

# VANITA VISHRAM WOMEN'S UNIVERSITY

(Managed By: Vanita Vishram, Surat)

1<sup>st</sup> Women's University of Gujarat



VANITA VISHRAM  
WOMEN'S UNIVERSITY

SURAT

## SCHOOL OF SCIENCE AND TECHNOLOGY

### FACULTY OF SCIENCE

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DEPARTMENT OF FOOD AND

NUTRITION

B.Sc. FOOD AND NUTRITION

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SYLLABUS

AS PER **NEP-2020**

W.E.F 2023-24



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## 1. PREAMBLE – VVWU

Vanita Vishram Women's University (VVWU) is the First-ever Women's University of Gujarat approved by the Government of Gujarat under the provisions of the Gujarat Private Universities Act, 2009. It is a University committed to achieve Women's Empowerment through Quality Education, Skill Development, and by providing employment opportunities to its girl students through its model curriculum, integration of technology in pedagogy and best-in-class infrastructure. The focus is on prioritizing practical component and experiential learning supported through academia-industry linkages, functional MoUs, skill development training, internships etc. It aims at providing opportunities to the girl students for holistic development and self-reliance.

### VISION

Empowerment of women through quality education and skill development, so as to make them strong pillars of stability in the society.

### MISSION

To provide Education & Professional Training to all women for their all-round development, so as to enable them to become economically independent and socially empowered citizens.

## 2. SALIENT FEATURES

1. Based on NEP-2020 & CBCS
2. Interdisciplinary as well as multidisciplinary.
3. Practical-oriented, skill-based & vocation-based.
4. Based on experiential learning.
5. Greater exposure to internship, hands-on training, project work, field work, presentation etc.
6. Mode of teaching shall be Offline
7. Qualified & Competent Faculty Members for effective teaching-learning
8. Employment-Generating

## 3. INTRODUCTION OF THE PROGRAM

It is a three-year undergraduate course offered after completion of 10+2 schooling. Food & Nutrition is concerned with the field of Science and in this course, the main emphasis is given to food, nutrition, diet and their production, management, preservation, etc. The Bachelor of Science course in Food and Nutrition focuses on the interface between Human Nutrition and Food Science as well as an integration of the two disciplines. The course aims to provide broad and balanced knowledge in Food and Nutrition in addition to understanding of key



chemical concepts, principles and theories. It will provide knowledge and skill to the students' thus enabling them to undertake further studies in Food and Nutrition, in related areas or multidisciplinary areas that can be helpful for self-employment / entrepreneurship. The course is designed to provide intellectual and laboratory skills according to the UGC module for CHOICE BASED CREDIT SYSTEM (CBCS) pertaining to B.Sc. Food and Nutrition.

#### **4. OBJECTIVE OF THE PROGRAM**

The primary objective of a Food and Nutrition program is to equip students with the skills and knowledge necessary for careers in the food industry and entrepreneurship.

- Introduce the students to the advanced aspects of Nutrition Science and Dietetics.
- Make them understand the role as a Nutritionist or a dietitian in preventive and therapeutic aspects of Health care management.
- Develop skills wherein they understand the role of various foods, nutrients they provide and imply innovative methods in food product development.
- Create awareness among them about the current and future trends in the industry and help to determine food safety and entrepreneurship.
- Create awareness about the need for Nutrition in Community emphasizing the role of Public Health Nutrition.

#### **5. PROGRAMME OBJECTIVES (PO<sub>s</sub>)**

- PO 1. To impart knowledge of biological sciences and application of biological systems in day-to-day life that are technological aspects.
- PO 2. To strengthen the in-field practical knowledge of the students by providing them hands-on experimentation, project work and field work.
- PO 3. To develop capability of thinking, understanding/analyzing and interpreting and solving problems to meet the need of industries such as agriculture, food and dairy, fermentation, diagnostics, pharma industries, etc. and research.
- PO 4. To make learners understand about bioethical aspects, safety aspects and their responsibilities towards mankind and the environment.
- PO 5. To make students capable of finding entrepreneurship opportunities for betterment of society, environment.
- PO 6. To make the students avail of all the basic knowledge required for various competitive examinations related to the Life Sciences and Biosciences.



