SNDT Women's University, Mumbai

B.Sc. (Food Science & Nutrition)

2023

Nomenclatures Across Levels:

Level	Semester	Name of the Level	Credits	Nomenclature
4.5	1	Certificate	22	UG Certificate in Food & Nutrition
	2		22	
5.0	3	Diploma	22	UG Diploma in Food & Nutrition
	4		22	
5.5	5	Degree	22	BSc in Food &Nutrition (Food Science & Nutrition)
	6		22	
6.0	7	Honors	22	BSc Honors in Food Science & Nutrition
	8		22	
	7	Research	22	BSc Research in Food Science & Nutrition
	8		22	

Programme Degree		**B.Sc.**
Faculty		Science & Technology
Specialization		**(Food Science & Nutrition)**
Preamble (Brief Introduction to the programme)		The Course will enable the students to understand human physiology and human health, basics of nutrition and its relation to health.
Programme Specific Outcomes		After completing this programme, Learner will -
	1.	Discuss nutrients and their functions.
	2.	Analyze nutritional requirements for different age groups.
	3.	Apply food processing, preservation and food product development skills.
	4.	Apply techniques of nutritional assessment.
	5.	Gain skills for food entrepreneurship and food sanitation and hygiene.

UG Structures and First Year Syllabi of Food Science & Nutrition were approved in the Academic Council of 22-11-2023.

Eligibility Criteria for Programme		Any woman who has successfully cleared 10+2 from the recognized Boards by the Government of India/respective state in the subject of Home Science/Science or have required credits as per the government norms to be able to join undergraduate programme. Student having cleared Arts with Home Science subjects is also eligible.

Syllabus Structure

No.	Courses	Type of Course	Credits	Marks
	Semester I			
1.1	Basics of Food Science (Theory)	Major (Core)	4	100
1.2	Basics of Food Science (Practical)	Major (Core)	2	50
1.3	Applied Science (Th + Pr)	OEC	4	100
1.4	From Other majors of Home Science at College level	VSC	4	50
1.5	Soft Skills	SEC	2	50
1.6	**Effective Spoken Communication**	AEC	2	50
1.7	Cuisines of India (Theory)	IKS	2	50
1.8	EVS	VEC	2	50
1.9	NSS/NCC/Cultural	CC	2	50
			22	**550**
	Semester II			
2.1	Basics of Nutrition(Theory)	Major (Core)	4	100
2.2	Basics of Nutrition (Practical)	Major (Core)	2	50
2.3	Introduction to cookery / Nutrition through Life Span	Minor Stream	2	50
2.4	Human Physiology	OEC	4	100
2.5	From Other majors of Home Science at College level	VSC	4	50
2.6	Soft skills	SEC	4	50
2.7	**Effective Written Communication**	AEC	2	50
2.8	Cuisines of India (Practical)	IKS	2	50

2.9	NSS/ NCC/ Cultural	CC	2	50
			22	**550**
		TOTAL	**44**	**1100**
UG CERTIFICATE (with extra 10 credits)			**54**	**1350**

10 Credits through-Practical: One Batch of 15 Student

SN	Courses	Type of Course	Credits	Marks
Semester III				
3.1	Food Preservation	Major (Core)	4	100
3.2	Macronutrients	Major (Core)	4	100
3.3	Introduction to Food preservation Pr	Minor Stream	6	100
3.4	Advance Chemistry	OEC	2	50
3.5	From Other majors of Home Science at College level	VSC	2	50
3.6	Seminar	AEC	2	50
3.7	Community Nutrition	FP	2	50
3.8	NSS/ NCC/ Cultural	CC	2	50
			22	**550**
Semester IV				
4.1	Micronutrients Th	Major (Core)	4	100
4.2	Basic Biochemistry Th	Major (Core)	4	100

4.3	Introduction to Food Entrepreneurship	Minor Stream	6	100
4.4	Food Hygiene and Sanitation	OEC	2	50
4.5	From Other majors of Home Science at College level	VSC	2	50
4.6	Techniques of Nutritional Assessment	AEC	2	50
4.7	NSS/ NCC/ Cultural	CC	2	50
4.8		CEP	2	50
			22	**550**
		TOTAL	**44**	**1100**
UG CERTIFICATE (with extra 10 credits)			**98**	**2450**

