Program and Course Structure

School of Allied Health Sciences
B.Sc.
(Nutrition and Dietetics)

Program code: SAH0105

Batch 2020-23

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

1. Transformative educational experience
2. Enrichment by educational initiatives that encourage global outlook
3. Develop research, support disruptive innovations and accelerate entrepreneurship
4. Seeking beyond boundaries

Core Values

- Integrity
- Leadership
- Diversity
- Community

1.2 Vision and Mission of the School

Vision of the SASH

To steer the School of Allied Health Sciences towards excellence in academics, innovation and entrepreneurship by constant endeavors.

Mission of the SASH

1. To create the state of the art facility for quality teaching learning, research & innovation
2. To incorporate the contemporary standards in teaching & learning
3. To inculcate in the students values of integrity and compassion towards the care of patients and society.

Core Values

- Skilled professional
- Multidimensional
- Compassion
- Management

1.3 Programme Educational Objectives (PEO)

PEO1: To impart knowledge and develop capacities of the students in Clinical Nutrition.

PEO2: To develop students to become health care professionals for services in various fields of clinical nutrition and related areas such as hospitals, academics, research, industry, community service.

PEO3: To enable them to pursue higher education and research in Clinical Nutrition and Food Science

PEO4: To enable the students to learn the methods of assessing human nutritional requirements, nutritional assessment and diet planning for the community.

1.3.2 Map PEOs with Mission Statements:

PEO Statements	School Mission 1	School Mission 2
PEO1:	**3**	**3**
PEO2:	**2**	**3**
PEO3:	**3**	**3**
PEO4:	**2**	**3**

Enter correlation levels 1, 2, or 3 as defined below:

1. Slight (Low)
2. 2. Moderate (Medium)
3. 3. Substantial (High)

1.3.3 Program Outcomes (PO's)

PO1: **Nutrition and Human body Knowledge:** Possess knowledge and comprehension of the core information associated with the profession of Dietetics, including food science, physiology and human anatomy, nutritional biochemistry, nutrition science, behavioural, social and planning diets for therapeutic conditions.

PO2: **Thinking Abilities:** Utilize the principles of scientific inquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyse, evaluate and apply information systematically and shall make defensible decisions.

PO3: **Environment and sustainability ability :** To understand the basic knowledge of environment and chemistry, its implications, and energy resource conservation.

PO4: **Communication:** Communicate effectively on complex nutritional activities with the community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentation and give receive clear instruction.

PO5: **Professional Identity and Planning abilities:** understand, analyse and communicate the value of their
professional roles in society as community worker, nutritional product developer,

PO6: **Nutritional Product Development:** develop nutritional rich products after analysing their nutritional and sensory qualities to increase nutritional status of population

PO7: **Ethics:** Apply ethical principles and commit to professional ethics and responsibility and norms of dietician practice

1.3.4 Mapping of Program Outcome Vs Program Educational Objectives

	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	3	3	2	3	2
PO2	3	2	3	3	3
PO3	3	3	3	3	2
PO4	3	3	3	2	3
PO5	3	2	2	3	3
PO6	2	3	3	3	2
PO7	3	3	3	3	3

1. Slight (Low)

2. Moderate (Medium)

3. Substantial (High)

1.3.5 Program Outcome Vs Courses Mapping Table[1]:

Program Outcome Courses	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7
Sem-1								
BND 106	Human Anatomy And Physiology -I	2	2	1	1	2	2	2
BND 119	Fundamentals Of Food And Nutrition-I	3	3	3	3	3	3	3
BND 108	Family Finance And Meal Management	2	3	3	3	3	2	2
BND120	Environmental Science	3	3	2	3	3	2	3
BND 110	General Psychology-I	2	2	3	2	2	3	2
BND118	English	3	2	2	2	2	2	2
Sem-2								
BND 111	Human Anatomy And Physiology -II	3	3	2	2	3	2	3
BND 121	Fundamentals Of Food And Nutrition-II	3	3	3	3	3	3	3
BND 122	Nutrition in Lifecycle	3	3	3	3	3	3	3
BND114	Psychology-II	2	3	3	3	3	3	2
BND117	Applied Chemistry	3	2	3	3	2	3	3
Sem-3								
BND 212	Food Science-I	3	3	3	3	3	3	3
BND 218	Basic Dietetics And Counselling -I	3	3	3	3	2	3	3
BND 209	Nutritional Biochemistry -I	3	3	3	3	3	3	3
BND 219	Food Safety	3	3	2	3	3	3	2
BND 220	Community Nutrition	3	3	3	3	3	3	3

[1] Cel value will contain the correlation value of respective course with PO.

Sem-4								
BND 213	Food Science-II	3	3	3	3	3	3	3
BND 214	Nutritional Biochemistry-II	3	3	3	3	3	3	3
BND 221	Basic Dietetics And Counselling -II	3	3	2	3	3	3	2
BND 216	Food Microbiology	3	2	2	3	3	3	2
BND 222	Textile and Clothing	3	3	3	3	3	3	3
Sem-5								
BND 311	Therapeutic Nutrition	3	3	3	3	3	3	3
BND 312	Preventive Nutrition	3	3	3	3	3	3	3
BND 313	Food Service Management-I	3	3	2	3	3	3	2
BND 355	Clinical Posting	3	2	2	3	3	3	2
BND 354	Community Posting	3	3	3	3	3	3	3
Sem-6								
BND 316	Advanced Therapeutic Nutrition	3	3	3	3	3	3	3
BND 317	Food Service Management-II	3	3	3	3	3	3	3
BND 318	Food preservation and Packaging	3	3	2	3	3	3	2
BND 361	Clinical Posting	3	3	3	3	3	3	3

1. Slight (Low) **2. Moderate (Medium)** **3. Substantial (High)**

Program Structure Template
School of Allied Health Sciences
B.Sc. (Nutrition and Dietetics)
Batch: 2020-23
TERM: I

S. No.	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course[2]: 1. CC 2. AECC 3. SEC 4. DSE
			L	T	P			
THEORY SUBJECTS								
1	BND 106	HUMAN ANATOMY AND PHYSIOLOGY -I	4	2	-	6	Core	CC,AECC
2	BND 119	FUNDAMENTALS OF FOOD AND NUTRITION	3	1	-	4	Core	CC,AECC,SEC
3	BND 108	FAMILY FINANCE AND MEAL MANAGEMENT	3	1	-	4	Core	CC,AECC
4	BND 120	ENVIROMENTAL SCIENCE	3	1	-	4	Core	CC,AECC,SEC
5	BND 110	GENERAL PSYCHOLOGY-I	3	1	-	4	Core	CC,AECC
6	BND 118	ENGLISH	2	1	-	3		SEC
Practical/Viva-Voce/Jury								
1.	BND 156	HUMAN ANATOMY AND PHYSIOLOGY-I	-	-	5	2	Core	CC,AECC
2.	BND 158	FUNDAMENTALS OF FOOD AND NUTRITION-I	-	-	2	1	Core	CC,AECC
3	BND159	ENGLISH (LAB)	-	-	2	1	Core	SEC
TOTAL CREDITS						**28**		

[2] CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses

Program Structure Template
School of Allied Health Sciences
B.Sc. (Nutrition and Dietetics)
Batch: 2020-23
TERM: II

S. No.	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course[3]: 1. CC 2. AECC 3. SEC 4. DSE
			L	T	P			
THEORY SUBJECTS								
1	BND 111	HUMAN ANATOMY AND PHYSIOLOGY -II	4	2	-	6	Core	CC,AECC
2	BND 121	FUNDAMENTALS OF FOOD AND NUTRITION-II	3	1	-	4	Core	CC,AECC
3	BND 122	NUTRITION IN LIFECYCLE	3	1	-	4	Core	CC,AECC
4	BND 117	APPLIED CHEMISTRY	3	1	-	4	Core	CC,AECC
5	BND 114	PSYCHOLOGY-II	3	1	-	4	Core	CC,AECC
Practical/Viva-Voce/Jury								
1	BND 151	HUMAN ANATOMY AND PHYSIOLOGY-II	-	-	5	2	Core	CC,AECC
2	BND 160	NUTRITION IN LIFECYCLE	-	-	5	2	Core	CC,AECC
TOTAL CREDITS							**26**	

[3] CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses

Program Structure Template
School of Allied Health Sciences
B.Sc. (Nutrition and Dietetics)
Batch: 2020-23
TERM: III

S. No.	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course[4]: 1. CC 2. AECC 3. SEC 4. DSE
			L	T	P			
THEORY SUBJECTS								
1	BND 212	FOOD SCIENCE-I	3	2	-	5	Core	CC,AECC
2	BND 218	BASIC DIETETICS AND COUNCELLING -I	3	1	-	4	Core	CC,AECC
3	BND 209	NUTRITIONAL BIOCHEMISTRY -I	2	1	-	3	Core	CC,AECC
4	BND 219	FOOD SAFETY	3	1	-	4	Core	CC,AECC
5	BND 220	COMMUNITY NUTRITION	3	2	-	4	Core	CC,AECC
Practical/Viva-Voce/Jury								
1	BND 257	FOOD SCIENCE-I	-	-	4	2	Core	CC,AECC
2	BND 263	BASIC DIETETICS AND COUNSELLING -II	-	-	5	2	Core	CC,AECC
3	BND 259	NUTRITIONAL BIOCHEMISTRY -I	-	-	2	1	Core	
TOTAL CREDITS							**25**	

[4] CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses

Program Structure Template
School of Allied Health Sciences
B.Sc. (Nutrition and Dietetics)
Batch: 2020-23
TERM: IV

S. No.	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course[5]: 1. CC 2. AECC 3. SEC 4. DSE
			L	T	P			
THEORY SUBJECTS								
1	BND-213	FOOD SCIENCE-II	4	1	-	5	Core	CC,AECC
2	BND-214	NUTRITIONAL BICHEMISTRY-II	2	1	-	3	Core	CC,AECC
3	BND-221	BASIC DIETETICS AND COUNCELLING -II	3	1	-	4	Core	CC,AECC
4	BND-216	FOOD MICROBIOLOGY	3	1	-	4	Core	CC,AECC
5	BND-222	TEXTILE AND CLOTHING	3	1	-	4	Core	CC,AECC
Practical/Viva-Voce/Jury								
1	BND 260	FOOD SCIENCE-II	-	-	5	2	Core	CC,AECC
2	BND 261	NUTRITIONAL BICHEMISTRY-II	-	-	2	1	Core	CC,AECC
3	BND 262	FOOD MICROBIOLOGY			5	2	Core	CC,AECC
TOTAL CREDITS							**26**	

[5] CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses

Program Structure Template
School of Allied Health Sciences
B.Sc. (Nutrition and Dietetics)
Batch: 2020-23
TERM: V

S. No.	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course[6]: 1. CC 2. AECC 3. SEC 4. DSE
			L	T	P			
THEORY SUBJECTS								
1	BND 311	THERAPEUTIC NUTRITION	4	2	-	6	Core	CC,AECC
2	BND 312	PREVENTIVE NUTRITION	3	1	-	4	Core	CC,AECC
3	BND 313	FOOD SERVICE MANGEMENT-I	3	1	-	4	Core	CC,AECC
Practical/Viva-Voce/Jury								
1	BND 356	THERAPEUTIC NUTRITION	-	-	5	2	Core	CC,AECC
2	BND 357	FOOD SERVICE MANAGEMENT-I	-	-	5	2	Core	CC,AECC
3	BND 354	COMMUNITY POSTING	-	-	9	5		
4	BND 355	CLINICAL POSTING	-	-	9	5		
TOTAL CREDITS							**26**	

[6] CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses

Program Structure Template
School of Allied Health Sciences
B.Sc. (Nutrition and Dietetics)
Batch: 2020-23
TERM: VI

S. No.	Subject Code	Subjects	Teaching Load			Credits	Core/Elective Pre-Requisite/ Co Requisite	Type of Course[7]: 1. CC 2. AECC 3. SEC 4. DSE
			L	T	P			
THEORY SUBJECTS								
1	BND 316	ADVANCED THERAPEUTIC NUTRITION	3	2	-	5	Core	CC,AECC
2	BND 317	FOOD SERVICE MANGEMENT-II	3	2	-	5	Core	CC,AECC
3	BND 318	FOOD PRESERVATION AND PACKAGING	3	1	-	4	Core	CC,AECC
Practical/Viva-Voce/Jury								
1	BND 360	ADVANCED THERAPEUTIC NUTRITION	-	-	2	1	Core	CC,AECC
2	BND 359	FOOD SERVICE MANGEMENT-II	-	-	2	1	Core	CC,AECC
3	BND 358	FOOD PRESERVATION AND PACKAGING	-	-	5	2	Core	CC
4	BND 361	CLINICAL POSTING	-	-	10	5	core	CC
TOTAL CREDITS						**23**		

[7] CC: Core Course, AECC: Ability Enhancement Compulsory Courses, SEC: Skill Enhancement Courses, DSE: Discipline Specific Courses

Course Templates

Theory Subjects

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2020-2021**	
Branch:		**Semester:** 1st Semester	
1	Course Code	BND 106	
2	Course Title	Human Anatomy and Physiology-I	
3	Credits	6	
4	Contact Hours (L-T-P)	4-2-0	
	Course Type	Compulsory	
5	Course Objective	To understand the normal structure and functioning of various organ systems of the body and their interactions and to be able to comprehend the pathophysiology of commonly occurring diseases	
6	Course Outcomes	CO1:Understand the current state of knowledge about the functional organization of the human body. CO2: Describe insight of normal functioning of all the organ systems of the body and their interactions. CO3: State the pathophysiology of commonly occurring diseases. CO4: Identify physiology with various disorders and their pathogenesis. CO5: To understand the defence mechanism of human body	
7	Course Description	The course in Physiology and Anatomy cover the first year is designed to give the students a depth knowledge of fundamental functions of different systems of human body. The major topics to be covered include the following: the cell, muscle& nervous tissue; blood; lymphoid tissues; respiratory system; blood vessels; circulation; heart; gastro intestinal tract; endocrine & Reproductive system, excretory system, central nervous system and special senses.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Component of cell**	
	A	Components of cell, functions of cell organelles, transport across cell membrane, intercellular communication and body fluids , homeostasis & membrane potential. Cell structure, Tissues – structure and functions of various types of tissues.	CO1
	B	Structure , functions &classification of nerve tissues, physiological properties of nerve and nerve impulse & neuroglia	CO1
	C	Neuromuscular junction, Difference between skeletal muscle, smooth muscle & cardiac muscle.	CO1
	Unit 2	**Composition and functions of blood**	

	A	Composition & functions of blood, plasma proteins, blood volume & haemoglobin.				CO2
	B	Erythrocytes, jaundice, leucocytes & platelets. Blood coagulation, blood groups, blood transfusion, Rh factor, Haematocrit value, ESR, Lymph , RE system & immunity				CO1, CO3
	C	Blood coagulation, blood groups, blood transfusion, Rh factor, Haematocrit value, ESR, Lymph , RE system & immunity Bones and muscles anatomy				CO2
	Unit 3	**Circulatory System**				
	A	Cardiac Muscle , physiological anatomy of the heart & blood vessels, cardiac cycle.				CO3
	B	Conducting system of heart, Heart sounds & ECG Heart Rate, Cardiac Output, Blood Pressure & Pulse.				CO3
	C	Heart- structure and blood vessels				CO3
	Unit 4	**Respiratory System**				
	A	Physiological anatomy & functions of respiratory system , airways, dead space, graph of lung volume & capacities				CO4
	B	Transport of Gases				CO4
	C	Regulation of respiration & Hypoxia. Basic anatomy of respiratory system.				CO4
	Unit 5	**Digestive system**				
	A	Physiological anatomy and functions of GIT, Saliva , Mouth & Oesophagus.				CO5
	B	Stomach, Pancreas, Liver & Gall Bladder. digestive juices and their functions				CO5
	C	Small Intestine , Large Intestine , Digestion and Absorption in GIT.				CO5
	Mode of examination	Theory				
	Weightage Distribution	**CA**	**MTE**	**ETE**		
		30%	20%	50%		
	Text book/s*	• Text book of physiology- A.K. Jain • Essentials of medical physiology- K.Sembulingam				

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO106.1	3	2	1	1	2	2	1
CO106.2	3	2	1	2	2	2	1

CO106.3	3	2	1	1	2	2	1
CO106.4	3	3	1	1	1	1	2
CO106.5	3	2	1	1	2	1	1

Theory Subjects

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2020-2021**
Branch:		**Semester:** 1st Semester
1	Course Code	BND 119
2	Course Title	Fundamentals of Food and Nutrition-I

