Absolute,Recognition,Differential,Terminal
Discrimination tests-pairedcomparison, duotriodifference, triangular difference,singlesampletest,twoalternativeforcedchoicetest
Descriptivetests-Simpledescriptive,Descriptivewithrating,Flavourprofile,Dilutionprofiletechnique

UnitIV-MethodsofEvaluationofFoodQuality– ObjectiveMethods **6hrs.**

BasicGuidelines,AdvantagesandDisadvantages,TestsUsed,Chemical,Physico-chemical,Microscopic,PhysicalMethod-grading,InstrumentsusedforEvaluation.

UnitVEvaluationofMicrobialQualityofFoods

5hrs. Metho

ds,AssaysusedtoassesstheMicrobialLoadsof differentfoods,PermittedlevelsofMicrobialLoadindifferentfoods,MicrobesresponsibleforFoodQuality,Microbiol ogicalevaluationstandards.

Text books:

1. Srilakshmi,B.SecondEdition,FoodScience,NewAgeInternational(P)LimitedPublishers,NewDelhi.2016
2. HarryT.Lawless,Hildegarde,SensoryEvaluationofFoodPrinciplesandPractices,SecondEdition,Springer Science, 2010.
3. Joshi,V.KSensory Science:Principlesand Applicationsin FoodEvaluation,2016.

Referencebooks:

1. Hutenwigs,B.J.FoodColorandAppearance,PublishedbyBlackieAcademicandProfessional,London, 2010.
2. HowardR.Beckley,Jacquiline,H.SensoryandConsumerResearchinFoodProductDesignandDevelopment , 2016
3. Bi,Jian,SensoryDiscriminationTestsandMeasurements:StatisticalPrinciples,ProceduresandTables,2016 .

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA-CanbeQuizzes,Assignment,Projects,andReports,andSeminar

FoodAnalysis(Practical–X)

SemesterIV	**HoursofInstruction/week–2**
CourseCode:21FSN383	**No.ofCredits– 1**
L-T-P– 0-0-2-1	**Total30hrs.**

Prerequisite: QuantitativeAnalysis,Proximateanalysis

CourseObjectives:

1. Tolearnthequalitativeandquantitativeanalyticaltestsinfoods.
2. Tounderstandtheprinciplesofreactionintheidentificationofnutritionalconstituentsoffoods.
3. Toacquiretheskillstoanalyzenutritionalcomponentsoffoods.
4. Todemonstratetheanalysisofnutritional constituentsinfoods.

CourseOutcomes:

CO1: Know the difference between qualitative and quantitative analytical tests in foods.CO2:Understandtheidentificationofdifferent typesofsugars,proteinsandminerals. CO3:Abletoidentifyandanalyseconstituentsinfoodsinalogicalsequenceofstepsofanalysis.

Skills: AcquireSkillstoquantifyproximatenutrientsinfoods

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	3	-	-	3	-	1	2	-	-	-
CO2	2	-	-	-	3	-	1	2	-	-	-
CO3	2	3	-	-	3	-	-	2	-	-	-

Practical's: **30hrs.**

1. Quantitativetestsforsugars,proteinsandminerals.
2. Quantitativeestimationofglucoseinsugarsolution.
3. Quantitativeestimationofreducingsugaringrapejuice.
4. Quantitativeestimationofreducingsugarinhoneysolution.
5. Quantitativeestimationofascorbicacidindrumstickleaves.
6. Quantitativeestimationofascorbicacidinlime juice.
7. Quantitativeestimationofascorbicacidinrawandcookedcabbage.
8. Quantitativeestimationofcalcium.
9. Quantitativeestimationofphosphorous.

TextBooks:

1. Varley,H.,Gowenlak,A.H.andHill,M.PracticalClinicalBiochemistry,WilliamItinmaonMedicalBooks, London,2010.

2. Oser,B.L.,Harke'sPhysiologicalChemistryXIVEditionTataMcGrawHillPublishingCompanyLtd., Bombay,2011

ReferenceBooks:

1. Sadasivam,S.andManickam,A.BiochemicalMethod,SecondEdition,NewAgeInternationalP.Ltd.,Publishers , NewDelhi,2013.
2. Raghuramulu, N.,Madhavannair, K.andKalyanaSundaram, NationalInstituteofNutrition, 2013,AManualofLaboratoryTechniques,Hyderabad,500007

EvaluationPattern

Internal	External	Total
80	20	100

*CA–RegularLabworkassessment

ELECTIVESA
FoodHygieneandSanitation

SemesterV	**HoursofInstruction/week– 3**
CourseCode:21FSN231	**No.ofCredits–3**
L-T-P– 3-0-0-3	**Total45hrs.**

Prerequisite: Foodsafety,Hygiene,WASH,FNHW

CourseObjectives:

1. Understandthebasicsoffoodhygiene
2. Understandtheconceptsofsafeandeffectivesanitationpractices
3. Understandthesanitaryaspectsofwater.