10 Credits through-

SN	Courses	Type of Course	Credits	Marks
Semester V				
5.1	Advance Biochemistry (Theory)	Major (Core)	4	100
5.2	Diet Therapy (Th &Pr)	Major (Core)	4	100
5.3	Recent Trends in FSN (Seminar)	Major (Core)	2	50
5.4	Food Microbiology Th &Pr	Major (Elective)	4	100
5.5	Food Entrepreneurship	Minor Stream	6	100
5.6	From Other majors of Home Science at College level	VSC	2	50
5.7	Community Nutrition (Practical)	CEP	2	50
			22	**550**
Semester VI				
6.1	Food Science and Processing Th &Pr	Major (Core)	4	100
6.2	Food Product Development	Major (Core)	4	100
6.3	Food Labeling and Packaging	Major (Core)	2	50
6.4	Food Analysis (Practical)	Major (Elective)	4	100
6.5	Nutrition for Wellness	Minor Stream	4	100
6.6	Internship	OJT	4	100
			22	**550**
		TOTAL	**44**	**1100**
***B.Sc. in* Food Science & Nutrition**			**132**	**3300**

Course Syllabus

Semester I

1.1 Major (Core)Course Title	Basics of Food Science
Course Credits	4
Theory – Practical Internal - External	**Theory** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1.Elaborate on the composition of foods and the changes occurring in them during food preparation and storage
	2. Outline the reasons for positive and negative changes in foods
	3.Choose the right techniques to plan recipes of high-quality products acceptable to consumers
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Elaborate on the importance of Sensory evaluation, Compare and differentiate between different sensory evaluation Techniques
	2. Describe role of water in food preparation, forms of water in food and types of water

Content Outline	• **Sensory characteristics of food** • Importance and objectives of Sensory evaluation and its Prerequisites • Tests for Sensory Evaluation**:** Sensitivity Threshold test Difference test – paired comparison, triangle and Duo-trio test, Rating test – Hedonic, Numerical, Composite scoring and ranking test • **Water:** Role of water in cookery, Forms of water – Bound and free water. Types: Hard and Soft • **Beverages:** Types and Classification.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to themodule. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Elaborate on the composition of Cereals, Pulses & Legumes, Vegetables and Fruits .
	2. Identify the changes occurring in the food components and justify their Application in food preparation
Content Outline	• **Cereals:** Structure and composition of a cereal grain, Properties of starch – Thickening and Gelatinization, Gel Formation, syneresis, Retrogradation and Lump formation, Dextrinization, Identity of grains, Gluten formation – Factors affecting Gluten formation. • **Leavening agents:** Natural and Chemical agents and their action. • **Pulses and legumes**: Composition, anti-nutritional factors, effects, effect of soaking, fermentation and germination, • **Vegetable and Fruits:** Composition, color pigments and effect of cooking on them. Pectic forms – Pectin, Protopectin, Pectic acid, Pectinic acid. Theory of gel formation, Vegetables gums and their commercial uses.
Module 3 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Describe the composition of Milk, Egg, Meat, Fish, Poultry
	2. Identify the changes occurring in the food components and justify their application in food preparation

Content Outline	• **Milk:** Composition, effect of heat, acid, alkali and enzymes on milk, scum formation, maillard reaction • **Egg:** Structure and composition of egg, protein in egg White and Egg Yolk, Methods to judge Egg quality (grading) Physical and chemical changes during egg storage, foams**, r**ole of egg in Cookery, methods of cooking egg. • **Meat, Fish and Poultry-**Composition, Structure, post mortem changes, ripening or ageing of meat, tenderization of meat, changes during meat cooking. • **Fish**: Classification, quality indicators of fish, types of fish spoilage, gelatin, and Fish Protein Concentrate (FPC). •
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Define the functional properties and role of fats and oils and sugars in food preparation
	2.Examine the reasons for spoilage of fats and methods to prevent it
Content Outline	• **Fats and Oils** Physical properties – plasticity, smoke point, flash point, Functional role of fats – flavor, texture, tenderness, emulsification, shortening and leavening effects. Emulsions- Types and applications Fat Spoilage – rancidity and its prevention. Antioxidants flavor reversion. Fat absorption and factors affecting it • **Sugars** Types of Sugars Stages of Sugar cookery and application. Physical Properties-crystalline, amorphous