3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Type	Compulsory	
5	Course Objective	To understand the basic knowledge of food chemistry, nutritive value of different foods , and role of macronutrient for energy contribution in body.	
6	Course Outcomes	CO1:Understand the basic concept of nutrients CO2: Understand the food guide pyramid and food groups CO3: Knowledge of basic nutrients and their functions. CO4: Understand the role of micronutrients in human body CO5: To understand the concept of malnutrition and different deficiency diseases.	
7	Course Description	The course "Fundamentals of Food and Nutrition" aims at developing basic understanding about nutrition, its effect on human health and newer advances in food technology. This course encompasses physiological, biochemical and social aspects of food and discusses relationship between metabolites and human health. Moreover, the course is focused on the advances in the most emerging area of applied science of Nutraceuticals (where food is the medicine). The knowledge of nutrition under extreme climate conditions, space nutrition, and sports nutrition empowers students' knowledge and skills to utilize food as a powerful tool for physical, mental, and social wellbeing.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Introduction to Nutrition**	
	A	Introduction to nutrition -Food as source of nutrients, functions of food, definition of nutrition, nutrients & energy, adequate, optimum & good nutrition, malnutrition.	CO 1
	B	Basic definition, function, classification and dietary sources of foods, nutrition and dietetics	CO1
	C	Concept of malnutrition, health, immunity by food and functions of food	CO1
	Unit 2	**Food Guide**	
	A	Food guide - Basic five food groups. How to use food guide (according to R.D.A.) Interrelationship between nutrition & health: - Visible symptoms of goods health	CO2
	B	Use of food in body-Digestion, absorption , transport and utilization	CO2
	C	Role of enzymes and hormones in digestion	CO2
	Unit 3	**Carbohydrates**	
	A	Carbohydrates: classification, food sources, storage in body.	CO3

	B	Carbohydrate: digestion and absorption				CO3
	C	Carbohydrate: Health Effects Regulation of the blood glucose level				CO3
	Unit 4	**Lipids**				
	A	Lipids : Classification, health benefits of lipids				CO4
	B	Lipids: Digestion, Absorption and transport				CO4
	C	Lipids: Role in body Lipids in food				CO3
	Unit 5	**Proteins**				
	A	Proteins : Classification and its role in body Proteins in Food				CO3
	B	Proteins: Digestion, Absorption and transport				CO4
	C	Protein Quality Evaluation Health effects of Proteins				CO3
	Mode of examination	Theory				
	Weightage Distribution	**CA**	**MTE**	**ETE**		
		30%	20%	50%		
	Text Book	• Nutrition Science- B.Srilakshmi • Text of Human Nutrition-Anjana Agarwal, Shobha Agarwal				

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO119.1	3	2	1	1	2	2	2
CO119.2	3	2	1	2	3	2	3
CO119.3	2	3	2	1	3	2	3
CO119.4	3	3	1	1	1	1	3
CO119.5	3	2	1	1	3	1	2

1-Slight (Low)
2-Moderate (Medium)
3-Substantial (High)

Theory Subjects

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2020-2021**
Branch:		**Semester:** 1st Semester
1	Course Code	BND 120
2	Course Title	Environmental Science
3	Credits	3
4	Contact Hours (L-T-P)	2-1
	Course Type	Compulsory
5	Course Objective	To understand the basic knowledge of environment and chemistry, its implications, and energy resource conservation.

6	Course Outcomes	CO1: Knowledge of environmental science and chemistry. CO2: Understand about atmosphere and its importance. CO3: Knowledge of energy and resource conservation CO4: Understand how environmental pollution effect the health CO5: know different instrumental techniques.	
7	Course Description	The goal of the **Environmental Science course** is to provide you with the **scientific** principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyse **environmental** problems both natural and human-made.	
8	**Outline syllabus**		CO Mapping
	Unit 1		
	A	Environmental Sciences – Relevance, Significance, Public awareness, Forest resources, Water resources, Mineral resources, Food resources. Ecosystem – concept, structure and function Biodiversity – Definition, genetic, species and ecosystem diversity, Values and uses of biodiversity	CO 1
	B	Definition of Environmental Chemistry- Concept and Scope of Environmental Chemistry, Definition and description of various terms -Contaminant, Pollutant, Sink, Aerosols, RSPM, Particulate matter, DO, COD, BOD, Toxicology, Toxins, Hazardous chemicals, Carcinogens, Sewage, Affluent, Effluents, Potability etc.	CO1
	C	Bio-geo chemical cycles in the environment: Carbon cycles, Oxygen cycle, Nitrogen cycles , Phosphorus cycles and Sulphur cycles. Chemistry of ozone layer, Ozone depletion - Causes and effects, Greenhouse effect, Major greenhouse gases- Causes and effects, Global warming; Acid rain- Causes and effects.	CO1
	Unit 2		
	A	Chemical composition of atmosphere- atmospheric water and CO2; ions and radicals in atmosphere, formation of particulate matter	CO2
	B	Photo-chemical and chemical reactions in the atmosphere, thermal inversion, particles in atmosphere,	CO2
	C	photochemical smog, acid rain, chemistry of ozone layer depletion; greenhouse gases and global warming.	CO2

	Unit 3					
	A	Renewable and non-renewable energy resources, growing energy need, sun as source of energy, solar radiation and its spectral characteristics, fossil fuels classification, composition. Physico-chemical characteristics and energy content of coal, petroleum and natural gas				CO3
	B	Principle of generation and conservation of conventional and non-conventional energy				CO3
	C	Energy from biomass and biogas, anaerobic digestion, energy use pattern and future need projection in different parts of the world, energy conservation policies.				CO3
	Unit 4					
	A	Environmental Pollution, Types and major sources of air pollutants, effects of air pollutants on physico-chemical and biological properties surrounding atmosphere, air borne diseases and their effects on health.				CO4
	B	Types and major sources of water pollutants, effects of water pollutants on physico-chemical and biological properties of water bodies, water borne diseases with special reference to water pollution.				CO4
	C	Major sources of noise pollution, effects of noise pollution on health, noise level standard in industrial, commercial, residential and silence zones. Radioactive and thermal pollution sources and their effects on surrounding environment. Solid waste disposal and its effects on surrounding environment.				CO3
	Unit 5					
	A	Basic principle of Instrumentation and application				CO5
	B	Spectrophotometer – photometric laws				CO5
	C	Application of pH, conductivity meter and turbidity meter.				CO5
	Mode of Examination	Theory				
	Weightage Distribution	CA	MTE	ETE		
		30%	20%	50%		
	Text Book	• Agarwal, K.C.2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. • Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd. , Ahmedabad — 380 013, India, Email: mapin@icenet.net • Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill				

		lnc.480p 4. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO120.1	2	2	3	2	2	2	2
CO120.2	1	1	3	2	1	2	2
CO120.3	2	2	3	1	2	2	2
CO120.4	1	2	3	2	2	2	2
CO120.5	3	2	3	1	3	1	1

Theory Subjects

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2020-21**	
Branch:		**Semester:** 1st Semester	
1	Course Code	BND 108	
2	Course Title	Family Finance and Meal Management	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Type	Compulsory	
5	Course Objective	To understand family values, income and imparting knowledge and skills needed to effectively manage recourses.	
6	Course Outcomes	CO1: Understand concept of family income and expenditure CO2: Knowledge of first aid CO3: Knowledge of basic principles of meal planning CO4: Understand different principles of resource management CO5: understand concept of consumer aid.	
7	Course Description	Develop a philosophy of why **meal** preparation and consumption at the **family** table is an important component in development and stability of **families**. Plan attractive **meals** with consideration for nutritional adequacy, income level, social, cultural, psychological, palatability, and aesthetic factors.	
8	**Outline syllabus**		**CO Mapping**
	Unit 1	**Concept of family and family income**	
	A	Concept of family income, meaning of household records. Money management: Types of income - management process applicable to money - planning, controlling and evaluating	CO 1

	B	Meaning of saving need of saving, benefits of saving hearing of investment, methods of investment	CO1
	C	Meaning of saving need of saving, benefits of saving hearing of investment, methods of investment	CO1
	Unit 2	**Family Values**	
	A	Family values - Components, structure and responsibilities of family - Neutralization of anger	CO2
	B	Threats of family life - Status of women in family and society	CO2
	C	Caring for needy and elderly - Time allotment for sharing ideas and concerns.	CO2
	Unit 3	**Meal Planning**	
	A	Meal Planning, Importance of meal planning	CO3
	B	Planning meal for family	CO3
	C	Meal modification for special conditions.	CO3
	Unit 4	**Recourse Management**	
	A	PRINCIPLES OF RESOURCE MANAGEMENT Definition, Management Process - planning, controlling evaluating goals, values and standards.	CO4
	B	Decision making: concepts, types of decisions, steps in decision making, methods of resolving conflicts. Resource Management - Classification, characteristics, factors affecting the use of resources.	CO4
	C	Time management - Time norms, plans and time management. Energy management - Fatigue - types and causes of fatigue - principles and techniques Mundel's class of changes - work simplification	CO3
	Unit 5	**Consumer Education**	
	A	**Consumer Education –** Definition of consumer, problem faced by consumer, importance of consumer of education, rights & responsibility of consumer.	CO5
	B	**Consumer Aids-** Different types of consumer aid	CO5
	C	Consumer Rights	CO5
	Mode of examination	Theory	
	Weightage Distribution	CA: 20% / MTE: 30% / ETE: 50%	
	Text Book	Text Book of Home Science- Asha Das, Puja Gupta Text Book of Dietetics- B. Srilakshmi	

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO108.1	2	1	1	2	2	2	2
CO108.2	3	2	1	2	1	2	2
CO108.3	2	2	2	1	3	2	2
CO108.4	3	1	1	2	3	2	2
CO108.5	3	2	2	3	3	2	2

Theory Subjects

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2020-21**	
Branch:		**Semester:** 1st Semester	
1	Course Code	BND 110	
2	Course Title	General Psychology-I	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Type	Compulsory	
5	Course Objective	To help students understand the process of emotion and relating them to diverse contexts.	
6	Course Outcomes	CO1: Understand basic concept and definitions of Psychology CO2: Gain Knowledge of life span and its development CO3: Knowledge of sensation, attention and perception CO4: Understand theories of motivation CO5: Understand theories of frustration and conflict	
7	Course Description	This **course** provides a comprehensive **overview** of cognitive **psychology**, the scientific study of mental processes: how people acquire, store, transform, use, and communicate information. Topics may include perception, attention, language, memory, reasoning, problem solving, decision-making, and creativity.	
8	**Outline syllabus**		**CO Mapping**
	Unit 1	**Introduction to psychology**	
	A	Schools: Structuralism, functionalism, behaviourism, Psychoanalysis.	CO 1
	B	Methods: Introspection, observation, inventory and experimental Branches: Pure Psychology and Applied Psychology	CO1
	C	Psychology of patients and their counselling	CO1
	Unit 2	**Developmental stages**	
	A	Life span: Different developmental stages	CO2
	B	Heredity and environment	CO2
	C	Role of nature and its controversy	CO2

	Unit 3	**Sensation, attention and perception**				
	A	Sensation: Vision, Hearing, Olfactory, Gustatory and coetaneous sensation, movement and visceral sense				CO3
	B	Attention: types of attention, determinants of attention				CO3
	C	Perception: Gestalt principles of organization of perception, factors influencing perception Illusion and Hallucination: types				CO3
	Unit 4	**Motivation**				
	A	Motivation cycle				CO4
	B	Classification of Motives				CO4
	C	Abraham Maslow's theory of need hierarchy				CO3
	Unit 5	**Frustration and conflict**				
	A	**Frustration:** Sources of frustration				CO5
	B	**Conflict:** Types of conflict				CO5
	C	Management of frustration and conflict				CO5
	Mode of Examination	Theory				
	Weightage distribution	CA	MTE	ETE		
		20%	30%	50%		

POs Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO110.1	1	3	1	3	2	1	2
CO110.2	1	2	1	2	1	1	2
CO110.3	2	3	2	3	1	1	3
CO110.4	1	3	1	2	2	1	3
CO110.5	1	3	1	2	1	1	3

Practical Subject

School: SAHS		**Batch: 2020-23**	
Program: BND 156		**Current Academic Year: 2020-21**	
Branch:		**Semester:1st semester**	
1	Course Code	BND 156	
2	Course Title	Human Anatomy and Physiology-I	
3	Credits	2	
4	Contact Hours (L-T-P)	0-0-4	
	Course Status	Compulsory	
5	Course Objective	To understand the normal structure and functioning of various organ systems of the body and their interactions and to be able to comprehend the pathophysiology of commonly occurring diseases	
6	Course Outcomes	CO1:Understand the use of compound microscope CO2: Describe estimation of haemoglobin concentration CO3: Understand the estimation method of RBC count CO4: Understand the estimation method of leucocyte count CO5: To understand different test for blood estimation	
7	Course Description	The course in Physiology and Anatomy cover the first year is designed to give the students a depth knowledge of fundamental functions of different systems of human body. The major topics to be covered include the following: the cell, muscle& nervous tissue; blood; lymphoid tissues; respiratory system; blood vessels; circulation; heart; gastro intestinal tract; endocrine & Reproductive system, excretory system, central nervous system and special senses.	
8	Outline syllabus		CO Mapping
	Unit 1	**Study of Compound Microscope**	**CO1**
	A	Briefing	
	B	Demonstration	
	C	Practical	
	Unit 2	**Estimation of Haemoglobin Concentration**	**CO2**
	A	Briefing	
	B	Demonstration	
	C	Practical	
	Unit 3	**Total Red Blood Cell Count**	**CO3**
	A	Briefing	
	B	Demonstration	
	C	Practical	
	Unit 4	**Total Leucocyte Count**.	**CO4**
	A	Briefing	
	B	Demonstration	
	C	Practical	

	Unit 5	**BT,CT , Blood Group Estimation and Demonstration of ESR & PCV.**			CO5
	A	BT & CT			
	B	Blood Groups			
	C	Demonstration of ESR & PCV			
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO156.1	3	2	1	1	2	1	2
CO156.2	3	2	2	2	1	1	2
CO156.3	2	1	2	3	3	2	1
CO156.4	3	2	1	2	1	2	1
CO156.5	3	2	1	1	1	1	2

Practical Subject

School: SAHS	**Batch: 2020-23**

Program: BND 156		**Current Academic Year: 2020-21**	
Branch:		**Semester:1st semester**	
1	Course Code	BND 158	
2	Course Title	Fundamentals of Food and Nutrition-I	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	To understand the basic knowledge of food chemistry, nutritive value of different foods , and role of macronutrient for energy contribution in body.	
6	Course Outcomes	CO1:Understand the use and care of kitchen equipment CO2: Understand the methods of food preparation for LIG CO3: Understand the methods of food preparation for MIG CO4: Understand the methods of food preparation for HIG CO5: Understand the use of nutritional educational pamphlets	
7	Course Description	The course "Fundamentals of Food and Nutrition" aims at developing basic understanding about nutrition, its effect on human health and newer advances in food technology. This course encompasses physiological, biochemical and social aspects of food and discusses relationship between metabolites and human health. Moreover, the course is focused on the advances in the most emerging area of applied science of Nutraceuticals (where food is the medicine). The knowledge of nutrition under extreme climate conditions, space nutrition, and sports nutrition empowers students' knowledge and skills to utilize food as a powerful tool for physical, mental, and social wellbeing.	
8	Outline syllabus		CO Mapping
	Unit 1	**Use and care of kitchen equipment**	
	A	Demonstration and uses	CO1
	B	Food Pyramid	CO1
	C	Weight and Measures	CO1
	Unit 2	**Food preparation (LIG)**	
	A	Snacks	CO2
	B	Main Course	CO2
	C	Beverages	CO2
	Unit 3	**Food preparation (MIG)**	
	A	Snacks	CO3
	B	Main Course	CO3
	C	Beverages	CO3
	Unit 4	**Food preparation (HIG)**	
	A	Snacks	CO4
	B	Main Course	**CO4**
	C	Beverages	CO4
	Unit 5	**Nutrition Education**	
	A	Pamphlets	CO5
	B	PEM	CO5
	C	Anaemia	CO5
	Mode of	Practical/Viva	

	examination				
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO158.1	3	1	1	2	1	3	2
CO158.2	3	2	1	2	2	3	2
CO158.3	2	3	2	1	3	2	2
CO158.4	3	2	1	2	1	2	2
CO158.5	3	2	1	3	3	3	2

Theory Subject

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2020-2021**
Branch:		**Semester: 2nd** Semester
1	Course Code	BND 111
2	Course Title	Human Anatomy and Physiology-II
3	Credits	6
4	Contact Hour	4-2-0 (L-T-P)