CourseOutcome:

CO1: Design food hygiene and sanitation measures to control the spread of microorganisms.CO2:Understandthelinksbetweenwater, sanitationandhealth

Skills: Developskillsinmaintainingsanitarypracticesin foodindustry

CO-POMapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	2	2	1	-	-	2	-	-	1	1
CO2	1	2	2	1	-	-	2	-	-	1	1

Syllabus:

UnitI-Foodhygiene **9hrs.**

General principle of food hygiene. Hygiene in rural and urban areas in relation to food preparation, personalhygiene andfood handling habits.Placeofsanitation in food plants.Sanitary aspectsofbuilding andequipment: Plantlayout anddesign,Comparative studiesonsanitaryfabrication ofdifferent typesofprocessingequipment's.

UnitII-Safeandeffectiveinsectandpestcontrol

9hrs. Extra neousmaterialsinfoods,PrinciplesofInsectsandpest'scontrol.Physicalandchemicalmethodsofcontrol. Effective control of micro-organisms: microorganisms important in food sanitation, micro-organismsasindicatorofsanitaryquality.

UnitIII-Sanitaryaspectsofwatersupply **9hrs.**

Sourceofwater,qualityofwater,watersupplyanditsusesinfoodindustries.Purificationanddisinfectionofwater, preventingcontaminationofpotablewatersupply.

UnitIV-Cleaningpractices **9hrs.**

Effectivedetergencyandcleaningpractices:Importanceofcleaningtechnology,physicalandchemicalfactorsinclea ning,classificationandformulationofdetergentsandsanitizers,cleaningpractices.

UnitV-Sanitationpractices **9hrs.**

Sanitaryaspectsof wastedisposal.Establishingandmaintainingsanitarypracticesinfoodindustry,sanitationprincipleandtherequirem entsforafoodsanitationprogram,roleofsanitation,generalsanitaryconsiderationandsanitaryevaluationoffoodplan ts.

References:

1. GuidetoImproveFoodHygiene-GastonandTiffney
2. PracticalFoodMicrobiology&Technology-HarryH.Weiser,Mountney,J.andGord,W.W.
3. FoodPoisoningandFoodHygiene-BettyC.Hobbs
4. PrinciplesofFoodSanitation-Marriottand Norman,G.
5. HygieneandSanitationinFoodIndustry-S.Roday

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

AdolescenceHealthandLifestyle

SemesterV	**HoursofInstruction/week–3**
CourseCode:21FSN232	**No.ofCredits–3**
L-T-P– 3-0-0-3	**Total45hrs**

Pre-requisite: Health,Lifestylechanges,adolescenceneeds.

CourseObjectives:

1. Understandthevalueofhealthandnutritionduringadolescence.
2. Understandtherelationshipbetweenlifestylepracticesandhealthoutcomes
3. Understandvariousstrategiesundertakento promoteadolescenthealth,lifestyleand nutritionalstatus

CourseOutcome:

CO1:Increasedmindfulnessonsignificanceinadolescent'shealth

CO2: Gained information on the impact of long term good lifestyle practices on healthCO3:Attainedknowledgeon methodstoovercomeunhealthylifestylepractices

Skills: Developskillstoovercomelifestylechangesduringadolescence

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	-	-	1	-	-	2	-	1	-	1
CO2	2	-	-	1	-	-	2	-	1	-	1
CO3	2	-	-	1	-	-	2	-	1	-	1

Syllabus:

Unit1–IntroductiontoAdolescentHealthandLifestyle

9hrs.