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. Market Survey and discussion on Types of Beverages
2. Market Survey and discussion on Types of Minimally processed cereal, Pulses/Legumes and Vegetable
3. Market Survey and discussion on Types of Milk, Milk products
4. Market Survey and discussion on Types of Fats, Oils and Sugars

Bibliography

- Srilakshmi, B: (2019) Food Science, 8th Edition, New Age International Pvt Ltd Publishers
- Shadaksharaswamy, M, Manay, S, (2020): Food facts and Principles, 4th Edition, New Age International Publishers
- Bennion, M. Scheule, B.: (2014): Introductory Foods,14th Edition, Prentice Hall Publications
- Manay, S. (2020) Foods Facts and Principles, 4th Edition, New Age International Pvt Ltd Publishers

- Subbulakshmi, G, Udipi, S. A (2021): Food processing and Preservation, 2nd Edition, New Age International Pvt Ltd Publishers
- Potter, N. N., Hotchkiss J. H: (1999), Food Science, 5th Edition, Springer Publications
- Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers

SNDTWU May 2023 BSc FSN Programme

1.2 Major (Core)

Course Title	**Basics of Food Science**
Course Credits	**2**
Theory – Practical **Internal - External**	**Practical** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1. **Outline and Examine the nature and composition of food ingredients**
	2. **Demonstrate the interplay of ingredients during food preparation**
	3. **Utilize different ingredients in food preparation to create products and Assess them using appropriate sensory evaluation tests.**

Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Conduct a variety of Sensory evaluation tests
	2. Observe the changes in sugar and starch in cereals/pulses and vegetables during food Preparation
Content Outline	• **Tests for Sensory Evaluation** Sensitivity Threshold test Difference test – paired comparison, triangle and Duo-trio test scoring and ranking test. • **Sugar and Starch Cookery** Preparation of sugar syrups; stages of sugar cookery and its practical application. Stiffness of starch gel and factors affecting it. Factors affecting gluten formation i.e. kneading time, types of cereal and flours, effect of amount of fat etc. • **Vegetable Cookery** Changes in colour pigments due to heat,acid and alkali
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Develop recipes demonstrating the shortening effect and factors affecting fat absorption
	2.Prepare milk products and plan recipes demonstrating the functional properties of eggs
Content Outline	• **Fat** Cookery- Shortening effect and factors affecting fat absorption. • **Milk Cookery**- Paneer, Maillard Reaction • **Egg Cookery**- Role of Egg – Boiled,omelette, French toast, mayonnaise etc.

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. Project on home production of Curds and Cream
2. Project on home production of Butter and Ghee

Bibliography

- Srilakshmi, B: (2019) Food Science, 8th Edition, New Age International Pvt Ltd Publishers
- Shadaksharaswamy, M, Manay, S, (2020): Food facts and Principles, 4th Edition, New Age International Publishers

- Bennion, M. Scheule, B.: (2014): Introductory Foods,14th Edition, Prentice Hall Publications
- Manay, S. (2020) Foods Facts and Principles, 4th Edition, New Age International Pvt Ltd Publishers
- Subbulakshmi, G, Udipi, S. A (2021): Food processing and Preservation, 2nd Edition, New Age International Pvt Ltd Publishers
- Potter, N. N., Hotchkiss J. H: (1999), Food Science, 5th Edition, Springer Publications
- Freeland-Graves, J., Peckham, G. C, (1995): Foundations of Food Preparation (6th Edition), Prentice Hall Publishers

SNDTWU May 2023 BSc FSN Programme

1.3 OPEN ELECTIVE (NOT NECESSARY FROM MAJOR)

Course Title	Applied Science
Course Credits	4
Theory – Practical **Internal - External**	**2 +2** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1.Acquire the basic knowledge of the fundamentals of biological sciences.
	2. Apply the knowledge of the biological processes to nutrition and health.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Identify and Differentiate between cells
	2.Comprehend Genetics and it's application