	Course Type	Compulsory	
5	Course Objective	To understand the normal structure and functioning of various organ systems of the body and their interactions and to be able to comprehend the pathophysiology of commonly occurring diseases.	
6	Course Outcomes	CO1:Understand the current state of knowledge about the functional organization of the human body. CO2: Describe insight of normal functioning of all the organ systems of the body and their interactions. CO3: State the pathophysiology of commonly occurring diseases. CO4: Identify physiology with various disorders and their pathogenesis. CO5: To understand the defence mechanism of human body	
7	Course Description	The course in Physiology and Anatomy cover the first year is designed to give the students a depth knowledge of fundamental functions of different systems of human body. The major topics to be covered include the following: endocrine & Reproductive system, excretory system, central nervous system and special senses.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**The Excretory System**	
	A	Physiological anatomy of kidney, structure and functions of excretory system, structure of nephron & JG Apparatus . Kidney- structure and other organs of urinary tract	CO1
	B	Mechanism of formation of Urine. & mechanism of concentration and dilution of urine--- The Counter Current System .	CO1
	C	Physiology of micturition and Regulation of Body Temperature in Humans.	CO1
	Unit 2	**Endocrine system**	
	A	Anatomy of Pituitary, Thyroid, Parathyroid, Adrenal and Islets of Langerhans. General principles of endocrinology, The pituitary Gland.	CO2
	B	The Thyroid Gland , The parathyroids , Calcitonin and Vitamin D.	CO1, CO3
	C	The Adrenal Cortex & Pancreas.	CO2
	Unit 3	**Reproductive System**	
	A	Anatomy of the male and female reproductive organs. Structure of Sperm, Menstrual cycle, Maturation of Graffian Follicle. Ovulation, Conception. Changes during Puberty, Classification of Male sex hormones and their functions, Spermatogenesis & semen.	CO1
	B	Changes during Puberty, Classification and Functions of female sex hormones, menstruation, ovulation and contraception.	CO3

	C	Physiological changes during pregnancy, functions of placenta and physiology of lactation.				CO2
	Unit 4	**The Nervous System**				
	A	Anatomy of nervous tissue, neuron and neuroglia. Reflex action, reflex arc, synapse- definition. Structure of Cerebrum, Cerebellum, Medulla oblongata and Hypothalamus.				CO2
	B	Organisation of Nervous system, The Synapse , Physiology of receptor organs for special and general sensation, physiology of reflex action, classification and properties of reflexes. Intro to Sensory and motor system. Functions of hypothalamus, thalamus, basal ganglia, cerebrum & cerebellum .				CO3
	C	Autonomic nervous system, Cerebrospinal Fluid and Blood Brain Barrier .				CO2
	Unit 5	**Special Senses**				
	A	Taste and Olfaction. Structure of eye, ear, nose, tongue and skin				CO2
	B	Vision—structure and function of eye, errors of refraction & their correction. colour blindness.				CO2
	C	Hearing—structure and function of ear, general outline of mechanism of hearing and perception of sound.				CO3
	Mode of examination	Theory				
	Weightage Distribution	**CA**	**MTE**	**ETE**		
		30%	20%	50%		
	Text book/s*	Text book of physiology- A.K. Jain Essentials of medical physiology- K.Sembulingam				

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO111.1	3	2	1	1	2	1	2
CO111.2	3	2	1	2	1	1	2
CO111.3	2	1	2	1	1	2	1
CO111.4	3	2	2	2	2	2	1

CO111.5	3	2	1	3	1	1	1

Theory Subject

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2020-2021**
Branch:		**Semester: 2nd** Semester
1	Course Code	BND 121
2	Course Title	Fundamentals of Food and Nutrition-II
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0
	Course Type	Compulsory

5	Course Objective	To understand the basic knowledge of food chemistry, nutritive value of different foods , and role of macronutrient for energy contribution in body.	
6	Course Outcomes	CO1:Understand the role of minerals in the body CO2: Understand the role of vitamins in the body CO3: Understand the role of water and electrolyte in the body CO4: Knowledge of nutrition and health education CO5:Understand different methods of communications.	
7	Course Description	The course "Fundamentals of Food and Nutrition" aims at developing basic understanding about nutrition, its effect on human health and newer advances in food technology. This course encompasses physiological, biochemical and social aspects of food and discusses relationship between metabolites and human health. Moreover, the course is focused on the advances in the most emerging area of applied science of Nutraceuticals (where food is the medicine). The knowledge of nutrition under extreme climate conditions, space nutrition, and sports nutrition empowers students' knowledge and skills to utilize food as a powerful tool for physical, mental, and social wellbeing.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Role of mineral in body**	
	A	Functions, Sources, Bioavailability	CO 1
	B	Deficiency Disease	CO1
	C	Deficiency Disease- Treatment and Prevention	CO1
	Unit 2	**Role of vitamins in body**	
	A	Vitamins (water & fat soluble) - definition, classification & functions	CO2
	B	Deficiency Disease	CO2
	C	Deficiency Disease- Treatment and Prevention	CO2
	Unit 3	**Water and Electrolyte balance**	
	A	Water - as a nutrient, function, sources	CO3
	B	Electrolyte Balance	CO3
	C	Acid base balance	CO3
	Unit 4	**Nutrition and health status of the community**	
	A	Learning and Working with the Community	CO4
	B	Community Nutrition and Health	CO4
	C	Factors Influencing Community Health and Nutrition	CO3
	Unit 5	**Communication Method**	

	A	Group Communication Methods Mass Communication Media				CO3
	B	Presentation of Selected Communication Media Non-Machine Media—Planning and Preparation				CO4
	C	Machine Operated Devices—Planning and Preparation				CO3
	Mode of examination	Theory				
	Weightage Distribution	**CA**	**MTE**	**ETE**		
		30%	20%	50%		
	Text Book	• Nutrition Science- B.Srilakshmi • Text of Human Nutrition-Anjana Agarwal, Shobha Agarwal				

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO121.1	3	1	1	3	2	1	1
CO121.2	3	2	2	3	2	1	2
CO121.3	2	1	2	3	1	2	1
CO121.4	3	1	1	3	2	2	1
CO121.5	3	2	1	3	1	1	1

Theory Subject

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2020-2021**
Branch:		**Semester: 2nd** Semester
1	Course Code	BND 122
2	Course Title	Nutrition in Life Cycle
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0
	Course Type	Compulsory
5	Course Objective	• To apply knowledge of the science of nutrition to human health across the lifespan. • To formulate a dietary intervention plan to address nutritional deficiencies or excesses according to the health needs of individuals relative to age, developmental and disease status.

6	Course Outcomes	CO1:Understand the nutritional requirements of pregnancy and formulate a dietary intervention plan for pregnancy CO2: Understand the nutritional requirements of lactation and formulate a dietary intervention plan for lactation CO3: Understand the nutritional requirements of infancy and formulate a dietary intervention plan for infancy CO4: Understand the nutritional requirements of childhood and formulate a dietary intervention plan for childhood CO5: Understand the nutritional requirements of adulthood and old age and formulate a dietary intervention plan for adulthood and old age	
7	Course Description	This course investigates how nutrition requirements and challenges change throughout the human lifecycle and how alteration in nutritional requirements impact on human health. The course will begin by investigating the influence of nutrition prior to and during conception. Students will then be taught about the importance of good maternal nutrition during pregnancy and lactation and the impact of poor nutritional balance on feotal and infant development and maternal health. The course will cover the assessment of normal growth and body development during childhood and adolescence and will conclude with a full review of current literature and research on nutrient needs and factors affecting the nutritional status of adults and the elderly	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Nutrition in pregnancy**	
	A	Introduction of Nutrition , Functions of food, Classification of nutrients, Phytochemicals, Health.	CO1
	B	Physiological changes, Relationship between maternal and foetal nutrition,	CO1
	C	Impact of nutritional deficiency on the outcome of pregnancy, Nutritional and food requirements, Dietary guidelines, Dietary problems, Complications of pregnancy, GDM	CO1
	Unit 2	**Nutrition during Lactation**	
	A	Structure of Breast, Physiology of lactation, Hormonal control of lactation, Nutritional and food requirements.	CO2
	B	Factors affecting volume & Composition of breast milk, Breast feeding and its advantages, Pre-term milk (PTM), Expressed Breast Milk (EBM), Drip Breast Milk (DBM)	CO2
	C	Common problems during breast feeding, Contraindications to breast feeding	CO2
	Unit 3	**Nutrition during Infancy**	
	A	Growth & development, LBW, Small for Gestational Age and Pre term baby, Nutritional requirements	CO3
	B	IMS Act, Artificial feeding, Hazards of Bottle feeding, Feeding of the Preterm and LBW babies	CO3

	C	Weaning, Feeding problems in weaning, Family Pot Feeding, Low cost supplementary foods, ARF				CO3
	Unit 4	**Nutrition during early childhood**				
	A	Growth and nutrient needs, Food requirements, Dietary guidelines				CO4
	B	Feeding problems, Nutrition related problems, Growth monitoring, Importance of growth charts, GOBIFFF.				CO4
	C	Nutrition of school children: Nutritional and food requirements, Dietary guidelines, Importance of breakfast, Feeding problems, Packed lunch, School lunch programmes				CO4
	Unit 5	**Nutrition during other life span**				
	A	Nutrition during adolescence: Growth and nutrient needs, Food requirements, Food habits and dietary guidelines, Nutritional problems, Nutritional programmes for adolescence.				CO5
	B	Nutrition during adulthood – Reference man, Reference woman, Nutritional requirements, feeding pattern.				CO5
	C	Geriatric nutrition: Process of ageing, Factors affecting food intake and nutrient use, Change in organ function with ageing, Nutrient needs, Nutrition related problems.				CO5
	Mode of examination	Theory				
	Weightage Distribution	**CA**	**MTE**	**ETE**		
		30%	20%	50%		
	Text book/s*	• Text book of Nutrition and Dietetics- Kumud Khanna • Text of Human Nutrition-Anjana Agarwal, Shobha Agarwal				

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO122.1	3	2	1	1	2	1	1
CO122.2	3	2	1	2	2	1	1
CO122.3	2	1	2	1	1	1	2
CO122.4	3	1	1	2	2	2	2
CO122.5	3	2	1	1	1	2	1

Theory Subject

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2020-2021**	
Branch:		**Semester: 2ND** Semester	
1	Course Code	BND 114	
2	Course Title	General Psychology-II	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1	
	Course Type	Compulsory	
5	Course Objective	• To help students understand the processes of emotion and relating them to diverse contexts. • To prepare students learn organizing their personal lives better by gaining insights into their own emotional strengths.	
6	Course Outcomes	CO1: Understand basic concept and definitions of emotions CO2: Gain Knowledge of life span and its development CO3: Knowledge of sensation, attention and perception CO4: Understand theories of motivation CO5: Understand theories of frustration and conflict	
7	Course Description	This **course** provides a comprehensive **overview** of cognitive **psychology**, the scientific study of mental processes: how people acquire, store, transform, use, and communicate information. Topics may include perception, attention, language, memory, reasoning, problem solving, decision-making, and creativity.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Emotions**	
	A	Three levels of analysis of emotion (physiological level, subjective state, and over behaviour)	CO 1
	B	Theories of emotion	CO1
	C	Stress and management of stress.	CO1
	Unit 2	**Intelligence**	
	A	Theories of intelligence	CO2
	B	Distribution of intelligence	CO2
	C		CO2
	Unit 3	**Thinking**	
	A	Reasoning: deductive and inductive	CO3
	B	Attention: types of attention, determinants of attention	CO3

	C	Perception: Gestalt principles of organization of perception, factors influencing perception Illusion and Hallucination: types	CO3
	Unit 4	**Learning**	
	A	Factors effecting learning	CO4
	B	Theories of learning: trial and error learning, classical conditioning, Operant conditioning, insight learning, social learning theory.	CO4
	C	The effective ways to learn: Massed/Spaced, Whole/Part, Recitation/Reading, Serial/Free recall, Incidental/Intentional learning, Knowledge of results, association, organization, and mnemonic methods.	CO3
	Unit 5	**Personality**	
	A	Approaches to personality: type &trait, behaviourist, psychoanalytic and humanistic approach	CO5
	B	Personality assessment: observation, situational test, questionnaire, rating scale, interview and projective techniques.	CO5
	C	Defence Mechanisms: denial of reality, rationalization, projection, reaction formation, identification, repression, regression, intellectualization ,undoing, introjections, acting out.	CO5
	Mode of Examination	Theory	
	Weightage distribution	CA: 20% / MTE: 30% / ETE: 50%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO123.1	2	1	2	2	2	2	2
CO123.2	1	2	1	2	1	1	2
CO123.3	2	1	2	1	1	1	1
CO123.4	1	1	1	1	2	2	1
CO123.5	1	2	1	1	1	2	1

Theory Subject

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2020-2021**	
Branch:		**Semester: 2nd** Semester	
1	Course Code	BND 117	
2	Course Title	Applied Chemistry	
3	Credits	3	
4	Contact Hours (L-T-P)	2-1	
	Course Type	Compulsory	
5	Course Objective	The **Course** of **Applied Chemistry** covers a variety of **chemical** fields, working on various materials including metal compounds, inorganic and organic compounds, polymers, proteins etc, doing basic researches and their applications	
6	Course Outcomes	CO1: Knowledge of environmental science and chemistry. CO2: Understand about atmosphere and its importance. CO3: Knowledge of energy and resource conservation CO4: Understand how environmental pollution effect the health CO5: know different instrumental techniques.	
7	Course Description	The degree **course** covers the study of topics and subjects like process design, health and safety, biological **chemistry**, biomaterials, inorganic materials and polymer synthesis. It also provides an insight into the fundamentals of inorganic, organic and physical **chemistry**, and their current applications.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Atomic Structure and Chemical Bonding**	
	A	**Atomic structure:** Rutherford atomic model – Bohr theory of hydrogen atom – Sommerfeld theory - Particle and wave character of electrons – de Broglie's equation, Heisenberg's uncertainty principle, Schrödinger wave equation, quantum numbers – Pauli's exclusion principle –Orbits and Orbitals. Electronic configurations	CO 1
	B	**Chemical Bonding:** Types of bonds – ionic, covalent, coordinate, metallic and hydrogen bonds - conditions for the bond formation - concept of hybridization – hybridization involving s and p orbitals – properties of ionic, covalent and coordinate compounds – valence bond theory – VSEPR theory. Molecular orbital theory – molecular orbital configurations of simple homo nuclear diatomic molecules, Comparison between Valence bond theory and Molecular orbital theory Effluents, Potability etc.	CO1

	C	**Chemical Bonding:** Types of bonds – ionic, covalent, coordinate, metallic and hydrogen bonds - conditions for the bond formation - concept of hybridization – hybridization involving s and p orbitals – properties of ionic, covalent and coordinate compounds – valence bond theory – VSEPR theory. Molecular orbital theory – molecular orbital configurations of simple homo nuclear diatomic molecules, Comparison between Valence bond theory and Molecular orbital theory.	CO1
	Unit 2	**Chemical Kinetics and Thermodynamics**	
	A	**Chemical Kinetics** :Order and Molecularity of a reaction, Derivation of First order rate equation, half-life period of first order reaction, determination of rate constant of hydrolysis of ester, Energy of activation, Catalysis, Industrial application of catalysts.	CO2
	B	**Thermodynamics:** Definitions of thermodynamic terms : System, surroundings etc. Types of systems, intensive and extensive properties, State functions, Thermodynamic processes, concept of heat and work. Laws of thermodynamics and concepts of entropy, free energy, heat content and chemical potential.	CO2
	C	First Law of Thermodynamics : Statement, definition of internal energy and enthalpy, Heat capacity, heat capacities at constant volume and pressure and their relationship, Joule's law – Joule-Thomson coefficient and inversion temperature.	CO2
	Unit 3	**Periodic Table and periodic properties**	
	A	**Periodic Table** – Classification of elements and General characteristics of s, p, d and f block elements	CO3
	B	**Periodic properties: Ionic radii,** Ionization potential, Electron affinity, Electronegativity. Variation of periodic properties in periodic table.	CO3
	C	**Periodic properties: Ionic radii,** Ionization potential, Electron affinity, Electronegativity. Variation of periodic properties in periodic table.	CO3
	Unit 4	**Metallurgy, Acids and Bases, Concentration of solution and volumetric analysis**	

	A	**Metallurgy:** Minerals and Ores, Ore Dressing - Types of ore Dressing- Froth Floatation process and Magnetic separation. Extraction of Aluminium and Iron metals from their ores.				CO4
	B	**Acids & Bases:** Arrhenius, Bronsted-Lowry, the Lux-Flood, solvent system and Lewis concept of acids and bases.				CO4
	C	Molarity - normality - molality and mole fraction - their calculations – in solutions for primary and secondary standards. Calculation of equivalent weight of acid, base, oxidizing agent, reducing agent and salt. Principle of Volumetric Analysis				CO3
	Unit 5	**Basic concepts in organic and polymer chemistry**				
	A	**Concepts in organic chemistry**: Classification of organic compounds - Nomenclature of organic compounds - Functional groups - Homologous series - IUPAC recommendations for naming simple aliphatic and aromatic compounds. Electron displacement effects - inductive - inductomeric - electrometric – mesomeric effect - resonance - hyperconjugation and steric effects.				CO5
	B	**Polymers** Polymerization - Types of polymerization - Distinction between addition and condensation polymerization - free radical - cationic and anionic polymerizations - mechanism of preparation of polymers - addition polymers and condensation polymers with examples - Thermoplastic and thermosetting polymers				CO5
	C	**Polymers** Polymerization - Types of polymerization - Distinction between addition and condensation polymerization - free radical - cationic and anionic polymerizations - mechanism of preparation of polymers - addition polymers and condensation polymers with examples - Thermoplastic and thermosetting polymers				CO5
	Mode of Examination	Theory				
	Weightage Distribution	CA	MTE	ETE		