## 6. PROGRAM SPECIFIC OUTCOMES (PSO<sub>s</sub>)

Upon completion of the B.Sc. Biotechnology/B.Sc. (Hons) Biotechnology program, the students would:

- PSO 1. Have the knowledge of basic Biology and Biotechnological aspects; its understanding, concept.
- PSO 2. Be able to apply their practical skills and knowledge to identify and resolve the problems related to and serve various Biotechnological Industries such as agriculture, food and dairy, environmental, fermentation, diagnostics, pharma industries, etc, Medical or hospital related organizations, Regulatory Agencies, Environmental problems & Academia.
- PSO 3. Be able to use modern analytical tools/ software/ equipment's and analyze the results used in industry and research through an interdisciplinary learning habitat.
- PSO 4. Be able to practice professional ethics in Food and Nutrition and Execute their professional careers in society as Dietitian, Nutritionist, Research assistant, Food lab technician, Public health expert, Food inspector, Food Entrepreneur, Wellness consultants, Diet counselor, Diabetes educator, fitness coach, Sports Nutritionist, Researcher.
- PSO 5. Develop high-quality research encouraging scientific thinking and approach for research.
- PSO 6. Develop skills for further higher studies, competitive examinations and employment.



## 7. PROGRAM HIGHLIGHTS:

<b>Course Level</b>	Undergraduate						
<b>Duration</b>	3 years (6 semesters)						
<b>Examination Type</b>	Semester system (1-6 semesters)						
<b>Intake</b>	100						
<b>Eligibility</b>	10 + 2 Open Eligibility						
<b>Mapping between POs and PSOs</b>		PSO 1.	PSO 2.	PSO 3.	PSO 4.	PSO 5.	PSO 6.
	PO 1.						
	PO 1.						
	PO 1.						
	PO 1.						
	PO 1.						
	PO 1.						
<b>Job Positions</b>	Dietitian, Nutritionist, Research assistant, Food lab technician, Public health expert, Food inspector, Food Entrepreneur, Wellness consultants, Diet counselor, Diabetes educator, fitness coach, sports Nutritionist, Researcher						

## 8. SCHEME OF ASSESSMENT

Following is the scheme of assessment followed by the university

<b>Weightage (%)</b>	<b>Continuous Comprehensive Evaluation (CCE) (50%)</b>	<b>Semester End Evaluation (SEE) (50%)</b>
100%	<ul style="list-style-type: none"> <li>• [Internal written Exam] (20%)</li> <li>• [Thread-01 + Thread-02] (10% + 10%) (Any 2 of the following)</li> </ul> <p>[1. Assignments/ 2. Project work/ 3. Field work/ 4. Quiz/ 5. Group discussion/ 6. Role play/ 7. (Lab Record/Lab Performance/Lab Work)/ 8. (Seminar/Class Performance/ Poster Presentation)/ 9. Viva-Voice/ 10. Book Review or Article Review/ 11. Case Studies/ 12. Class Test/ 13. Report Writing/ 14. Any other as per the requirement of the subject]</p> <ul style="list-style-type: none"> <li>• [Attendance] (10%)</li> </ul>	Semester End Evaluation (SEE) Theory Exam Whole Syllabus



## 9. CREDIT STRUCTURE

### B.Sc. Food and Nutrition Credit structure for UG – 2023

#### According to Curriculum and Credit Framework for Undergraduate Program

Semester	Major	Minor	Multi-Disciplinary	Ability Enhancement Course (AEC)	Skill Enhancement Course (SEC)	Value Added Courses (VAC)/IKS	RP/OJT	Dissertation	Total
1	8	4	4	2	2	2	0	0	22
2	8	4	4	2	2	2	0	0	22
3	12	0	4	2	2	2	0	0	22
4	12	4	0	2	2	2	0	0	22
5	12	8	0	0	2	0	0	0	22
6	12	4	0	2	4	0	0	0	22
<b>Total</b>	<b>64</b>	<b>24</b>	<b>12</b>	<b>10</b>	<b>14</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>132</b>
7	12	4	0	0	0	0	6	0	22
8	12	4	0	0	0	0	6	0	22
<b>Total</b>	<b>24</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>44</b>
<b>Grand Total</b>	<b>88</b>	<b>32</b>	<b>12</b>	<b>10</b>	<b>14</b>	<b>8</b>	<b>12</b>	<b>0</b>	<b>176</b>

\* If anyone wants to exit after the 2nd/ 4th Sem and wants a certificate/Diploma respectively, should complete an internship of 4 credits (60 hrs.)