Content Outline	**Cell** • As the basic unit of life • Types of cells • Salient features of animal cell **Introduction to Micro-organisms** • Bacteria-Structure, Classification based on response to Oxygen, nutrition, Importance of bacteria • Fungi- Morphology of molds and yeasts, classification, beneficial and harmful aspects • Virus- Morphology, Classification based on nucleic acid content and hosts **Genetics and Heredity** • Origin of the term gene • Chemical basis of heredity- organization of human genome, sex determination, monogenic and polygenic traits, patterns of inheritance- autosomal, recessive and sex-linked inheritance • Mutation and its type, abnormalities in chromosome number **Genetic Engineering and Biotechnology** • Definition of the terms • Methodology of gene cloning-in brief Application of genetic engineering in plants- insects & virus resistant plants, plants with improved characters. Application in human medicine- pharmaceuticals, thallessemia oncogenes, interferon, production of growth hormone, human insulin ELISA.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Differentiate between Functional groups and Organic & Inorganic compounds
	2.Comprehend Drugs and types of drugs
Content Outline	**Review of Basic Chemistry** • Important definitions • Difference between Organic & Inorganic compounds • Functional groups • Bohr's model of atom • Atomic number & electronic configuration **Drugs and Pharmaceuticals** • Properties of good drug • Meaning of important terms with e.g. Analgesic, Antipyretic, Antacid, Antibiotic, Diuretic, anti-inflammatory, Laxatives, Sulfa drugs • Common drugs- use and side effects of Aspirin, Paracetamol, Sulphanilamide
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module e.g. Define, differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1) Have knowledge of various micro-organisms 2) Have the required skills to study them.

Content Outline	•**Applied Biology** • Study and care of microscope • Observation of motility of bacteria by Hanging drop method (*E.coli* / *Proteus*) • Observation of bacteria by the simple: monochrome staining method (Hay infusion culture or milk) • Gram staining of bacteria in buttermilk • To observe common pathogenic bacteria (any 6 – permanent slides) • Observation of fungi on different food materials • To observe common pathogenic protozoa (permanent slides of *Entamoeba histolytica* and *Plasmodium vivax*) • Study of medicinally important plants
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Work systematically in laboratory.
	2.Perform chemical procedures
Content Outline	• **Applied Chemistry** • Introduction to chemistry lab & apparatus. • Neutralization of strong acid with strong base (HCl & NaOH) • Neutralization of weak base with strong acid (Na_2CO_3& H_2SO_4) • Neutralization of weak acid with strong base (Oxalic acid & NaOH) • Oxidation- reduction reaction (Oxalic acid & $KMnO_4$) • pH determination of various solutions: acid, base and neutral (two household example for each) Viscosity measurement: water, oil, shampoo by Oswald's viscometer

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. Performing experiment
2. Journal Maintenance
3. Project on Medicinal Plants

Bibliography

- George A. (2017): Shreve's Chemical Process Industries, 5th Edition
- Glazer A. Na Ni Baido H (2017) Microbial Biotechnology, 2nd Edition; W.H. Freemen Company.
- K. Venkatraman (1952): The Chemistry of Synthetic Dyes, Vol. I, Academic Press, New York.
- Kent S.A. (2003): Riegel's Handbook of Industrial Chemistry, 10th Edition
- Loewy A. and Sckevilz (2017) Cell Structure and Functions, Hold, New-York
- Nicholl D.S.T. (2008) An Introduction to Genetic Engineering, 3rd Edition, Cambridge University, Press.
- Pelczar N.S, Chan F.C.S. Krieg N.R.(1998) Microbiology, Tata Mc Grow Hill.
- Person D. (1983): The Chemical Analysis of Food, Churchill Livingstone, Edunburgh, London, New York.

- Porter K.R., Bonnevile M.A. (1973) Fine Structure of Cells and Tissues,**Lea& Blanchard, Philadelphia.**
- Prof. V. A. Shenal (1991): Introduction to the Chemistry of Dyestuffs, sevsk Publications.
- Rao C.V. (1994) Foundation to Mol. Biol, R. Chenda. Co. Publisher
- Thomsen E.G. (1985): Modern Cosmetics Universal publishing corp
- Zhdanov L.S. (1980): Physics for the Technician, MIR Publications. Moscow.