		30%	20%	50%	
	Text Book	• Agarwal, K.C.2001 Environmental Biology, Nidi Publ. Ltd. Bikaner. • Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd. , Ahmedabad — 380 013, India, Email: mapin@icenet.net • Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill lnc.480p 4. Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)			

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO117.1	3	2	2	2	2	3	2
CO117.2	3	2	1	2	2	3	2
CO117.3	2	1	2	1	1	1	1
CO117.4	3	1	1	1	2	2	1
CO117.5	3	2	1	1	1	2	2

School: SAHS		**Batch: 2020-23**
Program: BND 151		**Current Academic Year: 2020-2021**
Branch:		**Semester:2nd semester**
1	Course Code	BND 151
2	Course Title	Human Anatomy and Physiology-II
3	Credits	2
4	Contact Hours (L-T-P)	0-0-4
	Course Status	Compulsory
5	Course Objective	To understand the normal structure and functioning of various organ systems of the body and their interactions and to be able to comprehend the pathophysiology of commonly occurring diseases

6	Course Outcomes	CO1:Understand the estimation of different leucocyte count CO2: Describe the method of DLC CO3: Describe the arterial blood pressure and radial pulse CO4: Understand the effect of posture on B.P CO5: Understand the effect of exercise on B.P			
7	Course Description	The course in Physiology and Anatomy cover the first year is designed to give the students a depth knowledge of fundamental functions of different systems of human body. The major topics to be covered include the following: the cell, muscle& nervous tissue; blood; lymphoid tissues; respiratory system; blood vessels; circulation; heart; gastro intestinal tract; endocrine & Reproductive system, excretory system, central nervous system and special senses.			
8	Outline syllabus				CO Mapping
	Unit 1	**Different Leucocyte Count**			
	A	Briefing			CO1
	B	Demo			CO1
	C	Practical			CO1
	Unit 2	**DLC**			
	A	Briefing			CO2
	B	Demo			CO2
	C	Practical			CO2
	Unit 3	**Arterial Blood Pressure and radial pulse**			
	A	Briefing			CO3
	B	Demo			CO3
	C	Practical			CO3
	Unit 4	**Effect of Posture on B.P**			
	A	Briefing			CO4
	B	Demo			**CO4**
	C	Practical			CO4
	Unit 5	**Effect of exercise on B.P**			
	A	Briefing			CO5
	B	Demo			CO5
	C	Practical			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO151.1	3	2	2	1	1	2	2
CO152.2	3	2	1	2	1	2	2

CO153.3	3	1	2	1	1	1	1
CO154.4	2	1	1	1	2	2	1
CO155.5	3	2	1	1	1	1	1

Practical Subject

School: SAHS		**Batch: 2020-23**
Program: BND 156		**Current Academic Year: 2020-2021**
Branch:		**Semester:2nd semester**
1	Course Code	BND 160
2	Course Title	Nutrition in life cycle
3	Credits	2
4	Contact Hours (L-T-P)	0-0-4
	Course Status	Compulsory
5	Course Objective	• To apply knowledge of the science of nutrition to human health across the lifespan. • To formulate a dietary intervention plan to address nutritional deficiencies or excesses according to the health needs of individuals relative to age, developmental and disease status.
6	Course Outcomes	CO1: Understand the methods of food preparation for adults CO2: Understand the methods of food preparation for lactating and pregnant women CO3: Understand the methods of food preparation for children CO4: Understand the methods of food preparation for adolescent CO5: Understand the use of nutritional educational old age
7	Course	This course investigates how nutrition requirements and challenges change

	Description	throughout the human lifecycle and how alteration in nutritional requirements impact on human health. The course will begin by investigating the influence of nutrition prior to and during conception. Students will then be taught about the importance of good maternal nutrition during pregnancy and lactation and the impact of poor nutritional balance on feotal and infant development and maternal health. The course will cover the assessment of normal growth and body development during childhood and adolescence and will conclude with a full review of current literature and research on nutrient needs and factors affecting the nutritional status of adults and the elderly			
8	Outline syllabus				CO Mapping
	Unit 1	**Preparation of diets for adults**			
	A	Diet plan			CO1
	B	Calculations			CO1
	C	Diet preparation			CO1
	Unit 2	**Preparation of diet for pregnant and lactating mothers**			
	A	Diet plan			CO2
	B	Calculations			CO2
	C	Diet preparation			CO2
	Unit 3	**Preparation of diets for children**			
	A	Diet plan			CO3
	B	Calculations			CO3
	C	Diet preparation			CO3
	Unit 4	**Preparation of diets for adolescents**			
	A	Diet plan			CO4
	B	Calculations			**CO4**
	C	Diet preparation			CO4
	Unit 5	**Preparation of diets for oldage**			
	A	Diet plan			CO5
	B	Calculations			CO5
	C	Diet preparation			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO159.1	1	2	2	1	3	2	2
CO159.2	1	2	1	2	3	2	2
CO159.3	1	1	2	1	3	1	1
CO159.4	2	1	1	1	2	2	1
CO159.5	1	2	1	1	3	1	1

Theory Subjects

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-22**	
Branch:		**Semester: 3rd**	
1	Course Code	BND 212	
2	Course Title	**FOOD SCIENCE- I**	
3	Credits	5	
4	Contact Hours (L-T-P)	3-2-0	
	Course Type	Compulsory	
5	Course Objective	1. To understand the raw and processed food commodities used in daily life. 2. To discuss the qualities of available commodities and their suitability for different purposes	
6	Course Outcomes	CO1: To understand the objectives and methods of cooking. CO2:To understand the nutritive value, and various processing methods for cereals CO3:To understand the nutritive value, composition of nuts and oils and pulses. CO4:To understand the composition, and various properties of fats and oils CO5:To understand the composition, nutritional value, chemical reactions in fruits and vegetables.	
7	Course Description	**Food Sciences** is the study of the nature of **foods** and the changes that occur in them naturally and as a result of handling and processing	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction to Food Science**	
	A	Definition, functions of food, food groups	CO1,
	B	Food relation with health, cooking methods,	CO1
	C	Preliminary preparations for cooking, Advantages, Disadvantages, Moist heat methods, advantages, disadvantages	CO1

	Unit 2	**Introduction to Cereals**			
	A	Structure of cereals, nutritive value, composition,			CO2
	B	processing of wheat, rice, barley, rye, oats, millets and its products , convenient cereal products Effect of cooking on Nutritional value.			CO2
	C	Cereal cookery: Gluten formation, Gelatinization and dextrinization.			CO2
	Unit 3	**Introduction to Nuts and oils, Pulses.**			
	A	Composition and Nutritive value, Specific nuts and oilseeds, Toxic constituents of nuts			CO3
	B	Role of Nuts and oilseeds in cookery			CO3
	C	Composition and nutritive value, Digestibility of pulses, Processing, Toxic constituents, Pulse cookery			CO3
	Unit 4	**Introduction to fats and oils**			
	A	Composition and nutritional Value,			CO4
	B	Refining and processing of fats, storage, Emulsions, Rancidity,			CO4
	C	Smoking point and Flash point, Unconventional Oils			CO4
	Unit 5	**Introduction to fruits and vegetables**			
	A	Composition and Nutritive value of vegetables, Pigments, Selection and Storage, Vegetable cookery			CO5
	B	Composition and nutritive value, selection, post- harvest changes and storage,			CO5
	C	Ripening of fruits, Enzymatic and non-enzymatic browning.			CO5
	Mode of examination	Theory/Jury/Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	Text Book of Food Science by B Srilakshmi			

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO212.1	2	2	2	1	3	3	3
CO212.2	2	2	2	1	3	3	3
CO212.3	2	2	2	1	3	3	3
CO212.4	2	2	2	1	3	3	3
CO212.5	2	2	2	1	3	3	3

1-Slight (Low)
2-Moderate (Medium)
3-Substantial (High)

Theory Subject

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 3rd**	
1	Course Code	BND 218	
2	Course Title	Basic Dietetics and Counselling I	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Type	Compulsory	
5	Course Objective	1 Critically evaluates and derives requirements for specific macronutrients. 2. Understand critical periods in growth and development and impact of malnutrition.	
6	Course Outcomes	CO1: To understand the principles and role of dietician. CO2: To understand the various types of diets used in hospital set ups. CO3: To understand the principles and objectives of diet therapy in obesity. CO4: To understand the principles and objectives of diet therapy in leanness. CO5: To understand the food allergy and food intolerance and diet modifications.	
7	Course Description	To understand how Dietary Reference Intakes are derived for the population. To appreciate the role of nutrition in cellular and physical growth and assess nutritional status	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction Diet therapy and patient counselling**	
	A	Dietician and diet counselling: Role of Dietician, specializations of dietician, Nutrition and diet clinic,	CO1,
	B	Patient check-up and Nutrition counselling- directive and non-directive, Strategies and goals of counselling and follow up.	CO1
	C	Computer application: use of computers by Dietician, Dietary computations, Dietetic management, education/training	CO1
	Unit 2	**Concept of diet therapy and diet in fever**	
	A	Routine hospital diets - regular diets, clear fluid diet, full fluid diet, soft diet,	CO2
	B	Modified diets, Enteral and parenteral nutrition, Refeeding syndrome.	CO2
	C	Diet in Infections and Fevers: Types, Aetiology, Metabolic changes, Dietary considerations in Typhoid, Influenza, Malaria, Tuberculosis, AIDS.	CO2
	Unit 3	**Diet in obesity**	

	A	Aetiology, Assessment, Types, Childhood and Adolescent Obesity			CO3
	B	Complications, Management, and preventive strategies of Obesity.			CO3
	C	**Food exchange list** – Definition, types, and significance.			CO3
	Unit 4	**Diet in Leanness**			
	A	Aetiology, Nutritional requirement and Dietary management			CO4
	B	Diet during eating disorders- anorexia, bulimia,			CO4
	C	Binge eating.			CO4
	Unit 5	**Diet in Food Allergy and food intolerance (hypersensitivity)**			
	A	Definition, etiology, food allergens, symptoms and diagnosis of food allergies,			CO5
	B	nutritional management, restricted diets, elimination diets and hypo-sensitization,			CO5
	C	Prevention of adverse food reaction. Skin disturbances: Types, symptoms, Diagnosis and Treatment. Drug-Nutrient interactions (in brief)			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	Text book of Dietetics By B Srilakshmi, Text book of Nutrition and Dietetics by Kumud Khanna			

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO218.1	3	2	3	3	2	2	3
CO218.2	3	2	3	3	3	2	2
CO218.3	2	3	2	3	3	3	2
CO218.4	3	3	3	3	2	2	2
CO218.5	2	3	2	3	3	2	3

Theory Subjects

School: SAHS		**Batch : 2020-23**
Program: BND		**Current Academic Year: 2021-22**
Branch:		**Semester: 3rd**
1	Course Code	BND 209
2	Course Title	Nutritional Biochemistry- I
3	Credits	3
4	Contact Hours	2-1-0

	(L-T-P)				
	Course Type	Compulsory			
5	Course Objective	The course is an introduction to nutritional biochemistry. The students will learn how nutrients effect biochemical processes and signal transduction pathways and how this can lead to development of nutrition related diseases.			
6	Course Outcomes	CO1: To understand the types and theory of enzyme action. CO2: To understand hormonal action and blood & urine chemistry in body. CO3: To understand mechanism of carbohydrate utilization in body. CO4: To understand Biological oxidation and oxidative mechanisms in human body. CO5: To understand the methods of preparation of various solutions and their significance.			
7	Course Description	Nutritional Biochemistry provides students with knowledge and understanding of the delivery and function of cellular nutrients and metabolism in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.			
8	Outline syllabus				CO Mapping
	Unit 1				
	A	Dietary fibre, SDA, Essential amino acids, Protein energy malnutrition			CO1,
	B	Classification, Properties and function of carbohydrate, monosaccharides, disaccharides, Polysaccharides			CO1
	C	Classification of enzymes, Isoenzymes, Coenzymes, Co factor, enzyme inhibition			CO1
	Unit 2				
	A	Mechanism of action of hormones			CO2
	B	Peptidal and steroidal Hormone			CO2
	C	Physical and chemical properties of blood and urine			CO2
	Unit 3				
	A	Digestion of Carbohydrate			CO3
	B	Absorption of carbohydrate			CO3
	C	Metabolism of carbohydrate(Glycolysis, Kreb cycle, HMP shunt, Gluconeogenesis, Glycogen metabolism)			CO3
	Unit 4				
	A	Electron transport chain			CO4
	B	Oxidative phosphorylation			CO4
	C	Uncouplers and shuttle system			CO4
	Unit 5				
	A	Preparation of percentage solution			CO5
	B	Preparation of molar solution			CO5
	C	Preparation of normal solution			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Reference book/s*	• BergJM, Tymoczko JL and Stryer L. (2002)			

		Biochemistry 5th ed. W.H. Freeman. • Devlin TM. (2002) Text Book of biochemistry with Clinical Correlations 5th ed. John Wiley and Sons. • Horton RH, Moran LA, Ochs RS, Rawn JD and Scrimgeour.(2002) Principles of Biochemistry 3rd ed. Prentice Hall. • Murray RK, Granner DK, Kayes PA and Rodwell VW.(2003) Harper's Illustrated Biochemistry. 26th ed. McGraw-Hill. Asia. • Voet D and Voet JG. (2004)Biochemistry. 3rd ed. John Wiley and Sons.	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO209.1	3	2	1	1	2	3	3
CO209.2	3	2	1	1	3	2	3
CO209.3	3	2	1	1	3	3	3
CO209.4	3	2	1	1	2	1	2
CO209.5	3	1	1	1	1	1	1

Theory Subject

School: SAHS		**Batch : 2020-23**
Program: BND		**Current Academic Year: 2021-22**
Branch:		**Semester: 3rd**
1	Course Code	BND 219
2	Course Title	Food safety
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0
	Course Type	Compulsory
5	Course Objective	To enable the students to acquire knowledge on: Food safety, hygiene and food hazards, Food regulations (national as well as international),Design and implementation of food safety management systems such as ISO series, HACCP and its prerequisites such as GMP, GHP etc.
6	Course Outcomes	CO1: To understand the importance food safety and food storage. CO2: To understand various food borne illness by various contamination. CO3.To understand various accreditations and measures for food safety

		management. CO4:.To understand various laws and standards used for food safety and quality control. CO5: To understand various methods of waste disposal from food industry.	
7	Course Description	The course explains the importance of food safety by being able to define the terms food safety, contamination, food poisoning, HACCP, hazard and safe food. Candidates will be able to outline the ways in which the multiplication of food poisoning bacteria in food can be prevented during the preparation, storage and service of food and state the ways in which food poisoning bacteria in food can be destroyed.	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction to Food Safety**	
	A	Definition, Types of hazards and their impact on health, biological, chemical, physical hazards, and their control measures, Factors affecting Food Safety, Hygienic Food Handling, Purchasing and Receiving Safe Food—Important points to be observed for receiving various foods	CO1,
	B	Sanitary procedures while preparing, cooking and holding food, Safety of left over foods	CO1
	C	Food Storage- Guidelines for storage of foods at various temperatures, Storage of Specific Foods.	CO1
	Unit 2	**Food Borne Diseases**	
	A	Food Borne Illness and Food Hazards	CO2
	B	Food borne illnesses caused by Bacteria, Virus and Parasites, Natural toxicants in foods,	CO2
	C	Chemicals, Antibiotics, Hormones and Metal contamination.	CO2
	Unit 3	**Food Safety**	
	A	Food Safety Management: Basic concept, Prerequisites - GHPs, GMPs and SSOPs , HACCP, ISO series, TQM - concept and need for quality, components of TQM,	CO3
	B	Kaizen. Risk Analysis, Accreditation and Auditing (in brief)	CO3
	C	Safety concerns in food packaging: Principles in the development of safe and protective packaging , Product labelling, Nutritional labelling and safety assessment of food packaging materials	CO3
	Unit 4	**Food Laws**	
	A	Food laws and Standards**:** Indian Food Regulatory Regime, Global Scenario, Other laws and standards related to food, FPO, PFA, FSSAI, AGMARK, BIS.	CO4
	B	GRAS and permissible limits for chemical preservatives and legal aspects for γ- irradiations	CO4
	C	Recent concerns in food safety: New and Emerging Pathogens. Genetically modified foods / Transgenics / Organic foods. Newer approaches to food safety.	CO4
	Unit 5	**Waste Product Handling**	
	A	Waste product handling	CO5

	B	Planning for waste disposal			CO5
	C	Solid wastes and liquid wastes			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	The Food safety hazard Guidebook by R.Lawley, L. Curtis Food Safety and Toxicity, by De Vries, CRC, New York			

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO219.1	2	2	3	1	3	2	2
CO219.2	3	3	3	2	2	2	1
CO219.3	1	1	2	1	2	3	3
CO219.4	1	3	2	1	1	3	3
CO219.5	1	2	3	1	1	2	2