SignificanceofAdolescentHealth-stagesof adolescence,physical,social,emotional,spiritualandintellectualwell-being,sedentarylifestyle,reproductivehealthandfactorsinfluencing,integrationofknowledgeandskillstodevelopa healthylifestyleplans,parent'sadolescencecommunication

UnitII–PromotionofGoodEatingHabits

Factors,impacton health,Measurestoovercome Wate

Foodchoices-Skipping Breakfast-Factors,impact onhealth,MeasurestoovercomeJunkFoodConsumption-Factors,impactonhealth,Measurestoovercome EatingWhiteProducts-

randFluidintake-Significanceonhealth

9hrs.

UnitIII–Restingpatternandphysicalactivity **9hrs.**

Postures – Ergonomics, Good and Bad postures, Advantage and DisadvantagesDegenerativeDiscDisease– Causes,types,Consequencestohumanhealth
SleepingPattern– Types,advantagesanddisadvantages,circardiumrhythm,nocturnalhabits,consequencestohumanhealth,
Physicalactivity,obesityandweightmanagement-Typesandsignificance,weightmanagement,

UnitIV–SupportingMentalHealth **9hrs.**

Stress- Causes,types,signs and symptoms, coping with emotions and stress,impact of Stress on adolescenthealth
DepressionandSuicidaltendency-CausesandimpactofDepressiononadolescenthealth
Peer pressure- Causes, types and impact of peer pressure and ways to overcome on adolescent healthProcrastination- Causes, types and impact of peer pressure and ways to overcome on adolescent healthViolence–Types,causesandeffects,rehabilitationmeasures

UnitV–Personalhabitsandhygiene **9hrs.**

PersonalHabits:

Alcoholaddiction,Smoking,SubstanceAbuse,Electronicaddiction-Factors, symptoms,typeshealthimpact,measurestoovercome

Personalhygiene:

Generalhygiene,menstrualhygiene,dental hygiene

TextBooks:

1. An Introduction to LifestyleManagement:Facilitator'sHandbook,Dr.AnjaMorris-Paxton,2019
2. FoodScience-Srilakshmi,ProsperMontaguePublishingGroupLtd.,Hamlyn,London.2015.
3. Internet Addiction: The Ultimate Guide for How to Overcome An Internet Addiction For Life(Gaming Addiction, Video Game,TV,RPG,Role-Playing, Treatment, Computer) PaperbackCaesarLincoln, 2014.
4. Food&Nutrition-Swaminathan(1995),TheBangalorePrinting&publishingcoltd.,VolI,SecondEdition, Bangalore
5. TheNewRulesofPosture:HowtoSit,Stand,andMoveintheModernWorld,MaryBond,2006
6. Stress Management: A Wellness Approach First Edition by Nanette E. Tummers,ISBN-13: 978-1450431668

EvaluationPattern:

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

SPORTSNUTRITION

SemesterV	**HoursofInstruction/week– 3**
CourseCode:21FSN233	**No.ofCredits–3**
L-T-P– 3-0-0-3	**Total45hrs.**

Pre-requisite: Healthandfitnessknowledge,practice.

CourseObjectives:

1. Understandtheimportanceoffitnessand health
2. Gain knowledgeonrelationshipbetween nutritionforphysicalactivity
3. Gainunderstandingonthetechniquesoftraining
4. Understandtherisksofhypokineticdiseases
5. Comprehendtheprinciplesofexerciseandstressmanagement

CourseOutcome:

CO1: Understand the significance of fitness and trainingCO2:Fosterfitnessskills
CO3: Learntomanagelifestylerelateddisorders
CO4:Participateonstressandhealthmanagement practices

Skills: GaintheTechnicalAbilitytoestablishandmanageFitnessCenters

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	-	1	-	-	1	1	1	-	1
CO2	1	-	-	1	-	-	1	1	1	-	1
CO3	1	-	-	1	-	-	1	1	1	-	1
CO4	1	-	-	1	-	-	1	1	1	-	1

Syllabus:

Unit1-HealthandFitness **9hrs.**

Definition,ComponentsandRelationshipamongPhysicalFitness,WellnessandHealth–challengesandpersonalizedapproach, Benefitsoffitnesstraining

UnitII-ExercisePhysiologyandNutritionforPhysicalActivity **9hrs.**

PulmonaryStructureandFunction,CardiovascularRegulationandintegration,Skeletal andneuralcontrol,

endocrinesand exercise,roleofmacro andMicro nutrients,optimumnutritionandIntroduction - FoodGroups,MyPyramid (FAO/WHO, 2005), Adequate Diet.Role ofMacroand Micro nutrients – Carbohydrates,Proteins,Fats,VitaminD,Calcium,Iron,OptimumNutritionandHydrationforHealth