1.4 VOCATIONAL SKILL COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	11.
	12.
	13.
	14.
	15.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	5.
	6.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	13.
	14.

Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

SNDTWU May 2023 BSc FSN Programme

1.5 SKILL ENHANCEMENT COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	16.
	17.
	18.
	19.
	20.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	7.
	8.

Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	15.
	16.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

SNDTWU May 2023 BSc FSN Programme

1.6 ABILITY ENHANCEMENT COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	21.
	22.
	23.

	24.
	25.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	9.
	10.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	17.
	18.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

1.7 INDIAN KNOWLEDGE SYSTEM COURSE

Course Title	**Cuisines of India**
Course Credits	2

Theory – Practical **Internal - External**	**Theory** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1.To identify the different cuisines of India
	2.To categorize regionally the various preparations.
	3. To categorize seasonally the various preparations
	4.To be aware of differences in use of various ingredients used in regional cuisines of India.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Become Familiar with the cuisines of the western and northern regions of India
	2. Become aware of various seasonal and festival preparations of the western and northern regions of India
Content Outline	• **Western Cuisine**: Cuisines of Maharashtra, Gujarat, Rajasthan • **North Indian Cuisine**: Cuisines of Jammu and Kashmir, Punjab, Uttar Pradeshand Madhya Pradesh
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Become Familiar with the cuisines of the Eastern and Southern regions of India
	2. Become aware of various seasonal and festival preparations of the western and northern regions of India
Content Outline	• **Southern India Cuisine**: Cuisines of Karnataka, Andhra Pradesh, Tamil Nadu and Kerala • **Eastern India Cuisine**: Cuisines of Bengal, Orissa, Assam

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

Projects on collating recipes from the students respective regions

Bibliography:

- Patil V (1992), 'Food Heritage of India: A collection of Unusual Recipes from every corner of India, pp:123-147, Vakil & sons ltd Bombay Print.
- Nambiar, Vanisha (2021) *Indian Food Anthropology and the Eat Right Movement Volume I*. Selective and Scientific books
- Chitra P,(1989) *Foods of Earth Tastes of Heaven: Vegetarian Cuisine of Gujrath*Prairie Web Press
- Dalal T, 'The complete Gujarati Cook Book'
- Philip T (1978), *'Indian Cuisine'*, Ministry of Information and Broadcasting Government of India: 14-15.
- Shenoy, Jaya, (1989*)'Dakshin Bharat'*. SaraswathaPrakashana
- Cookery Books of Tarla Dalal.
- Cookery Books of Nita Mehta.
- Food Magazines

SNDTWU May 2023 BSc FSN Programme

1.8 VALUE EDUCATION COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	31.
	32.
	33.
	34.
	35.

Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	13.
	14.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	21.
	22.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

1.9 CO-CURRICULAR COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	

Course Outcomes	After going through the course, learners will be able to
	36.
	37.
	38.
	39.
	40.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	15.
	16.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	23.
	24.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

➔

UG Structures and First Year Syllabi of Food Science & Nutrition were approved in the Academic Council of 22-11-2023.

UG Structures and First Year Syllabi of Food Science & Nutrition were approved in the Academic Council of 22-11-2023.

References

Semester II

2.1 Major (Core)

Course Title	**Basics of Nutrition**
Course Credits	4
Theory – Practical **Internal - External**	**Theory** **Internal**
Course Outcomes	After studying the subject, students will be able to
	1. Define basic nutrition concepts and terminologies
	2. Know the types of nutrients available from food
	3.Understand the concept of serving size and balanced diet
	4.Comprehend the contribution of macronutrients and micronutrients to health
	5.Understand the application of basic nutrition knowledge while making food choices to plan a balanced diet
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Explain basic concepts in nutrition
	2. Outline the six types of nutrients present in food
Content Outline	•Definition of Health, Nutrition, Nutrients, Food, Estimated Average Requirements (EAR), Balanced Diet, Recommended Dietary Allowances (RDA), Tolerable Upper Limit (TUL), Malnutrition (Undernutrition, Overnutrition, Optimum nutrition). • Introduction to the nutrients present in food, namely, Carbohydrates, Proteins, Fats, Vitamins, Minerals & Water.
Module 2 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to