Theory Subject

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 3rd**	
1	Course Code	BND 220	
2	Course Title	Community Nutrition	
3	Credits	5	
4	Contact Hours (L-T-P)	3-2-0	
	Course Type	Compulsory	
5	Course Objective	To understand the importance of nutrition in national progress and the significance of the assessment of nutritional status and find solutions to overcome problems of malnutrition in the community.	
6	Course Outcomes	CO1: To understand various aspect of community nutrition. CO2: To understand various methods used for assessment of nutritional status in community. CO3. To identify various modes of contamination and water & waste disposal. CO4: To understand the importance of public hygiene and public safety. CO5: To understand common infectious diseases.	
7	Course Description	This course will provide an introduction to the practice of public health nutrition, discussion of significant public health nutrition problems. and an overview of food and nutrition programs available to the community. Students will engage in skill-building and participatory activities, as well be introduced to case examples of creative and innovative approaches to community nutrition	
8	Outline syllabus		CO Mapping
	Unit 1	**Introduction to Community**	

	A	**Definition of Community –** meaning of optimum nutrition, malnutrition – under nutrition and overnutrition			CO1,
	B	**Characteristics of community –** Demography, vital statistics - IMR, MMR, NMR, Morbidity rate, Crude birth rate, Crude death rate, General fertility rate, Age specific fertility rate, Life expectancy			CO1
	C	**Factors contributing to malnutrition in the community**- Food habits, customs and practices, availability of food, socio-economic factors and housing and hygienic conditions. Inter - relationship between malnutrition, infection and poverty			CO1
	Unit 2	**Assessment of Nutritional Status**			
	A	Methods of assessment of nutritional status: Direct assessment and indirect assessment			CO2
	B	Significance of nutritional assessment of community, improvement of nutrition of community			CO2
	C	National Nutrition Policy			CO2
	Unit 3	**Agents of contamination**			
	A	Agents of contamination, Sources and Reservoirs of infection, Modes of transmission of infection, Modes of entry into a susceptible host, prevention and control of infection and diseases			CO3
	B	Water supply: Sources of water, Urban drinking water supply system			CO3
	C	Waste disposal: Urban waste disposal methods, steps in waste disposal, water supply and sanitation programmes in rural areas,			CO3
	Unit 4	**Personal Hygiene**			
	A	Personal Hygiene: Introduction, Personal cleanliness, Rest and sleep, Exercise, fatigue, and posture, Habits,			CO4
	B	Public and Home safety: Safety at homes, Areas at home which have high potential for accidents, Activities, potential for accidents, Household goods, potential for accidents			CO4
	C	Public safety: Road accidents, Railway and airplane accidents, Prevention measures.			CO4
	Unit 5	**Common infectious diseases**			
	A	Common infectious diseases, Definition, types, and modes of infection			CO5
	B	Measles, Diptheria, malaria			CO5
	C	Tuberculosis			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	

	Refrence book/s*	• ICMR (1990). Nutrient Requirements and Recommended Dietary Allowances for Indians. • FAO/WHO/UNU (2004). Human Energy Requirements. Report of a Joint Expert Consultation. • WHO (2007). Protein and Amino-acid Requirements in Human Nutrition. Report of a joint WHO/FAO/UNU expert consultation. WHO Technical Report Series 935. • Bamji M.S., Rao N.P., Reddy V. Eds. (2009). Textbook of Human Nutrition. 3rd Edition. Oxford and IBH Publishing Co. Pvt. Ltd. • Nutrition in Developmental Transition. NFI-WHO (SEARO) Symposium. NFI (2006).	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO220.1	1	2	3	3	3	2	1
CO220.2	3	3	2	3	2	2	1
CO220.3	1	2	3	3	2	1	3
CO220.4	1	2	3	3	2	1	3
CO220.5	3	3	3	2	3	1	2

Practical Subject

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 3rd**	
1	Course Code	BND 257	
2	Course Title	Food Science I	
3	Credits	5	
4	Contact Hours (L-T-P)	3-2-0	
	Course Status	Compulsory	
5	Course Objective	1. To understand the raw and processed food commodities used in daily life. 2. To discuss the qualities of available commodities and their suitability for different purposes	
6	Course Outcomes	CO1: To understand the various cooking methods. CO2: To analyse the gluten content in cereal products. CO3: To understand the determination of acidity. CO4: To understand the evaluation of egg quality. CO5: To describe the methods of vegetable product preservation.	
7	Course Description	**Food Sciences** is the study of the nature of **foods** and the changes that occur in them naturally and as a result of handling and processing	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Introduction of Food Science Practical	CO1
	B	Preliminary preparation of cooking	CO1
	C	Different cooking methods	CO1
	Unit 2	**Determination of gluten content**	
	A	Demo	CO2
	B	Practical	CO2
	C	Result Analysis	CO2
	Unit 3	**Determination of acidity in given samples**	
	A	Demo	CO3
	B	Practical	CO3
	C	Result Analysis	CO3
	Unit 4	**Study the effect of various additives on stability of egg white foam**	
	A	Demo	CO4
	B	Practical	CO4
	C	Result Analysis	CO4
	Unit 5	**Jam and Jelly preparation**	
	A	Demo	CO5
	B	Practical	CO5

	C	Result Analysis			CO5
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

Pos COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO257.1	3	3	1	2	3	3	2
CO257.2	3	3	1	2	3	3	2
CO257.3	3	3	1	2	3	3	2
CO257.4	3	3	1	2	3	3	2
CO257.5	3	3	1	2	3	3	2

Practical Subject

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 3rd**	
1	Course Code	BND 259	
2	Course Title	Nutritional Biochemistry I	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	The course is an introduction to nutritional biochemistry. The students will learn how nutrients effect biochemical processes and signal transduction pathways and how this can lead to development of nutrition related diseases	
6	Course Outcomes	CO1: To understand the preparation of various reagents CO2: To Understand the qualitative analysis of carbohydrates I. CO3: To Understand the qualitative analysis of carbohydrates II CO4: To Understand the working of colorimeter. CO5: To understand the quantitative analysis of glucose	
7	Course Description	Nutritional Biochemistry provides students with knowledge and understanding of the delivery and function of cellular nutrients and metabolism in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Preparation of Reagents	CO1
	B	Preparation of buffer	CO1
	C	Checking of pH	CO1
	Unit 2		
	A	Molisch Test	CO2
	B	Iodine Test	CO2
	C	Benedict Test	CO2
	Unit 3		
	A	Barford's Test	CO3
	B	Seliwanoff's Test	CO3
	C	Hydrolysis of sucrose	CO3
	Unit 4		
	A	Colorimetry	CO4
	B	Lambart-Beer test	CO4
	C	Standard , black and test solution	CO4
	Unit 5		
	A	Quantitative analysis of Glucose in normal sample	CO5
	B	Quantitative analysis of abnormal sample	CO5
	C	Quantitative analysis of unknown sample	CO5
	Mode of examination	Practical	

	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	Textbook of Biochemistry By D.M. Vasudevan Biochemistry by U. Satyanarayan Textbook of Biochemistry by Chatterjee & Shinnde			

Pos COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO259.1	3	3	1	1	1	2	1
CO259.2	3	3	1	1	2	3	1
CO259.3	3	3	1	1	1	3	1
CO259.4	2	2	1	1	3	2	1
CO259.5	3	3	1	1	1	3	1

Practical Subject

School: SAHS	**Batch : 2020-23**
Program: BND	**Current Academic Year: 2021-2022**
Branch:	**Semester: 3rd**

1	Course Code	BND 263			
2	Course Title	Basic Dietetics and Counselling I			
3	Credits	2			
4	Contact Hours (L-T-P)	3-1-5			
	Course Status	Compulsory			
5	Course Objective				
6	Course Outcomes	CO1: To understand weights and measurement of various food stuffs. CO2: To understand various routine diets used in hospital setups. CO3: To prepare various diets for obesity. CO4: To prepare and understand diet in leanness. CO5: To prepare and understand diets for food intolerance and food allergy.			
7	Course Description	The course includes the study of objective and principles behind the treatment of various diseases via diet therapy and identification of diseases via signs and symptoms.			
8	Outline syllabus				CO Mapping
	Unit 1	**Weights and Measurement**			
	A	Exchange list			CO1
	B	Raw foods			CO1
	C	Cooked foods weight			CO1
	Unit 2	**Preparation of Routine hospital diets**			
	A	Preparation and calculation of clear liquid diets			CO2
	B	Preparation and calculation of Full liquid diet			CO2
	C	Preparation and calculation of Soft and normal diet			CO2
	Unit 3	**Diet in Obesity**			
	A	Diet planning			CO3
	B	Calculation			CO3
	C	Preparation			CO3
	Unit 4	**Diet in Leanness**			
	A	Diet planning			CO4
	B	Calculation			CO4
	C	Preparation			CO4
	Unit 5	**Diet in Food allergy and intolerance**			
	A	Diet planning			CO5
	B	Calculation			CO5
	C	Preparation			CO5
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*	Dietician's pocket book by NancieH.Herbold Therapeutic Nutrition, 17th edition, Mac Milan Publishers			

Pos COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7

CO263.1	3	3	2	2	3	3	3
CO263.2	3	3	2	2	3	3	3
CO263.3	3	3	2	2	3	3	3
CO263.4	3	3	2	2	3	3	3
CO263.5	3	3	2	2	3	3	3

Theory Subjects

School: SAHS		**Batch : 2020-23**
Program: BND		**Current Academic Year: 2021-2022**
Branch:		**Semester:4th**
1	Course Code	BND 213
2	Course Title	Food Science II
3	Credits	7
4	Contact Hours (L-T-P)	3-2-5

	Course Type	Compulsory	
5	Course Objective	1.To understand the raw and processed food commodities used in daily life. 2. To discuss the qualities of available commodities and their suitability for different purposes	
6	Course Outcomes	CO1: To understand the composition, nutritive value and processing methods of dairy industry. CO2: To understand composition, nutritive value and manufacturing methods of various beverages. CO3: To understand composition, Nutritive value and processing of meat industry. CO4: To understand composition, Nutritive value and processing of fish and egg. CO5: To understand composition, Nutritive value and various chemical reactions of sugar and sugar products.	
7	Course Description	**Food Sciences** is the study of the nature of **foods** and the changes that occur in them naturally and as a result of handling and processing	
8	Outline syllabus		CO Mapping
	Unit 1	**Milk and dairy industry**	
	A	Composition, Nutritive value, Physical properties Processing	CO1,
	B	Milk cookery(Effect of heat, effect of Enzyme, Effect of phenolic compounds,), Microbial spoilage	CO1
	C	Processing, Milk Products, Milk substitutes, Role of milk and milk products in cookery	CO1
	Unit 2	**Beverages and coffee**	
	A	Food Beverages: Classification of beverages. Coffee, Tea: processing, Adulterants, Types of tea, Factors affecting quality of beverages.	CO2
	B	Cocoa and chocolates, Fruit beverages, soups, vegetable juices.	CO2
	C	Properties, Ingredients and Types of Milk based beverages, malted beverages, carbonated non-alcoholic beverages, and alcoholic beverages.	CO2
	Unit 3	**Meat and Poultry**	
	A	Meat: Classification, structure, Composition and Nutritive value	CO3
	B	Post mortem changes, Ageing, Tenderizing, Curing, Selection and storage, Meat cookery	CO3
	C	Poultry: Classification, Processing, Composition and nutritive value, Storage.	CO3
	Unit 4	**Fish and Egg**	
	A	Fish: Classification, Composition and Nutritive value, Selection,	CO4
	B	Fish cookery, Storage Egg: Structure, Composition and Nutritive value,	CO4
	C	Egg quality and evaluation, Egg 3cookery, Egg white foams, Iron sulphide formation.	CO4
	Unit 5	**Sugar and Sugar cookery**	
	A	Sugar and related products: Nutritive value, Properties, Sugar related products	CO5
	B	Stages of sugar cookery, Crystallization,	CO5
	C	Crystalline and non-crystalline candies, Role of sugar in cookery.	CO5

	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	Text Book of Food Science by B Srilakshmi			

Pos Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO213.1	2	2	2	1	3	3	3
CO213.2	2	2	2	1	3	3	3
CO213.3	2	2	2	1	3	3	3
CO213.4	2	2	2	1	3	3	3
CO213.5	2	2	2	1	3	3	3

Theory Subjects

School: SAHS		**Batch : 2020-23**
Program: BND		**Current Academic Year: 2021-2022**
Branch:		**Semester: 3rd**
1	Course Code	BND 221
2	Course Title	Basic Dietetics and Counselling-II
3	Credits	4
4	Contact Hours (L-T-P)	3-1-0
	Course Type	Compulsory
5	Course Objective	To understand the nutrition assessment, planning, implementation, monitoring and follow up in nutrition care process, the causative factors and metabolic changes in various diseases/disorders and acquire knowledge on the principles of diet therapy and comprehend principles of dietary counselling and the rationale of prevention of various diseases/disorders.
6	Course Outcomes	CO1: To understand the objectives and principles of diet planning. CO2: To understand the various methods of energy calculation. CO3: To understand the principles of diet therapy in nutritional deficiency diseases. CO4: To understand the theory behind electrolyte and water balance. CO5: To understand the diet therapy in hormonal imbalances.

7	Course Description	The course involves the principles of nutrition to persons in a hospital, nursing home or other health care setting who require a modified diet for the treatment or prevention of disease. Course emphasizes the effect of illness upon behaviour and food acceptance and the need for individualized diets to meet nutritional and therapeutic requirements.			
8	Outline syllabus				CO Mapping
	Unit 1	**Principle of diet planning**			
	A	Principle of diet planning and counselling, Different types of diet, Vegetarian diets, ketogenic diets, Glycaemic index of foods			CO1,
	B	Prebiotic, Probiotics: Uses, Types, and Nutritive value			CO1
	C	Enteral and parenteral feeds, Formula feeds, Pre and post-operative nutritional care			CO1
	Unit 2	**Dietary management**			
	A	Energy, caloric values, methods of assessment, factors affecting caloric value, Effects of deficiency			CO2
	B	**Respiratory diseases**- Chronic pulmonary diseases, bronchitis, pneumonia, respiratory failure, Nutritional management, Aetiology			CO2
	C	**Musculo- Skeletal diseases**- Osteoporosis, Arthritis- Rheumatoid and Osteo Arthritis, Nutritional management, Aetiology			CO2
	Unit 3	**Dietary management of Deficiency disease**			
	A	**Diet in Nutritional Deficiency:** PEM, Anaemia			CO3
	B	**Diet in Nutritional Deficiency:** Anaemia			CO3
	C	**Diet in Nutritional Deficiency:** Xeropthalmia, Osteoporosis,			CO3
	Unit 4	**Water and Electrolyte balance**			
	A	Distribution of water and electrolyte, Functions of water, Requirement			CO4
	B	Sources, Water balance, Thirst mechanism, electrolyte balance,			CO4
	C	Water depletion, water excess, Oedema			CO4
	Unit 5	**Dietary Management**			
	A	Aetiology, physiological changes, complications and Nutritional care in PCOD			CO5
	B	Aetiology, physiological changes, complications and Nutritional care in Hypothyroid, hyperthyroid			CO5
	C	Aetiology, physiological changes, complications and Nutritional care in Stress.			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	Text book of Dietetics By B Srilakshmi, Text book of Nutrition and Dietetics by Kumud Khanna			

POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7

COs							
CO221.1	3	3	1	1	3	2	3
CO221.2	2	2	1	1	3	2	3
CO221.3	3	3	1	1	3	2	3
CO221.4	3	3	1	1	3	2	3
CO221.5	3	3	1	1	3	2	3

Theory Subjects

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 4th**	
1	Course Code	BND 214	
2	Course Title	Nutritional Biochemistry II	
3	Credits	4	
4	Contact Hours (L-T-P)	2-1-5	
	Course Type	Compulsory	
5	Course Objective	The course is an introduction to nutritional biochemistry. The students will learn how nutrients effect biochemical processes and signal transduction pathways and how this can lead to development of nutrition related diseases.	
6	Course Outcomes	CO1: To understand the chemistry of lipids metabolism. CO2: To understand the chemistry of proteins. CO3: To understand the chemistry and synthesis of Nucleic acids. CO4: To understand the biochemical mechanism of vitamins and minerals. CO5: To understand the biochemistry and mechanism of action of free radicals.	
7	Course Description	Nutritional Biochemistry provides students with knowledge and understanding of the delivery and function of cellular nutrients and metabolism in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.	
8	Outline syllabus		CO Mapping
	Unit 1	**Lipids Chemistry**	
	A	Chemistry of lipids	CO1,
	B	Digestion and absorption of Lipids	CO1
	C	Metabolism of Lipids	CO1
	Unit 2	**Amino-acid Chemistry**	
	A	Chemistry of amino acids and Proteins	CO2
	B	Digestion and absorption of proteins	CO2
	C	Metabolism of Proteins	CO2
	Unit 3	**Nucleic acid Chemistry**	

	A	Chemistry of Nucleic acids			CO3
	B	Metabolism of Nucleic acids			CO3
	C	De Novo synthesis of Nucleic acids			CO3
	Unit 4	**Vitamins and Mineral Chemistry**			
	A	Vitamins and Their Classification			CO4
	B	Metabolism of fats and water soluble vitamins			CO4
	C	Minerals and their classification and metabolism			CO4
	Unit 5	**Free Radical Chemistry**			
	A	Free Radical chemistry			CO5
	B	Haemoglobin and molybdenum			CO5
	C	Porphyria and its types			CO5
	Mode of examination	Theory			
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	• Textbook of Biochemistry By D.M. Vasudevan • Biochemistry by U. Satyanarayan • Textbook of Biochemistry by Chatterjee & Shinnde			