UnitIII-PhysicalActivityTraining **9hrs.**

Aerobic and anaerobic training -To enhance Cardio Vascular Endurance, Flexibility and Body Composition,Measurement of PAL, Benefits of Fitness training and Gadgets for measuring PA – Motorized Treadmill,(aerobic Fitness), Functional Trainer, Fluid Rower (Upper body), Elliptical Bicycle and Bicyle Ergometer(Lowerbody),StretchTrainer(Wholebody),MultiGym(9,12,16station)fordifferentmusclegroups

UnitIV-DiseasesduetoFaultyFoodHabitsandPhysicalInactivity

9hrs.L

ifeStylerelateddiseases/disorders-NoncommunicableDiseaseconditions- Underweight, Obesity,Diabetesmellitus, Hypertension, Cancer, CardiovascularDisease, Anaemia

UnitV-Exercise,StressandHealthManagement

9hrs.S

tressAssessmentandManagementTechniques-Exerciseatmediumandhighaltitudes,Underweight,OverweightandObesity,RelaxationTechniques,YogaandMeditationforHealth,ClinicalExercisePhysiologyforCancer,CVandPulmonaryrehabilitation

TextBooks:

1. WernerW.KHoejer(1989),LifetimePhysicalFitnessandWellness,MortonPublishingCompany,Colorado.
2. Mishra,S.C(2005)PhysiologyinSports.SportsPublication,NewDelhi
3. Greenberg,S.JandPargman,D(1989)PhysicalFitness–AWellnessApproachPrenticeHallInternational(UK)Limited,London
4. SwaminathanT,(2008)EssentialsofFoodandNutritionBangalorePrintingPublishingCo.

ReferenceBooks:

1. McArdle,W.D,FrankI.Katch,F.IandVictorL.Katch(1996)ExerciseNutrition:EnergyNutritionandHumanPerformance.William&WilkinPublishingUSA.
2. Mahan,KandStump,E.S(1996)KrauseFood andNutrition andDiet TherapyW.BSaundersCompany,USA.
3. McArdle,W.D,FrankI.Katch,F.IandVictorL.Katch(2010)EssentialsofExercisePhysiology,7th edition. William&WilkinPublishingUSA.

EvaluationPattern:

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

ELECTIVESB

HomeScalePreservationofFoods

SemesterVI	**HoursofInstruction/week– 3**
CourseCode:21FSN331	**No.ofCredits –3**
L-T-P–3-0-0-3	**Total45hrs.**

Pre-requisite: Foodprocessing,preservation,additives,preservatives

CourseObjectives:

1. Understandthemethodsofhomescalefoodpreservation
2. Gainknowledgerelatedtopreservationonsugar,salt,drying andchemicalspreservative
3. Learnt theimportanceofmoistureremoval andfermentationinhomescalepreservation

CourseOutcomes:

CO1:Gainexpertisetomanagesurplusfruitsandvegetablesathomescale level
CO2: Enhance the knowledge related to preservation on sugar, salt, drying and chemicals preservativeCO3:Empoweredtobecomeanentrepreneurinsmallscalefoodindustries

Skills: Developskillsinfoodprocessingandpreservationathomescalelevel

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	1	-	1	1	3	-	1	1	1	1	1
CO2	1	-	1	1	3	-	1	1	1	1	1
CO3	1	-	-	1	3	-	1	1	1	1	1

Syllabus:

Unit1-IntroductiontoFoodPreservation **9hrs.**

BasicPrinciplesofFoodPreservation,TypesofSpoilage,ImportanceofFoodPreservationDifferentMethodsofFood Preservation. Managementofsurplusfoods.