(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)	1. Identify the sources and Elaborate on the functions of water, and the Macronutrients available from food.
	2. Understand the conditions resulting from deficiencies and excess consumption of water and macronutrients.
Content Outline	Sources, Functions, Effects of Deficiencies and Excessive Consumption of • Carbohydrates • Proteins • Fats • Water
Module 3 (Credit 1)	

Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Identify the sources and functions of the Vitamins (Fat-soluble & Water-soluble) available from food.
	2. Understand the conditions resulting from deficiencies and excess consumption Vitamins (Fat-soluble & Water-soluble) available from food.
Content Outline	Sources, Functions, Effects of Deficiencies and Excessive Consumption of • Fat-Soluble Vitamins (Vitamins A, D, E & K) • Water-Soluble Vitamins (Vitamins B1, B2, B3, B6, B9, B12)
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Identify the sources and functions of the Minerals (Macrominerals and Microminerals) available from food.
	2. Understand the conditions resulting from deficiencies and excess consumption Minerals (Macrominerals and Microminerals) available from food.
Content Outline	Sources, Functions, Effects of Deficiencies and Excessive Consumption of • Macrominerals (Calcium & Phosphorus) • Microminerals (Iron, Iodine, Selenium, Zinc)

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

➔ Individual or group projects on classifying food items based on their main nutrients

➔ Individual or group projects on clinical signs of nutrients deficiencies and toxicities

Bibliography:

- Mudambi, S.R. and Rajgopal, M.V**. (**2020), *Fundamentals of Foods, Nutrition and Diet Therapy*, New Age International Pvt. Ltd.
- Joshi, S (2021), *Nutrition and Dietetics* (5th Edition),McGraw Hill.
- Bamji, M.S. (2019), *Textbook of Human Nutrition* (4th Edition)**,** Oxford.
- Agarwal, A and Udipi, S. A. (2022). *Textbook of Human Nutrition* (2nd Edition), Jaypee Brothers Medical Publishers (P).

1. SNDTWU **2.2 Major (Core)**

Course Title	**Basics of Nutrition**
Course Credits	**2**
Theory – Practical **Internal - External**	**Practical** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1.Relate weight and measures of raw foods with cooked amounts

	2. Understand the concept of standardization of basic recipes (serving size and portion size)
	3. Identify and list food sources of various nutrients
	4. Develop and prepare recipes using rich sources on nutrients
	5. Develop and prepare multi-nutrient rich recipes to improve dietary nutrient adequacy
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Identify and Summarize weights and measures of raw and cooked food items
	2. Understand and demonstrate the concept of standardization of recipes (serving size, portion size)
Content Outline	• Weights and measures of cereals, millets, pulses, milk, milk products, eggs, fruits and vegetables. • Standardization of basic recipes.
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Identify and select recipes and calculate nutrients in single serving
	2. Apply the principles of nutrition to the optimize nutrient content in the recipe
Content Outline	**Identification, selection and preparation of Recipes for One Serving:** - Energy: high and low calorie - Proteins - Vitamin A - Vitamin C - B- complex vitamins - Calcium - Iron

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. Individual assignments on collating pictures of rich sources of various nutrients
2. Individual assignments on planning multi-nutrient recipes to improve nutrient density of commonly consumed recipes

Bibliography:

- Mudambi, S.R. and Rajgopal, M.V**. (**2020), *Fundamentals of Foods, Nutrition and Diet Therapy*, New Age

International Pvt. Ltd.

- Joshi, S (2021), *Nutrition and Dietetics* (5th Edition),McGraw Hill.

- Bamji, M.S. (2019), *Textbook of Human Nutrition* (4th Edition)**,** Oxford

- Agarwal, A. and Udipi, S. A. (2022), *Textbook of Human Nutrition* (2nd Edition), Jaypee Brothers Medical Publishers (P).