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO214.1	3	2	1	1	2	3	1
CO214.2	3	2	1	1	3	2	1
CO214.3	3	2	1	1	3	2	1
CO214.4	3	2	1	1	2	2	1
CO214.5	3	1	1	1	1	2	1

Theory Subjects

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 4th**	
1	Course Code	BND 216	
2	Course Title	Food Microbiology	
3	Credits	5	
4	Contact Hours (L-T-P)	3-1-2	
	Course Type	Compulsory	
5	Course Objective	The course aims to provide theoretical and practical knowledge about the micro-organisms involved in the food spoilage, infections and intoxications. The course also enables to understand the concept of preservation and microbiological safety in various food operations.	
6	Course Outcomes	CO1: To understand the concept of food microbiology. CO2: To understand the various microorganism involved in food industry. CO3: To understand the microbial contamination and its effects on food products CO4: To understand the microbial contamination and its effects on food products CO5: To understand various aspects of environmental microbiology.	
7	Course Description	This course provides students with general information on microbiology, such as the classification of various microorganisms, including bacteria, viruses and fungi. Students interested in food science use this course to gain information on potentially dangerous microorganisms that can be introduced during food processing and preservation. Methods in microbe detection and control are highlighted.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Introduction to Microbiology: Definitions of microbiology and microbes, Beneficial effects of microorganisms.	CO1,
	B	Microbial growth curve, Effect of intrinsic and extrinsic factors on growth curve	CO1
	C	PH, Moisture, Temperature, Oxygen availability, Nutrients and others.	CO1
	Unit 2		
	A	Microorganisms: General morphology, Characteristics, Reproduction, and Economic importance of: A) Bacteria, B) Fungus	CO2
	B	Microorganisms: General morphology, Characteristics,	CO2

		Reproduction, and Economic importance of: B) Virus C) Algae	
	C	Microorganisms: General morphology, Characteristics, Reproduction, and Economic importance of: B) Protozoa	CO2
	Unit 3		
	A	**Microbiology of Deficient Food**: Spoilage, contamination sources, types, effect on the following: Cereal and cereal products	CO3
	B	**Microbiology of Deficient Food**: Spoilage, contamination sources, types, effect on the following: Sugar and sugar products	CO3
	C	**Microbiology of Deficient Food**: Spoilage, contamination sources, types, effect on the following: Vegetables and fruits	CO3
	Unit 4		
	A	**Microbiology of Deficient Food**: Spoilage, contamination sources, types, effect on the following: Meat and meat products	CO4
	B	**Microbiology of Deficient Food**: Spoilage, contamination sources, types, effect on the following: Fish, egg and poultry, Milk and milk products	CO4
	C	**Microbiology of Deficient Food**: Spoilage, contamination sources, types, effect on the following: Canned Foods	CO4
	Unit 5		
	A	**Environmental Microbiology:** Water and water borne diseases	CO5
	B	**Environmental Microbiology:** Air and air borne diseases	CO5
	C	**Environmental Microbiology:** Soil and soil borne diseases, Sewage and diseases	CO5
	Mode of examination	Theory	
	Weightage Distribution	CA / MTE / ETE 30% / 20% / 50%	
	Text book/s*	Textbook of food Microbiology By Willium C Fraizier	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO216.1	2	2	3	2	2	3	1
CO216.2	2	2	3	2	2	3	1
CO216.3	2	2	3	2	2	3	1
CO216.4	2	2	3	2	2	3	1

CO216.5	2	2	3	2	2	3	1

Theory Subject

School:		**Batch : 2020-23**
Program:		**Current Academic Year: 2021-2022**
Branch:		**Semester: 4th**
1	Course Code	BND 222

2	Course Title	Textile and Clothing	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Type	Compulsory	
5	Course Objective	To promote an understanding of Fashion and Textile Design in relation to the needs of fashion, contractual furnishings, home textiles, and the business to business textile products.	
6	Course Outcomes	CO1: To understand types of fibre and its properties. CO2: To understand the basic principles of yarn making. CO3: To understand basic methods of fabric construction. CO4: To understand the classification and stages of dyes. CO5: To understand the finishing process in detail.	
7	Course Description	The textile and clothing course is to introduce a broad range of textile processes and theoretical perspectives on which to base the practice of textile design. The candidate will have an overview to develop colour, drawing, design, develop and produce textiles and textile products.	
8	Outline syllabus		CO Mapping
	Unit 1	**Textile fibres and their properties**	
	A	Primary and secondary properties of textile fibres with reference to 16 their effect on fibre characteristics	CO1,
	B	Classification of fibres	CO1
	C	Origin, production and properties of various fibres: Natural-cotton, linen, wool, silk. Man-made-rayon, polyester, polyamide (nylon 6,6) acrylics, elastomeric fibres	CO1
	Unit 2	**Yarns**	
	A	Basic principle of yarn making: Mechanical spinning (cotton system, wool system, worsted system),	CO2
	B	Types of yarns: Staple, Filament, Simple, complex Properties of yarns: Yarn numbering systems and twist	CO2
	C	Textured yarns: Classification, manufacture and properties Blends: Types of blends and purpose of bending•	CO2
	Unit 3	**Fabric construction**	
	A	Weaving: Parts and functions of the loom	CO3
	B	Knitting: Classification, construction, characteristics and usage	CO3
	C	Non-woven and felts-construction, properties and usage	CO3
	Unit 4	**Dyeing, Printing**	
	A	Classification of dyes	CO4
	B	Stages of dyeing	CO4
	C	Printing methods and style	CO4
	Unit 5	**Finishing**	
	A	Classification of finishes Preparatory finishes	CO5
	B	Finishes affecting appearance and texture	CO5
	C	Finishes for enhancing special characteristics	CO5
	Mode of	Theory	

	examination				
	Weightage Distribution	CA	MTE	ETE	
		30%	20%	50%	
	Text book/s*	Corbman, P.B., (1985) Textiles- Fiber to Fabric (6th Edition), Gregg Division/McGraw Hill Book Co., US. Joseph, M.L., (1988) Essentials of Textiles (6th Edition), Holt, Rinehart and Winston Inc., Florida			

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO222.1	1	1	1	1	1	1	1
CO222.2	1	1	1	1	1	1	1
CO222.3	1	1	1	1	1	1	1
CO222.4	1	1	1	1	1	1	1
CO222.5	1	1	1	1	1	1	1

Practical Subjects

School: SAHS		**Batch : 2020-23**
Program: BND		**Current Academic Year: 2021-2022**
Branch:		**Semester: 4th**
1	Course Code	BND 260
2	Course Title	Food Science II
3	Credits	2
4	Contact Hours (L-T-P)	3-2-4
	Course Status	Compulsory
5	Course Objective	
6	Course Outcomes	CO1: To understand the various cooking methods. CO2: To analyse the Ph of various food beverages.

		CO3: To understand the process of gelatinization in cereal products CO4: To understand the process of malt extraction. CO5: To describe the methods of vegetable product preservation.	
7	Course Description	**Food Sciences** is the study of the nature of **foods** and the changes that occur in them naturally and as a result of handling and processing	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Introduction of Food Science Practical	CO1
	B	Paneer Preparation	CO1
	C	Milk Cookery	CO1
	Unit 2	**Determination of PH**	
	A	Demo	CO2
	B	Practical	CO2
	C	Result Analysis	CO2
	Unit 3	**Gelatinization**	
	A	Demo	CO3
	B	Practical	CO3
	C	Result Analysis	CO3
	Unit 4	**Extraction of Malt from Potato**	
	A	Demo	CO4
	B	Practical	CO4
	C	Result Analysis	CO4
	Unit 5	**Preparation of Ketchup**	
	A	Demo	CO5
	B	Practical	CO5
	C	Result Analysis	CO5
	Mode of examination	Practical	
	Weightage Distribution	CA: 60% / MTE: 0% / ETE: 40%	
	Text book/s*	• Bureau of Indian standards: Specifications and standard methods. Volume I to XII. • Fellows P J (2002), Food Processing Technology-Principles and Practices, 2nd Edition. Woodhead Publishing Ltd. • Food and Agriculture Organization. (1980) Manual of Food Quality Control. Additive Contaminants Techniques. Rome. • Fuller, G.W. (1999) New Food Product Development. From concept to market place. CRC press, New York.	

Pos COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO260.1	3	3	1	2	3	3	2
CO260.2	3	3	1	2	3	3	2

CO260.3	3	3	1	2	3	3	2
CO260.4	3	3	1	2	3	3	2
CO260.5	3	3	1	2	3	3	2
CO260.6	3	3	1	2	3	3	2

Practical

School:		**Batch : 2020-23**
Program:		**Current Academic Year: 2021-2022**
Branch:		**Semester: 4th**
1	Course Code	BND 262
2	Course Title	Food Microbiology
3	Credits	1
4	Contact Hours (L-T-P)	3-1-2
	Course Status	Compulsory
5	Course Objective	The course aims to provide theoretical and practical knowledge about the micro-organisms involved in the food spoilage, infections and intoxications. The course also enables to understand the concept of preservation and microbiological safety in various food operations.
6	Course Outcomes	CO1: To understand the concept of food microbiology. CO2: To understand the various microorganism involved in food industry. CO3: To understand the microbial contamination and its effects on food products CO4: To understand the microbial contamination and its effects on food

		products CO5: To understand various aspects of environmental microbiology.			
7	Course Description	This course provides students with general information on microbiology, such as the classification of various microorganisms, including bacteria, viruses and fungi. Students interested in food science use this course to gain information on potentially dangerous microorganisms that can be introduced during food processing and preservation. Methods in microbe detection and control are highlighted.			
8	Outline syllabus				CO Mapping
	Unit 1				
	A	Introduction of Microbiology lab			CO1
	B	Introduction of microscope			CO1
	C	Study of equipments			CO1
	Unit 2	**Preparation of laboratory media and special media**			
	A	Demo			CO2
	B	Practical			CO2
	C	Result Analysis			CO2
	Unit 3	**Gram Staining**			
	A	Demo			CO3
	B	Practical			CO3
	C	Result Analysis			CO3
	Unit 4	**Pouring, plating and streeking methods**			
	A	Demo			CO4
	B	Practical			CO4
	C	Result Analysis			CO4
	Unit 5	**To check environmental microflora**			
	A	Demo			CO5
	B	Practical			CO5
	C	Result Analysis			CO5
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

Pos COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO260.1	2	2	3	3	2	3	1
CO260.2	2	2	3	2	2	3	1
CO260.3	2	2	3	2	2	3	1
CO260.4	2	2	3	2	2	3	1
CO260.5	2	2	3	2	2	3	1
CO260.6	2	2	3	2	2	3	1

Practical

School: SAHS		**Batch : 2020-23**	
Program: BND		**Current Academic Year: 2021-2022**	
Branch:		**Semester: 4th**	
1	Course Code	BND 261	
2	Course Title	Nutritional Biochemistry II	
3	Credits	2	
4	Contact Hours (L-T-P)	3-1-5	
	Course Status	Compulsory	
5	Course Objective	The course is an introduction to nutritional biochemistry. The students will learn how nutrients effect biochemical processes and signal transduction pathways and how this can lead to development of nutrition related diseases.	
6	Course Outcomes	CO1: To understand the preparation of various solutions. CO2: To determine the absorption capacity. CO3: To understand the chemistry of fatty acids CO4: To understand the analysis of proteins CO5: To understand the analysis process of various biochemical components.	
7	Course Description	Nutritional Biochemistry provides students with knowledge and understanding of the delivery and function of cellular nutrients and metabolism in the human body. It involves integrated learning between the areas of Biochemistry and Nutrition.	
8	Outline syllabus		CO Mapping
	Unit 1		
	A	Preparation of percentage solutions	CO1
	B	Preparation of Molar solution	CO1

	C	Preparation of Normal solution			CO1
	Unit 2				
	A	Determination of absorption maximum.			CO2
	B	Verification of Combert-Beer's Law			CO2
	C	Preparation of Standard curve			CO2
	Unit 3				
	A	Physical and solubility test			CO3
	B	Test for Fatty acids			CO3
	C	Salkowski's Test			CO3
	Unit 4				
	A	Preparation of protein I			CO4
	B	Preparation of protein II			CO4
	C	Esbach Test			CO4
	Unit 5				
	A	Quantitative estimation of total protein			CO5
	B	Quantitative estimation of serum Creatinine			CO5
	C	Denaturation of proteins			CO5
	Mode of examination	Practical			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	
	Text book/s*				
	Other References	• A manual of laboratory techniques edited by Raghuramulu N. Madhavan Nair K. and Kalyansundaram S. NIN ICMR 1983. • Fiske C and Subba Rao Y. the colorimetric determination of Phosphorous J. Biol. Chem. 1925. • Fundamentals of clinical chemistry edited by Tietz NW WB Saunders Co. 1976. • Hawk's Physiological Chemistry. Edited by Oser B.L. McGraw-Hill Book Co. 14th ed. 1965.			

Pos Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO261.1	3	2	1	2	2	3	1
CO261.2	3	2	1	2	2	3	1
CO261.3	3	2	1	2	2	3	1
CO261.4	3	2	1	2	2	3	1
CO261.5	3	2	1	2	2	3	1
CO261.6	3	2	1	2	2	3	1

Theory Subjects

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2022-2023**	
Branch: SAHS		**Semester: 5th** Semester	
1	Course Code	BND 311	
2	Course Title	Therapeutic Nutrition	
3	Credits	5	
4	Contact Hours (L-T-P)	3-1-2	
	Course Type	Compulsory	
5	Course Objective	To understand the nutrition assessment, planning, implementation, monitoring and follow up in nutrition care process, the causative factors and metabolic changes in various diseases/disorders and acquire knowledge on the principles of diet therapy and comprehend principles of dietary Counselling and the rationale of prevention of various diseases/disorders.	
6	Course Outcomes	CO1: Understand the diseases of GI tract and principles of diet modifications for its different therapeutic conditions CO2: Understand principles of diet modifications for Diabetes mellitus CO3:Understand principles of diet modifications for Cardiovascular diseases CO4: Understand principles of diet modifications for Gout CO5: Understand importance of diet for inborn error	
7	Course Description	**Clinical nutrition** is concerned with **therapeutic** uses for **nutrition**, usually in medical settings, as part of a complete health care program. **Clinical** Nutritionists create effective **nutrition** plans aimed at disease prevention and treatment, strengthening of the immune system, and nourishment of the body.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Diet in Gastrointestinal disease**	

	A	Diet in Gastrointestinal disease: Aetiology, Symptoms and dietary management of Oesophagitis, Gastro Oesophageal Reflux Disease (GERD), Dyspepsia, Gastritis, Peptic ulcer, Constipation, Diarrhoea, Ulcerative colitis, Flatulence, Irritable bowel syndrome, Inflammatory bowel disease, Diverticulitis				CO 1
	B	Diarrhoea, Ulcerative colitis, Flatulence, Irritable bowel syndrome, Inflammatory bowel disease, Diverticulitis				CO1
	C	Malabsorption syndrome – Lactose intolerance, Steatorrhoea, Celiac disease, Tropical sprue.				CO1
	Unit 2	**Diet in Diabetes Mellitus**				
	A	Types, Aetiology, Symptoms, factors affecting normal blood sugar level				CO2
	B	Diagnosis, Treatment, Dietary modifications, food exchange system, Glycemic Index, Glycemic load				CO2
	C	Complications of diabetes, Nutrition in complication of diabetes, hypoglycemic agents and supportive therapy.				CO2
	Unit 3	**Diet in Cardiovascular diseases**				
	A	Aetiology, Symptoms, Risk factors, pathophysiology, dietary management and prevention of Atherosclerosis, Coronary Artery Disease				CO3
	B	Role of Functional foods in preventing Cardiovascular Diseases				CO3
	C	Hypercholesterolemia, Hypertension – classification, sodium restricted diet, dangers of severe sodium restriction.				CO3
	Unit 4	**Diet in Gout**				
	A	Etiopathology				CO4
	B	Clinical features, complications				CO4
	C	Dietary management				CO3
	Unit 5	**Diet in Inborn Errors of Metabolism**				
	A	Phenylketonuria, Maple Syrup Urine Disease (MSUD)				CO5
	B	Tyrosinemia				CO5
	C	Homocystinuria, Galactosemia				CO5
	Mode of Examination	Theory				
	Weightage distribution	CA	MTE	ETE		
		20%	30%	50%		

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO311.1	3	2	3	2	2	3	3
CO311.2	3	2	3	2	3	3	2
CO311.3	3	3	2	3	3	3	3
CO311.4	2	3	3	3	3	2	3
CO311.5	3	3	3	3	3	3	3