UnitI1-PreservationbyusingSugar **9hrs.**

Sugarconcentrates,PreparationofJam,Jelly,Marmalades,Preserves,Candied,Glazed,CrystallizedFruits,FPOSpecification,ProblemsEncountered,Spoilages

Unit III- PreservationbyRemovalofMoisture **9hrs.**

SundryingDrying,Dehydration,MethodofDrying,PreparationofVegetableVathals-LadiesFinger,Brinjal,Beans, Cluster Beans, Preparation of Vadams – Rice vadam, Sago Vadam, Rice Flakes Vadam, TomotoVadam

UnitIV-PreservationbyusingChemicalsandSalts

9hrs. Che
micalPreservatives–Definition,TypesofPreservatives,PreparationandPreservationofFruitJuices,picking–PrinciplesInvolved,Process, Types
PreparationofVariousTypesofPickles–Lime,Mango,Ginger,Capsicum,MixedVegetables,Brinjal,Onion,Garlic

UnitV-Fermentation **9hrs.**
Definition,TypesofFermentation,CommonFermentedFoods– CheeseMaking,Dokhla,Wine

Text books:

1. Adams,M.R.andMoss,M.O.(2005)FoodMicrobiology,NewAgeInternational(P)Ltd.,NewDelhi,.
2. UshaChandrasekhar,(2002)FoodScienceandApplicationsinIndianCookery,PhoenixPublishingHousePvt. Ltd., NewDelhi,.
3. Srilakshmi,B.(2013)FoodScience,New AgeInternational(P)Ltd.,NewDelhi,

ReferenceBooks:

1. Fellows,P.(2000)FoodProcessingTechnology,PrinciplesandPractice,2nd Edition,CRCPress,WoodlandPublishingLtd.,Cambridge,England.
2. Sommers, C.H. and Xveteng Fan, (2006) Food Irradiation Research and Technology, BlackwellPublishing,2006.
3. Swaminathan,M.FoodScience,ChemistryandExperimentalFoods,BappcoPublishers,2013.

EvaluationPattern:

Assessment	Internal	External
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

NutraceuticalsandNutrigenomics

SemesterVI	**HoursofInstruction/week– 3**
CourseCode:21FSN332	**No.ofCredits–3**
L-T-P–3-0-0-3	**Total45hrs.**

Pre-requisite: Nutraceuticals,bioactivecomponents,dietarysupplements,geneticallymodifiedfoods

CourseObjectives:

1. Gainknowledgeabout functional foods,nutraceuticalandnutrigenomics.
2. Understandingthemolecularlevelinteraction betweennutrientsand otherdietarybioactivewithhumangenome.
3. Knowtheapplicationsofnutrigenomicsinwellnessanddiseasemanagement.

CourseOutcomes:

CO1:Understandthedevelopmentsinthefieldofnutraceuticalsandnutrigenomics.

CO2: Understanding the functions of dietary supplements and nutraceuticals in disease conditions.CO3:Knowtheimportanceof probioticsandprebioticsinhumanhealth

CO4:Comprehendthecomponentsofnutrigenomics,geneexpression,functionalfoods

CO-POMapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	2	1	-	-	-	-	2	2	2	-	-
CO2	2	2	-	-	-	-	2	2	2	-	-
CO3	2	2	-	-	-	-	2	2	2	-	-
CO4	2	2	-	-	-	-	2	2	2	-	-

Syllabus:

UnitI-Nutraceuticalsand FunctionalFoods **9hrs.**

Definition of functional and traditional foods, nutraceuticals, designer foods and pharma foods, history offunctional foods,components offunctional foods,foods containing nutraceuticalsandclassification ofnutraceuticals–basedonplantsources, mechanismofactionandchemicalnature

UnitII-RoleofDietarySupplementsandNutraceuticalsinHealthandDisease **9hrs.**

Conceptofdietarysupplements,sourcesandfunctionsofphytochemicalswithsuitableexamples,FOSHUfoods–concepts, regulatoryaspects

UnitIII-ProbioticsandPrebiotics **9hrs.**

Gut microbiota,functions,conceptofprobiotic,prebiotics&symbiotics; applicationsofprobioticsinhuman

nutrition

UnitIV-Nutrigenomics **9hrs.**

Definition of nutrigenomics, gene expression– transcription, translation, post translational modification,nutrition in the omics era- elementary concepts on epigenetics, transcriptomics, proteomics, metabolomics;geneticvariationandnutritionalimplications

UnitV-NutritionandGeneExpressionandNutrigenomicsandComplexDiseases

9hrs.