SNDTWU May 2023 BSc FSN Programme

2.3 MINOR

Course Title	Nutrition through Life Span
Course Credits	**2**
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	1. Define reference man and woman (2020).
	2. Understand the concept of food plate and translate the same into meal plans for themselves
	3. Comprehend the variation in nutritional needs which are food based depending on life stage
	4. Suggest adaptations in home based family meals for varying life stages
Module 1 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to

(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)	1.Create Meal plans based on My Plate Concept for themselves
	2.Comprehend the basics of Nutrition Labels
Content Outline	1. Food Guide/ Food Pyramid/My Plateand its use and Definition of Reference Man and Woman 2. Balanced diet using Food Plate Concept 3. Factors affecting meal planning 4. Use of nutrition labels to include healthful pre-packaged foods in diets
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1.Comprehend the importance of nutrition during pregnancy and lactation and suggest dietary modifications in a family diet
	2. Suggest dietary modifications in a family diet based on physiological changes during growth, development and ageing
Content Outline	Importance of balanced diets especially during pregnancy and lactation. Guidelines for nutrient dense foods, galactagogues, home based weaning foods, finger foods, packed meals, inclusion of protein foods, inclusion of micronutrient foods, water and restriction of salt, sugar and fats for all age groups.

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1.Market survey and discussion on Nutrition labels on Prepackaged foods
2.Presentations on Food Preparations for Various Age groups.

References

1. Dietary Guideline for Indians, A Manual (2011) NIN, Hyderabad.
2. Indian Food Composition Tables (2017), T. Longvah, R.Ananthan, K.Bhaskarachary, K.Venkaiah, NIN, Hyderabad.
3. My Plate for the Day (2020), ICMR-NIN
4. Textbook of Human Nutrition, 2nd Edition2022, (Late) Anjana Agarwal & Shobha A Udipi
5. Nutrition and Dietetics (2021) 5th Edition, Joshi, A Shubhangini, McGraw Hill Education India
6. Nutrition Requirements for Indians, A Report of the Expert Group,2020,ICMR-NIN,MoHFW

SNDTWU May 2023 BSc FSN Programme

2.4 OPEN ELECTIVE (NOT NECESSARY FROM MAJOR)

Course Title	**Human Physiology**

Course Credits	4
Theory – Practical **Internal - External**	**Theory & Practical** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1. Explain the basic concepts in human physiology
	2. Understand the association between human physiology and Nutrition
	3. Develop an understanding of the functioning of various systems of the human body
	4. Develop basic skills for first-aid and measuring and interpreting basic body parameters
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Elaborate on the basic concepts and terminologies used in human physiology
	2. Identify and discuss the relationship between human nutrition and physiology
Content Outline	• Introduction to Human Physiology: Skeletal, Circulatory, Respiratory, Gastrointestinal, Excretory, Nervous, Reproductive and Endocrine systems of the body • Physiology and Human Nutrition
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Elaborate on the functioning of the circulatory, immune, respiratory and excretory systems of the human body
	2. Understand basics of the mechanism by which the human body maintains homoeostasis (Body temperature, Fluid-Electrolyte and Acid-Base balance)

Content Outline	• The Circulatory system and functioning of the heart • The Immune System • The Respiratory System • The Excretory System • The Homoeostatic mechanisms of the human body
Module 3 (Credit 1)	
Learning Outcomes *(Specific related to the module..*	After learning the module, learners will be able to
	1. Elaborate on the functioning of the Gastrointestinal and Nervous systems of the human body
Define, Differentiate, Carry out, Design, etc. …)	2. Understand the functioning of the Endocrine and Reproductive Systems of the human body
Content Outline	•The Gastrointestinal System – Organs of the GI system and basic process of digestion, absorption, utilization of food in the human body • The Endocrine and Reproductive Systems of the human body
Module 4 (Credit 1)	
Learning Outcomes *(Specific related to the module..* *e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Develop basic first-aid skills, and learn the methods of measurement of body temperature and blood pressure
	2. Understand the basic interpretation of urine analysis and complete blood count parameters
Content Outline	• Contents of the First-Aid box and different types of bandages and bandaging techniques • First-aid for dehydration, heat-stroke, etc • Measurement of body temperature and blood pressure • Determination of blood groups, making of a peripheral blood smear, basic interpretation of urinary and CBC parameters.