Theory Subjects

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2022-2023**	
Branch: SAHS		**Semester: 5th** Semester	
1	Course Code	BND 312	
2	Course Title	Preventive Nutrition	
3	Credits	4	
4	Contact Hours (L-T-P)	3-1-0	
	Course Type	Compulsory	
5	Course Objective	• To familiarize students with recent advances in nutraceuticals. • To impart knowledge on the health benefits of nutraceuticals and functional foods.	
6	Course Outcomes	CO1: Understand the diseases of GI tract and principles of diet modifications for its different therapeutic conditions CO2: Understand principles of diet modifications for Diabetes mellitus CO3:Understand principles of diet modifications for Cardiovascular diseases CO4: Understand principles of diet modifications for Gout CO5: Understand importance of diet for inborn error	
7	Course Description	Understand the functional foods and their uses. Comprehend the rationale of prevention of various diseases/disorders using nutraceuticals.	
8	**Outline syllabus**		CO Mapping
	Unit 1	**Functional foods**	
	A	Definition, Relation of functional foods & Nutraceutical (FFN) to foods & drugs	CO 1
	B	Applications of herbs to functional foods. free radicals, antioxidants, phytochemicals, prebiotics, probiotics and symbiotic	CO1
	C	Fibre – classification, role, physiological and metabolic effect, Role of fibre in prevention of diseases	CO1
	Unit 2	**Introduction to Nutraceuticals as Science**	
	A	Historical perspective, classification, scope &future prospects	CO2
	B	Applied aspects of the Nutraceutical Science. Sources of Nutraceuticals	CO2
	C	Relation of Nutraceutical Science with other Sciences: Medicine, Human physiology, genetics, food technology, chemistry and nutrition	CO2
	Unit 3	**Properties, structure and functions of various Nutraceuticals**	

	A	Glucosamine, Octacosanol, Lycopene, Carnitine, Melatonin and Ornithine alpha ketoglutarate				CO3
	B	Glucosamine, Octacosanol, Lycopene, Carnitine, Melatonin and Ornithine alpha ketoglutarate				CO3
	C	Use of pro-anthocyanidins, grape products, flaxseed oil as Nutraceuticals.				CO3
	Unit 4	**Nutrigenomics**				
	A	Production technology for recombinant therapeutic products using E.coli with examples like human insulin, growth hormones, interferons, erythropoietin.				CO4
	B	Immunization – Significance, immunization schedule for children				CO4
	C	Immunization – Significance, immunization schedule for children				CO3
	Unit 5	**Perspectives in preventive nutrition**				
	A	Fortification, enrichment, restoration, health supplements and proprietary foods				CO5
	B	Nutrigenomics				CO5
	C	Biomolecules as antibiotics, vitamins, pigments				CO5
	Mode of Examination	Theory				
	Weightage distribution	CA	MTE	ETE		
		20%	30%	50%		

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO312.1	3	1	3	3	3	2	2
CO312.2	3	2	3	2	3	3	2
CO312.3	3	3	1	3	1	3	3
CO312.4	1	3	2	3	2	2	3
CO312.5	1	2	3	3	3	3	3

Theory Subjects

School: SAHS	**Batch :** 2020-23

Program: BND		**Current Academic Year: 2022-2023**	
Branch: SAHS		**Semester: 5th** Semester	
1	Course Code	BND 313	
2	Course Title	Food Service Management-I	
3	Credits	5	
4	Contact Hours (L-T-P)	3-1-2	
	Course Type	Compulsory	
5	Course Objective	• To prepare students to meet the challenges associated with the Food and Beverage Industry. • Students will gain a basic understanding of the Food and Beverage industry by analysing the industry's various processes	
6	Course Outcomes	CO1: Knowledge of development of food service unit CO2: Understand principles of entrepreneurship in food services CO3:Understand principles of menu planning CO4: Understand principles of food management system. CO5: Understand the process of storage in food service management.	
7	Course Description	A **food service management** program provides you with theoretical and practical knowledge, and you usually spend extensive time applying your coursework in real-world restaurant environments. The **courses** you take include **food service** sanitation, nutrition, culinary arts, dining room **management** and business practices.	
8	**Outline Syllabus**		CO Mapping
	Unit 1	**History and development of food service system**	
	A	Food service establishments-history and development, factors affecting development	CO 1
	B	Approaches to food service management, principles of management, functions of management	CO1
	C	The management process, types of plan, preparing a planning guide or prospectus	CO1
	Unit 2	**Entrepreneurship and food service management**	
	A	Entrepreneurship- characteristic of entrepreneur, creativity, innovation and entrepreneurship	CO2
	B	Business requirement for food products	CO2
	C	Entrepreneurship development and training	CO2
	Unit 3	**Menu Planning**	
	A	Definition and functions of menu, need for menu planning,	CO3

		knowledge and skills required for planning menu	
	B	Types of menu and its application	CO3
	C	Steps in menu planning and its evaluation	CO3
	Unit 4	**Food Management: Purchase and Storage**	
	A	Purchasing: A food Management activity	CO4
	B	Mode of Purchasing	CO4
	C	Methods of purchasing	CO4
	Unit 5	**Storage**	
	A	Storage Space	CO5
	B	Store Room Management	CO5
	C	Production Control: Use of standardized recipes, quality control in food preparation and cooking	CO5
	Mode of Examination	Theory	
	Weightage distribution	CA: 20% / MTE: 30% / ETE: 50%	
	Text Book	• West B Bessie & Wood Levelle (1988) Food Service in Institutions 6th Edition Revised By Hargar FV, Shuggart SG, & Palgne Palacio June, Macmillian Publishing Company New York. • Sethi Mohini (2005) Institution Food Management New Age International Publishers • Tripati P C & Reddy PW (2008) Principles of Management 3rd edition Tata Mc Graw Hill Book Company • Knight J B & Kotschevar LH (2000) Quantity Food Production Planning & Management 3rd edition John Wiley & Sons • Dessler Gary (2007) Human Resource Management 11th edition Prentice Hall New Jersey	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO313.1	3	1	2	1	2	3	2
CO313.2	3	2	2	2	1	3	2
CO313.3	3	1	1	1	1	3	2

CO313.4	2	1	2	2	2	1	2
CO313.5	2	2	1	1	2	2	2

Practical Subjects

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2022-2023**
Branch: SAHS		**Semester: 5th** Semester
1	Course Code	BND 355
2	Course Title	Clinical Posting
3	Credits	5
4	Contact Hours	00-00-9

	(L-T-P)	
	Course Type	Compulsory
5	Course Objective	1. The objective of assigning the project related to hospital work is to expose our students to different health issues coming in the hospitals. 2. This type of project work will help the students to develop better understanding of working in a hospital environment and dealing with IPD and OPD patients.
6	Course Outcomes	CO1: The hospital posting project will enable our students to acquire knowledge and skills which will help them take up jobs in hospitals. CO2: These types of activities will give practical exposure to our students working in a hospital. CO3:These postings will add value to students, faculty members, school and university.
7	Theme	Major sub-themes for research: • Woking in a hospital kitchen • Case studies of IPD patients • Counselling of OPD patients
8	**Guidelines for faculty members**	It will be a individual assignment. Every student has to do case study of 50 IPD patients in a tenure of 6 months. The dietitian in the hospital will guide the students and approve the case studies and help the student in preparing final report. The faculty will guide the student to prepare the PPT. The report should contain a proper format of case studies and result of each nutritional assessment of IPD pateints The student should **submit the report** to program-Coordinator signed by the Dietitian of Sharda Hospital by 25 November 2019. The students have to send the hard copy of the **report and PPT**, and then only they will be allowed for ETE.
	Role of Coordinator	The Coordinator will supervise the whole process and assign students to the dietitian of the hospital.
	Layout of the Report	Report must contain case studies done in hospital in a format given by the dietitian. Note: Research report should base on primary data.
	Format	**The report should be in a hard cover /file** The Design of the Cover page to report will be given by the Coordinator
	ETE	**The students will be evaluated by panel of faculty members on the basis of their presentation.**

	Course Evaluation

	Continuous Assessment	**60%**
	Questionnaire design	**20 Marks**
	Report Writing	**40 Marks**
	ETE(PPT presentation)	**40%**

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO315.1	1	3	3	3	2	3	3
CO315.2	1	2	2	2	3	3	3
CO315.3	1	3	1	3	1	3	3

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2022-2023**
Branch: SAHS		**Semester: 5th** Semester
1	Course Code	BND 354
2	Course Title	Community Posting
3	Credits	5
4	Contact Hours (L-T-P)	00-00-9
	Course Type	Compulsory
5	Course Objective	1. The objective of assigning the project related to community work is to expose our students to different health issues faced by the people in different sections of society. 2. This type of project work will help the students to develop better understanding of problems of people living in disadvantage position in the society, may be socially, medically, economically, or otherwise. 3. This type of live project work will help our students to connect their class-room learning with practical issues/problems in the society.

6	Course Outcomes	CO1:The community posting project will enable our students to acquire knowledge and skills which will help them take up projects or assignments in industry or hospital. CO2: These types of activities will give practical exposure to our students. It will help them understand different current issues. CO3: They will learn to do research. CO4:These activities will add value to students, faculty members, school and university.	
7	Theme	Major sub-themes for research: • Mal-Nutritional issues • Nutritional education • Assessment of Nutritional Status	
8	**Guidelines for faculty members**	It will be a group assignment. There should be not more than 5 students in each group. The faculty guide will guide the students and approve the project title and help the student in preparing the questionnaire and final report. The questionnaire should be well design and it should carry at least 20 questions (Including demographic questions). The faculty will guide the student to prepare the PPT. The topic of the research should be related to nutritional problems and assessment concerning the common man. The report should contain 1500 to 2000 words and relevant charts, tables and photographs. The student should **submit the report** to CCC-Coordinator signed by the faculty guide by 25 November 2019. The students have to send the hard copy of the **report and PPT**, and then only they will be allowed for ETE.	
	Role of Coordinator	The Coordinator will supervise the whole process and assign students to faculty members.	
	Layout of the Report	a. Introduction b. Literature review(optional) c. Objective of the research d. Research Methodology e. Finding and discussion f. Conclusion and recommendation g. References Note: Research report should base on primary data.	
	Guideline for Report Writing	**Title Page: The following elements must be included:** • Title of the article; • Name(s) and initial(s) of author(s), preferably with first names	

		spelled out; • Affiliation(s) of author(s); • Name of the faculty guide and Co-guide **Abstract:** Each article is to be preceded by a succinct abstract, of up to 250 words, that highlights the objectives, methods, results, and conclusions of the paper. **Text: Manuscripts should be submitted in Word.** • Use a normal, plain font (e.g., 12-point Times Roman) for text. • Use italics for emphasis. • *Use the automatic page numbering function to number the pages.* • *Save your file in docx format* (Word 2007 or higher) or doc format (older Word versions) **Reference list:** The list of references should only include works that are cited in the text and that have been published or accepted for publication. The entries in the list should be in alphabetical order. Journal article Hamburger, C.: Quasimonotonicity, regularity and duality for nonlinear systems of partial differential equations. Ann. Mat. Pura Appl. 169, 321–354 (1995)	
	Format	**The report should be Spiral** The Design of the Cover page to report will be given by the Coordinator Cover page Acknowledgement Content Project report Appendices	
	ETE	**The students will be evaluated by panel of faculty members on the basis of their presentation.**	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO314.1	1	1	3	2	2	2	3
CO314.2	1	2	2	2	3	2	3
CO314.3	1	2	1	3	1	1	3
CO314.4	2	1	1	2	1	2	1

School: SAHS		**Batch: 2020-23**	
Program: BND		**Current Academic Year: 2022-2023**	
Branch:		**Semester:5th semester**	
1	Course Code	BND 356	
2	Course Title	Therapeutic Nutrition	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	To understand the nutrition assessment, planning, implementation, monitoring and follow up in nutrition care process, the causative factors and metabolic changes in various diseases/disorders and acquire knowledge on the principles of diet therapy and comprehend principles of dietary Counselling and the rationale of prevention of various diseases/disorders.	
6	Course Outcomes	CO1: Understand the methods of food preparation for GI patients CO2: Understand the methods of food preparation for diabetic diet CO3: Understand the methods of food preparation for CVD CO4: Understand the methods of food preparation for Gout CO5: Understand the methods of food preparation for inborn errors	
7	Course Description	**Clinical nutrition** is concerned with **therapeutic** uses for **nutrition**, usually in medical settings, as part of a complete health care program. **Clinical** Nutritionists create effective **nutrition** plans aimed at disease prevention and treatment, strengthening of the immune system, and nourishment of the body.	
8	Outline syllabus		CO Mapping
	Unit 1	**Preparation of diets for GI therapeutic conditions**	
	A	Diet plan	CO1
	B	Calculations	CO1
	C	Diet preparation	CO1

	Unit 2	**Preparation of diet for Diabetic diseases**			
	A	Diet plan			CO2
	B	Calculations			CO2
	C	Diet preparation			CO2
	Unit 3	**Preparation of diets for cardiovascular diseases**			
	A	Diet plan			CO3
	B	Calculations			CO3
	C	Diet preparation			CO3
	Unit 4	**Preparation of diets for gout**			
	A	Diet plan			CO4
	B	Calculations			**CO4**
	C	Diet preparation			CO4
	Unit 5	**Preparation of diets for inborn errors**			
	A	Diet plan			CO5
	B	Calculations			CO5
	C	Diet preparation			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO351.1	3	2	3	2	2	3	3
CO351.2	3	2	3	2	3	3	2
CO351.3	3	3	2	3	3	3	3
CO351.4	2	3	3	3	3	2	3
CO351.5	3	3	3	3	3	3	3

School: SAHS		**Batch: 2020-23**	
Program: BND		**Current Academic Year: 2022-2023**	
Branch:		**Semester:5th semester**	
1	Course Code	BND 357	
2	Course Title	Food Service Management-I	
3	Credits	1	
4	Contact Hours (L-T-P)	0-0-2	
	Course Status	Compulsory	
5	Course Objective	To prepare students to meet the challenges associated with the Food and Beverage Industry. Students will gain a basic understanding of the Food and Beverage industry by analysing the industry's various processes	
6	Course Outcomes	CO1: Understand the methods of increasing quality cooking concept and principles CO2: Understand the methods of recipe conservation CO3: Understand the methods of mid-day meals for pre-schoolers CO4: Understand the methods of College hostel mess CO5: Understand the methods of Working women hostel	
7	Course Description	A **food service management** program provides you with theoretical and practical knowledge, and you usually spend extensive time applying your coursework in real-world restaurant environments. The **courses** you take include **food service** sanitation, nutrition, culinary arts, dining room **management** and business practices.	
8	Outline syllabus		CO Mapping
	Unit 1	**Quality cooking: concept, principles and technique**	
	A	Cooking losses in pre-preparation methods	CO1
	B	Raw and cook weight of vegetables	CO1
	C	Market survey for different food groups	CO1
	Unit 2	**Recipe conservation**	
	A	Calculation of recipe conservation and standardization of recipe	CO2
	B	Recipe preparation	CO2
	C	Recipe preparation	CO2
	Unit 3	**Planning and organizing meals for**	
	A	Mid-day snack for pre-schoolers	CO3

	B	Calculations			CO3
	C	Recipe preparation			CO3
	Unit 4	**Planning and organizing meals for**			
	A	College hostel mess			CO4
	B	Calculations			**CO4**
	C	Recipe preparation			CO4
	Unit 5	**Planning and organizing meals for**			
	A	Working women hostel			CO5
	B	Calculations			CO5
	C	Recipe preparation			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO353.1	2	2	3	2	2	2	3
CO353.2	1	2	3	2	1	1	2
CO353.3	1	1	2	3	3	1	3
CO353.4	2	3	3	3	1	2	3
CO353.5	3	1	3	3	3	3	3

Theory Subject

School: SAHS		**Batch :** 2020-23	
Program: BND		**Current Academic Year: 2022-2023**	
Branch: SAHS		**Semester: 6th** Semester	
1	Course Code	BND 316	
2	Course Title	Advanced Therapeutic Nutrition	
3	Credits	6	
4	Contact Hours (L-T-P)	3-2-2	
	Course Type	Compulsory	
5	Course Objective	To understand the nutrition assessment, planning, implementation, monitoring and follow up in nutrition care process, the causative factors and metabolic changes in various diseases/disorders and acquire knowledge on the principles of diet therapy and comprehend principles of dietary Counselling and the rationale of prevention of various diseases/disorders.	
6	Course Outcomes	CO1: Understand principles of diet modifications for Paediatric Patients. CO2: Understand principles of diet modifications for liver diseases CO3:Understand principles of diet modifications for renal diseases CO4: Understand principles of diet modifications for CO5: Understand importance of diet for inborn error	
7	Course Description	**Clinical nutrition** is concerned with **therapeutic** uses for **nutrition**, usually in medical settings, as part of a complete health care program. **Clinical** Nutritionists create effective **nutrition** plans aimed at disease prevention and treatment, strengthening of the immune system, and nourishment of the body.	
8	**Outline Syllabus**		CO Mapping
	Unit 1	**Diet Modification for paediatric patients**	
	A	Dietary management of PEM	CO 1
	B	Nutritional management of LBW	CO1
	C	Dietary management of other deficiency disease present in paediatric patients.	CO1
	Unit 2	**Diet in Diseases of Liver and Gall Bladder**	
	A	Aetiology, Symptoms, Dietary treatment in Jaundice, Hepatitis, Pancreatitis, Cirrhosis, Hepatic Coma	CO2