Nutrient control of gene expression – amino acids, nucleotides, basic concepts of nutrigenomics and complexdiseases–diabetes, cancerandobesity

TextBooks:

1. Mahtab,S,Bamji,KamalaKrishnasamy,G.N.V.Brahmam,TextBookofHumanNutrition,ThirdEdition,Oxford andIBHPublishingCo. P.Ltd.,NewDelhi,2015.
2. Srilakshmi, B. Second Edition, Food Science, New Age International (P) Limited Publishers, NewDelhi,2017
3. Simopoulus,A.P.andOrdovas,K.J.M.,2004,NutrigeneticsandNutrigenomics,Vol.93,Karger,Switzerland.

ReferenceBooks:

1. Watson,David,H.,2013,PerformanceFunctionalFoods,CRCPress,WoodHeadPublishingLtd.,England
2. Tamine,A.,2015,ProbioticDairyProducts,BlackwellPublishingLtd.,UK
3. NarasingaRao,B.S.,2015,NutritionResearchinIndia–ACountryReport,PublishedbyINSA,NewDelhi.
4. Webb, G.P., 2016,DietarySupplementationsandFunctionalFoods, BlackwellPublishingLtd.,NewYork.
5. Tai,E.S.andGillies,P.J.,2007,Nutrigenomics–OpportunitiesinAsia,Karger,Singapore.2013.

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

CareerOpportunitiesinFoodScience andNutrition

SemesterVI	**HoursofInstruction/week– 3**
CourseCode:21FSN333	**No.ofCredits–3**
L-T-P–3-0-0-3	**Total45hrs.**

Prerequisite: Biologicalsciences,foodscience,dietetics,communitynutrition,foodindustry

CourseObjectives:

1. Understandtheextendedhigherlearning opportunitiesforUGFoodScienceandNutrition graduates.
2. UnderstandvariouscareeropportunitiespertainingtograduatesinUG FoodScienceandNutrition.
3. BuildingcapacityandLearningskillforcompetitiveexaminationopeningintogovernmentandnon-governmentsectors

CourseOutcome:

CO1:Awarenessbuiltonhigherlearningopportunities

CO2: Building appropriate skills and capacity to open careers in various food sector.CO3:Buildingknowledgeandskillsforthecompetitiveexampreparations.

Skills: Strengthentechnical anddevelopexam preparednessskills

CO-POMappings

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3	PSO4
CO1	-	-	-	1	-	2	3	-	-	-	-
CO2	-	-	-	1	-	2	3	-	-	-	-
CO3	-	-	-	1	-	2	3	-	-	-	-

UnitI-Preparationforhigherlearning&research

9hrs. Unde rstandingthedomainsofhigherlearning,Opportunitiesforhigherlearning,thrustareasofexchangestudies, possibleinterdisciplinarycoursesandlearningopportunities.

UnitII-Careeropportunitiesinhospitals **9hrs.**

RegisteredDietitianExamination,preparation,howtoapply,syllabus,technicalknowledgeandskillsrequired.

UnitIII-Careeropportunitiesingovernmentsector&community

9hrs. Vario us Ministry, National and state government departments open for recruiting officers and staff with foodscienceandnutritionbackground.

UnitIV-Careeropportunitiesinfoodindustry&asentrepreneur **9 hrs.**RequiredEducation&TrainingforacareerintheFoodIndustry,OpportunitiesasaFoodtechnologistProduct/processdevelopmentscientist,Qualitymanager,Regulatoryaffairsofficer,KnowabouttheRecruitersandrolesandresponsibilities.Small-andlarge-scalefood-basedbusiness,howtoinitiatestartups,applyingforFSSAI,settingqualitystandardsrolesandresponsibilities.

UnitV– Preparationforcompetitiveexams

9hrs. Various resourcesweblinksandwebsitesforvariousrelevantjobapplications.StateemploymentExchangeregistration. RegisteredDietitianExam-Eligibility,registration,application,Syllabus.
NET/SLETExams–
Interiordesign,resourcemanagement,textilesandclothing,humandevelopment,extensioneducation

Textbooks/References:

1. Premalata,M,(2007),'TextBookofHomescience',KalyaniPublishers,Chennai.
2. Onlineresources

EvaluationPattern

Assessment	Internal	External Semester
Periodical1(P1)	15	
Periodical2(P2)	15	
*ContinuousAssessment(CA)	20	
EndSemester		50

*CA- CanbeQuizzes,Assignment,Projects,andReports,andSeminar

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