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## SCHOOL OF SCIENCE AND TECHNOLOGY

### FACULTY OF SCIENCE

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#### DEPARTMENT OF FOOD AND NUTRITION

#### B.Sc. FOOD AND NUTRITION SEMESTER 1

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### SYLLABUS

AS PER **NEP-2020**

W.E.F 2023-24





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**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**10.COURSE STRUCTURE – PAPER TITLES SEMESTER 1**

UG Course structure for year – 2023									
Sem	Major	Minor	Multi-Disciplinary	Ability Enhancement Compulsory (AEC)	Ability Enhancement Elective – Skill based (SEC)	Value Added Courses (VAC)	Summer Internship/ Project/ Online Course	Dissertation	Total
<b>1</b>	Introduction of Food and Nutrition	Physical Health/Child Development and Personality	Food Map	Functional English-I	Instrumentation	Indian Knowledge System	-	-	7
	Human Physiology and Applied Science						-	-	





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**11. TEACHING AND EVALUATION SCHEME FOR BSC FOOD AND NUTRITION ACADEMIC YEAR 2023-24**

Semester	Course Code	Course Category	Course Title	Offering Department	Teaching Scheme			Examination Scheme														
					Contact Hour			Total Credit	Theory					Practical					Total Marks	Total Credits		
					Theory	Practical	Total		Credit	CCE		SEE		CCE +SEE Passing Max	Credit	CCE		SEE			CCE +SEE Passing	
										Max.	Passing	Max.	Passing			Max.	Passing	Max.				Passing
1	FNM201-1C:	Discipline Specific Course (Major)	Introduction of Food and Nutrition	Food and Nutrition	3	0	3	3	3	35	13	35	13	26	0	0	0	0	0	0	70	3
	-	Discipline Specific Course (Major) - Practical	Introduction of Food and Nutrition	Food and Nutrition	0	2	2	1	0	0	0	0	0	0	1	15	6	15	6	12	30	1
	FNM202-1C:	Discipline Specific Course (Major)	Human Physiology and Applied Science	Food and Nutrition	3	0	3	3	3	35	13	35	13	26	0	0	0	0	0	0	70	3
	-	Discipline Specific Course (Major) - Practical	Human Physiology and Applied Science	Food and Nutrition	0	2	2	1	0	0	0	0	0	0	1	15	6	15	6	12	30	1
	FNE201-1C	Discipline Specific Elective (Minor)	Physical Health	Food and Nutrition	3	0	3	3	3	35	13	35	13	26	0	0	0	0	0	0	70	3
	-	Discipline Specific Elective (Minor) – Practical	Physical Health	Food and Nutrition	0	2	2	1	0	0	0	0	0	0	1	15	6	15	6	12	30	1
	MDC201-1C	Interdisciplinary/Multidisciplinary Courses	Food Map	Food and Nutrition	4	0	4	4	4	50	18	50	18	36	0	0	0	0	0	0	100	4





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AEC201-1C	Ability Enhancement Course (AEC)	Functional English -I	English	2	0	2	2	2	25	9	25	9	18	2	25	9	25	9	18	50	2
SEC201-1C	Skill Enhancement Courses (SEC)	Instrumentation	Chemistry	2	0	2	2	2	25	9	25	9	18	2	25	9	25	9	18	50	2
IKS201-1C	Value Added Courses (VAC) / IKS	Indian Knowledge System	Biotechnology	2	0	2	2	2	25	9	25	9	18	2	25	9	25	9	18	50	2
<b>TOTAL</b>				16	12	28	22	22	275	99	275	99	198	22	200	72	200	72	144	550	22





EFFECTIVE FROM ACADEMIC YEAR 2023-24  
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**Semester I**

**FNM201-1C: Introduction of Food and Nutrition (Theory)**

**Credit 3**

**Contact Hour per week 3**

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**Outline of the Course:**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Major)
<b>Purpose of Course</b>	From this course the students will learn basic concepts of all the foods., food groups and composition of nutrients for all food items.
<b>Course Objective</b>	CO 1. To understand the interrelationship between Food, Nutrition and Health. CO 2. To understand in brief about the functions of food and various nutrients, their requirements, dietary sources. CO 3. To be familiar with different methods of cooking, their advantages and disadvantages. CO 4. To gain knowledge of improving nutritional quality of food.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of Foods.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
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**Course Content- FNM201-1C: Introduction of Food and Nutrition (Theory)**