	B	Role of food and alcohol in developing liver diseases.	CO2
	C	Biliary Tract Diseases- Cholecystitis, Cholelithiasis, and Choledocholithiasis	CO2
	Unit 3	**Diet in Renal disease**	
	A	Causes, Symptoms and dietary management in Nephritis, Nephrosis	CO3
	B	Acute and chronic renal failure, Renal calculi, Acid and alkali producing foods	CO3
	C	End Stage Renal Diseases (ESRD), Dialysis.	CO3
	Unit 4	**Diet in Cancer**	
	A	Tumor markers and their applications, Types of cancer, Risk factors	CO4
	B	Symptoms, Metabolic alterations and Nutritional problems of cancer and cancer therapy	CO4
	C	Medical Nutrition Therapy, Role of food in prevention of cancer.	CO4
	Unit 5	**Diet and Drug interaction**	
	A	Basic Concept	CO5
	B	Effect of nutrition on drugs	CO5
	C	Clinical significance and risk factors for drug-nutrient interactions	CO5
	Mode of Examination	Theory	
	Weightage distribution	CA: 20% / MTE: 30% / ETE: 50%	
	Text Book	Swaminathan, M (1989), Hand Book of Food and Nutrition, Bangalore Printing and Publishing Co, Bangalore. Gibney M J., Elia.M, Lingqvist. O (2005),Clinical Nutrition, Blackwell Science publishing Co. Guthrie, H.A and Picciano, M.F, (1995), Human Nutrition, Mosby Publishing Co, New York.	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO316.1	3	2	3	2	2	3	3
CO316.2	3	2	3	2	3	3	2
CO316.3	3	3	2	3	3	3	3

CO316.4	2	3	3	3	3	2	3
CO316.5	3	3	3	3	3	3	3

Theory Subject

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2022-2023**
Branch: SAHS		**Semester: 6th** Semester
1	Course Code	BND 317
2	Course Title	Food Service Management-II

3	Credits	6	
4	Contact Hours (L-T-P)	3-2-2	
	Course Type	Compulsory	
5	Course Objective	• To prepare students to meet the challenges associated with the Food and Beverage Industry. • Students will gain a basic understanding of the Food and Beverage industry by analysing the industry's various processes	
6	Course Outcomes	CO1: understand principles of quality food production CO2: Understand different types of food service system CO3:Understand principles of plant sanitation and safety CO4: Understand budgeting in food service unit CO5: Understand the process of delivery and service and goals issues	
7	Course Description	A **food service management** program provides you with theoretical and practical knowledge, and you usually spend extensive time applying your coursework in real-world restaurant environments. The **courses** you take include **food service** sanitation, nutrition, culinary arts, dining room **management** and business practices.	
8	**Outline Syllabus**		CO Mapping
	Unit 1	**Quality food production**	
	A	Principles of food production: traditional, commissary and ready prepared	CO 1
	B	Food production Management systems: menu, ingredient control, production forecasting, production scheduling	CO1
	C	Production control: standardized recipe, developing program for recipe standardization	CO1
	Unit 2	**Types of Food Service system**	
	A	Conventional, commissary ,ready prepared and assembly/serve	CO2
	B	Conduct and appearance of service unit personnel	CO2
	C	Leadership :definition, components of leadership, approaches of leadership, styles of leadership	CO2
	Unit 3	**Plant Sanitation and safety**	
	A	Sanitation and safety definition, sanitation in food services, sanitizing agents, cleaning agents, sanitation and public health	CO3

	B	Methods to wash, rinse and sanitize food contact surfaces, post cleaning care, 3e's of safety, safety enforcement.	CO3
	C	Standards, policies and schedules	CO3
	Unit 4	**Food management: records and control**	
	A	Records and control: basic concept	CO4
	B	Record necessary for catering unit: budget, types of budget	CO4
	C	Cost control	CO4
	Unit 5	**Food Management : delivery and service-goals and issues**	
	A	Food service systems model and its significance	CO5
	B	Methods of delivery service system	CO5
	C	Application to food service management	CO5
	Mode of Examination	Theory	
	Weightage distribution	CA: 20% / MTE: 30% / ETE: 50%	
	Text Book	Anderson, F. (1996), Home Appliance Servicing Taraporwals Sons. & Co. Arora, K., (2002), Theory of Cookery, Frank Bros. & Co., Ltd., New Delhi. Berry, M., (1995), Complete Cook Book, Dorling Kindersley Ltd., London. Hsiung, D.T., (1994), Chinese Cantonese Cooking, Parragon Book Service Ltd., England. Johnson, J.B, (1995), Equipment for Modern Living, Macmillan company Ltd Khan, M.A. (1987), Food Service Operations, Avi Publishing Company.	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO313.1	3	1	2	1	2	3	2
CO313.2	3	2	2	2	1	3	2
CO313.3	3	1	1	1	1	3	2
CO313.4	2	1	2	2	2	1	2
CO313.5	2	2	1	1	2	2	2

Theory Subjects

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2022-2023**
Branch: SAHS		**Semester: 6th** Semester
1	Course Code	BND 318
2	Course Title	**FOOD PRESERVATION AND PACKAGING**
3	Credits	6
4	Contact Hours (L-T-P)	3-1-5
	Course Type	Compulsory
5	Course Objective	To equip students with advanced knowledge of preservation and packaging of food

6	Course Outcomes	CO1: understand principles of food preservation CO2: Understand the concept of dehydration and drying CO3:Understand the concept of preservation by high temperature CO4: Understand the concept of ionization technique CO5: Understand the concept of preservation by low temperature	
7	Course Description	**Preservation** by chilling, freezing, canning, fermentation, concentration, dehydration, smoking, by chemical agents and novel non thermal **techniques**.	
8	**Outline Syllabus**		CO Mapping
	Unit 1	**Introduction to food preservation**	
	A	Introduction to food preservation –definition methods of food preservation , principles of food preservation	CO 1
	B	Packaging of foods – definition, Functions of packaging; Type of packaging materials;	CO1
	C	Selection of packaging material for different foods; Selective properties of packaging film; Methods of packaging and packaging equipment.	CO1
	Unit 2	**Dehydration and drying of food items**	
	A	Dehydration- definition and objectives, method of preservation,	CO2
	B	factors affecting rate of drying, sun drying, normal drying curve. water activity,	CO2
	C	types of dehydrators (air convection, drum, freeze and vacuum driers) steps in dehydration of fruits and vegetable Packaging of dehydrated foods.	CO2
	Unit 3	**Preservation by high temperature**	
	A	Introduction: pasteurisation , sterilization	CO3
	B	Canning: Preservation principle of canning of food items, thermal process time calculations for canned foods, spoilage in canned foods Preservation by preservative : chemical preservative , natural preservatives .	CO3
	C	Role of food packaging in food preservation, packaging of fruits and vegetables. Point to be considered before designing a packaging systems	CO3
	Unit 4	**Ionization radiation**	
	A	Use of preservative in foods: chemical preservative, biopreservatives, antibiotics, lactic acid bacteria.	CO4

	B	Record necessary for catering unit: budget, types of budget				CO4
	C	Innovative food packaging : types of packaging, MAP,CAP, active packaging , vacuum packaging , aseptic packaging				CO4
	Unit 5	**Preservation by low temperature :**				
	A	Definition and objectives, difference between freezing and refrigeration, systems of refrigeration,				CO5
	B	method of preservation. slow freezing process, quick freezing process				CO5
	C	steps in freezing fruits and vegetables. cryogenic freezing of fruits and vegetable. effect of freezing on nutritive value.				CO5
	Mode of Examination	Theory				
	Weightage distribution	CA	MTE	ETE		
		20%	30%	50%		
	Text Book	Anderson, F. (1996), Home Appliance Servicing Taraporwals Sons. & Co. Arora, K., (2002), Theory of Cookery, Frank Bros. & Co., Ltd., New Delhi. Berry, M., (1995), Complete Cook Book, Dorling Kindersley Ltd., London. Hsiung, D.T., (1994), Chinese Cantonese Cooking, Parragon Book Service Ltd., England. Johnson, J.B, (1995), Equipment for Modern Living, Macmillan company Ltd Khan, M.A. (1987), Food Service Operations, Avi Publishing Company. Lillicrap, D.K., (1989), Food and Beverage Service, 2nd edition, BLBS.				

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO318.1	3	1	2	1	2	3	2
CO318.2	3	2	2	2	1	3	2
CO318.3	3	1	1	1	1	3	2
CO318.4	2	1	2	2	2	1	2
CO318.5	2	2	1	1	2	2	2

Practical Subjects

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2022-2023**
Branch: SAHS		**Semester: 6th** Semester
1	Course Code	BND 361
2	Course Title	Clinical Posting
3	Credits	5
4	Contact Hours (L-T-P)	00-00-9
	Course Type	Compulsory
5	Course Objective	1. The objective of assigning the project related to hospital work is to expose our students to different health issues coming in the hospitals. 2. This type of project work will help the students to develop better understanding of working in a hospital environment and dealing with IPD and OPD patients.

6	Course Outcomes	CO1: The hospital posting project will enable our students to acquire knowledge and skills which will help them take up jobs in hospitals. CO2: These types of activities will give practical exposure to our students working in a hospital. CO3:These postings will add value to students, faculty members, school and university.	
7	Theme	Major sub-themes for research: • Woking in a hospital kitchen • Case studies of IPD patients • Counselling of OPD patients	
8	**Guidelines for faculty members**	It will be a individual assignment. Every student has to do case study of 50 IPD patients in a tenure of 6 months. The dietitian in the hospital will guide the students and approve the case studies and help the student in preparing final report. The faculty will guide the student to prepare the PPT. The report should contain a proper format of case studies and result of each nutritional assessment of IPD patients The student should **submit the report** to program-Coordinator signed by the Dietitian of Sharda Hospital by 25 april 2019. The students have to send the hard copy of the **report and PPT**, and then only they will be allowed for ETE.	
	Role of Coordinator	The Coordinator will supervise the whole process and assign students to the dietitian of the hospital.	
	Layout of the Report	Report must contain case studies done in hospital in a format given by the dietitian. Note: Research report should base on primary data.	
	Format	**The report should be in a hard cover /file** The Design of the Cover page to report will be given by the Coordinator	
	ETE	**The students will be evaluated by panel of faculty members on the basis of their presentation.**	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO357.1	1	1	3	2	2	2	3
CO357.2	1	2	2	2	3	2	3
CO357.3	1	2	1	3	1	1	3

CO357.4	2	1	1	2	1	2	1

Practical Subjects

School: SAHS		**Batch: 2020-23**
Program: BND		**Current Academic Year: 2022-2023**
Branch:		**Semester:6th semester**
1	Course Code	BND 360
2	Course Title	Advanced Therapeutic Nutrition
3	Credits	2
4	Contact Hours (L-T-P)	0-0-5
	Course Status	Compulsory
5	Course Objective	To understand the nutrition assessment, planning, implementation, monitoring and follow up in nutrition care process, the causative factors and metabolic changes in various diseases/disorders and acquire knowledge on the principles of diet therapy and comprehend principles of dietary Counselling and the rationale of prevention of various diseases/disorders.
6	Course Outcomes	CO1: Understand the methods of food preparation for **paediatric** CO2: Understand the methods of food preparation for liver disease CO3: Understand the methods of food preparation for renal disease CO4: Understand the methods of food preparation for gall bladder CO5: Understand the methods of food preparation on oncogenic diet
7	Course Description	**Clinical nutrition** is concerned with **therapeutic** uses for **nutrition**, usually in medical settings, as part of a complete health care

		program. **Clinical** Nutritionists create effective **nutrition** plans aimed at disease prevention and treatment, strengthening of the immune system, and nourishment of the body.			
8	Outline syllabus				CO Mapping
	Unit 1	**Preparation of diets for paediatric conditions**			
	A	Diet plan			CO1
	B	Calculations			CO1
	C	Diet preparation			CO1
	Unit 2	**Preparation of diet for liver disease**			
	A	Diet plan			CO2
	B	Calculations			CO2
	C	Diet preparation			CO2
	Unit 3	**Preparation of diets for renal disease**			
	A	Diet plan			CO3
	B	Calculations			CO3
	C	Diet preparation			CO3
	Unit 4	**Preparation of diets for gall bladder**			
	A	Diet plan			CO4
	B	Calculations			**CO4**
	C	Diet preparation			CO4
	Unit 5	**Preparation of oncogenic diets**			
	A	Diet plan			CO5
	B	Calculations			CO5
	C	Diet preparation			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO351.1	3	2	3	2	2	3	3
CO351.2	3	2	3	2	3	3	2
CO351.3	3	3	2	3	3	3	3
CO351.4	2	3	3	3	3	2	3
CO351.5	3	3	3	3	3	3	3

Practical Subjects

School: SAHS		**Batch: 2020-23**	
Program: BND		**Current Academic Year: 2022-2023**	
Branch:		**Semester:6th semester**	
1	Course Code	BND 359	
2	Course Title	Food Service Management-II	
3	Credits	2	
4	Contact Hours (L-T-P)	0-0-5	
	Course Status	Compulsory	
5	Course Objective	To prepare students to meet the challenges associated with the Food and Beverage Industry. Students will gain a basic understanding of the Food and Beverage industry by analysing the industry's various processes	
6	Course Outcomes	CO1: Understand the methods for planning and organizing for industrial canteen CO2: Understand the methods for planning and organizing for railway base kitchen CO3: Understand the methods for planning and organizing for birthday party CO4: Understand the practical working of food service establish CO5: Understand the planning and preparation of prospectus	
7	Course Description	A **food service management** program provides you with theoretical and practical knowledge, and you usually spend extensive time applying your coursework in real-world restaurant environments. The **courses** you take include **food service** sanitation, nutrition, culinary arts, dining room **management** and business practices.	
8	Outline syllabus		CO Mapping
	Unit 1	**Planning and organizing meals for**	
	A	Industrial canteen	CO1

	B	Calculations			CO1
	C	Recipe preparation			CO1
	Unit 2	**Planning and organizing meals for**			
	A	Railway base kitchen			CO2
	B	Calculations			CO2
	C	Recipe preparation			CO2
	Unit 3	**Planning and organizing meals for**			
	A	Birthday party			CO3
	B	Calculations			CO3
	C	Recipe preparation			CO3
	Unit 4	**Visit to a food service establishment**			
	A	Visit			CO4
	B	Record preparation			**CO4**
	C	Record preparation			CO4
	Unit 5	**Preparing a planning guide/prospectus**			
	A	Preparation			CO5
	B	Preparation			CO5
	C	Preparation			CO5
	Mode of examination	Practical/Viva			
	Weightage Distribution	CA	MTE	ETE	
		60%	0%	40%	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO359.1	2	2	3	2	2	2	3
CO359.2	1	2	3	2	1	1	2
CO359.3	1	1	2	3	3	1	3
CO359.4	2	3	3	3	1	2	3
CO359.5	3	1	3	3	3	3	3

Practical Subjects

School: SAHS		**Batch :** 2020-23
Program: BND		**Current Academic Year: 2022-2023**
Branch: SAHS		**Semester: 6th** Semester
1	Course Code	BND 358
2	Course Title	Food Preservation and Packaging
3	Credits	2
4	Contact Hours (L-T-P)	00-00-5
	Course Type	Compulsory
5	Course Objective	1. The objective of assigning the project related to food industry is to expose our students to different types of food industries. 2. This type of project work will help the students to develop better understanding of working in a food industry
6	Course Outcomes	CO1: The food industry project will enable our students to acquire knowledge and skills which will help them take up jobs. CO2: These types of activities will give practical exposure to our students working in food industry CO3:These postings will add value to students, faculty members, school and university.
7	Theme	Major sub-themes for research: • Bakery industry • Preservation industry
8	**Guidelines for faculty members**	It will be a individual assignment. Every student has to do 1 month industry training in bakery and preservative industry The industry supervisor will guide the students and approve the studies and help the student in preparing final report. The faculty will guide the student to prepare the PPT. The report should contain a proper format of each work they learned in a industry The student should **submit the report** to program-Coordinator signed by the industry guide by 25 april 2019.

		The students have to send the hard copy of the **report and PPT**, and then only they will be allowed for ETE.	
	Role of Coordinator	The Coordinator will supervise the whole process and assign students to different food industry.	
	Layout of the Report	Report must contain details of work student has done in the industry with proper pictures and working of different equipments Note: Research report should base on primary data.	
	Format	**The report should be in a spiral bind printed form** The Design of the Cover page to report will be given by the Coordinator	
	ETE	**The students will be evaluated by panel of faculty members on the basis of their presentation.**	

POs COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO358.1	2	2	3	2	2	2	3
CO358.2	1	2	3	2	1	1	2
CO358.3	1	1	2	3	3	1	3
CO358.4	2	3	3	3	1	2	3
CO358.5	3	1	3	3	3	3	3

Signature of HOD