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

1. .Quiz
2. Asignments
3. Individual measurement of body temperature, blood pressure, determination of blood group

Bibliography

- Guyton, A.C., Hall J.E.(2011) *Textbook of Medical Physiology.*12th ed. Saunder's Elsivier.
- Chaudhari. Sujit K., (2004) *Concise Medical Physiology*, 5th ed. New Central Book Agency, Calcutta.
- Kamath Sandhya A., *API Text Book of Medicine.* 11thed.TheAssociation of Physicians of India.
- Dutta, D.C.,(2016) *Textbook of Gynaecology*7th ed Jaypee BrothersMedical Publishers.

- Gordon Sears, Robert S. Winwood J. L. Smith Wilson -*Anatomy and Physiologyfor Nurses*.6th ed., The London Bookworm
- Nitin Ashok John.,(2022) *Human Physiology*.14th ed.CBS Publishers & Distributors Pvt.Ltd

SNDTWU May 2023 BSc FSN Programme

2.5 VOCATIONAL SKILL COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	51.
	52.
	53.
	54.
	55.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	21.
	22.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to

(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)	37.
	38.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

SNDTWU May 2023 BSc FSN Programme

2.6 SKILL ENHANCEMENT COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	56.
	57.
	58.
	59.
	60.
Module 1 (Credit 1)	
Learning Outcomes	After learning the module, learners will be able to

(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)	23.
	24.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	39.
	40.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

2.7 ABILITY ENHANCEMENT COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	61.

	62.
	63.
	64.
	65.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	25.
	26.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	41.
	42.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References

Course Title	**Cuisines of India**
Course Credits	2
Theory – Practical **Internal - External**	**Practical** **Internal**
Course Outcomes	After going through the course, learners will be able to
	1. Become familiar with use of various ingredients used in regional cuisines
	2. To prepare common recipes made in different regions of India
	3. To prepare various seasonal recipes made in different regions of India
	4. To prepare various festivals recipes made in different regions of India
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Prepare recipes from cuisines of the western and northern regions of India
	1. Prepare various seasonal and festival preparations of the western and northern regions of India
Content Outline	• Western Cuisine: Cuisines of Maharashtra, Gujarat, Rajasthan • North Indian Cuisine: Cuisines of Jammu and Kashmir, Punjab, Uttar Pradeshand Madhya Pradesh
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	1. Prepare recipes from cuisines of the Southern and Eastern regions of India
	2. Prepare various seasonal and festival preparations of the Southern and Western regions of India

Content Outline	• Southern India Cuisine: Cuisines of Karnataka, Andhra Pradesh, Tamil Nadu and Kerala •EasternIndia Cuisine: Cuisines of Bengal, Orissa, Assam

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE):

Projects on preparing recipes from the students respective regions

Bibliography

- Patil V (1992), 'Food Heritage of India: A collection of Unusual Recipes from every corner of India, pp:123-147, Vakil & sons ltd Bombay Print.
- Nambiar, Vanisha (2021) *Indian Food Anthropology and the Eat Right Movement Volume II*. Selective and Scientific books
- Chitra P,(1989) *Foods of Earth Tastes of Heaven: Vegetarian Cuisine of Gujrath*Prairie Web Press
- Dalal T, 'The complete Gujarati Cook Book'
- Philip T (1978), *'Indian Cuisine'*, Ministry of Information and Broadcasting Government of India: 14-15.
- Shenoy, Jaya, (1989*)'Dakshin Bharat'*. SaraswathaPrakashana
- Cookery Books of Tarla Dalal.
- Cookery Books of Nita Mehta.
- Food Magazines

SNDTWU May 2023 BSc FSN Programme

2.9 CO-CURRICULAR COURSE

Course Title	
Course Credits	2
Theory – Practical **Internal - External**	
Course Outcomes	After going through the course, learners will be able to
	71.
	72.
	73.

	74.
	75.
Module 1 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	29.
	30.
Content Outline	• ---- • ---- •
Module 2 (Credit 1)	
Learning Outcomes *(Specific related to the module.. e.g. Define, Differentiate, Carry out, Design, etc. …)*	After learning the module, learners will be able to
	45.
	46.
Content Outline	• ---- • ---- •

Assignments/Activities towards Comprehensive Continuous Evaluation (CCE)

References