<b>Units</b>	<b>Particulars</b>	<b>% Weightage of Unit</b>	<b>Hours</b>
<b>1</b>	<b>Introduction to Nutrition</b> <ul style="list-style-type: none"><li>● Terminologies: Definition of Health, Nutrition, Nutrients, Foods, Malnutrition, Undernutrition, Over Nutrition.</li><li>● Functions of Foods- Physiological, Psychological and Social.</li><li>● Various Food groups.</li></ul>	10%	7
<b>2</b>	<b>Introduction to Menu Planning</b> <ul style="list-style-type: none"><li>● Exchange List, RDA, Reference man and Reference woman</li><li>● The Food Guide, Food Pyramid, Balance Diet and My Plate.</li><li>● Food exchange list</li><li>● Steps involved in menu planning</li></ul>	25%	10
<b>3</b>	<b>Introduction to Adjuncts to Diet Therapy</b> <ul style="list-style-type: none"><li>● Physical Activity</li><li>● Exercise</li><li>● Yoga</li><li>● Stress Management</li></ul>	30%	12
<b>4</b>	<b>Introduction to Cooking and Preliminary preparations of Food</b> <ul style="list-style-type: none"><li>● Objectives of Cooking, Preliminary preparations of Food, Methods of Cooking- Moist heat methods, Dry heat methods, Microwave cooking, Solar cooking, their advantages and disadvantages, Effect of cooking on nutritive value.</li></ul>	35%	16

**REFERENCE**

**Core references:**

**Reference books**

1. B Srilakshmi (2019) Dietetics. 8th Edition, New Age International Pvt. Ltd.
2. B Srilakshmi (2018) Food Science. 7th Edition, New Age International Pvt. Ltd.
3. Mudambi, S.R., Rajgopal, M.V. (2012) Fundamentals of Foods, Nutrition and Diet Therapy. 7th Edition, New Age International Pvt. Ltd.
4. Nutrient Requirements and Recommended Dietary Allowances for Indians- I.C.M.R. Publication 2009

**Web references**

[https://main.icmr.nic.in/sites/default/files/Publication/icmr-nic-in-pricepubl-content-20-htm-2018-08-10-16\\_10\\_13.pdf](https://main.icmr.nic.in/sites/default/files/Publication/icmr-nic-in-pricepubl-content-20-htm-2018-08-10-16_10_13.pdf)

**FNM201-1C: Introduction of Food and Nutrition (Theory)**



EFFECTIVE FROM ACADEMIC YEAR 2023-24

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**Department of Food and Nutrition**

**B. Sc Food & Nutrition Program**

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To understand the interrelationship between Food, Nutrition and Health.
CO 2	To understand in brief about the functions of food and various nutrients, their requirements, dietary sources.
CO 3	To be familiar with different methods of cooking, their advantages and disadvantages.
CO 4	To gain knowledge of various cooking methods.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Introduction to Nutrition				
2	Introduction to Menu Planning				
3	Introduction to Adjuncts to Diet Therapy				
4	Introduction to Cooking and Preliminary preparations of Food				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						
CO4						



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**Semester I**

**FNM201-1C: Introduction to Food and Nutrition (Practical)**

**Credit 1**

**Contact Hour per week 2**

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**Outline of the Course:**

<b>Course type</b>	Practical
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Major)- Practical
<b>Purpose of Course</b>	From this course students will learn in-depth study of the foundations of general rules to prepare standardized & nutritious foods.
<b>Course Objective</b>	CO 1. Introduction to laboratory and tools. CO 2. To gain basic knowledge and understanding of the food. CO 3. To understand the concept of serving, portion size & their cooked amount. CO 4. To learn the various cooking methods, mediums of cooking, use of food guide
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of Foods.
<b>Teaching Methodology</b>	Practical, Demonstration, Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**FNM201-1C: Introduction to Food and Nutrition (Practical)**

**Course Content**

Units	Particulars	% Weightage of Unit	Hours
1	<b>Introduction to Food Laboratory Rules</b> <ul style="list-style-type: none"><li>• Introduction to laboratory tools and equipment.</li><li>• WASH (Water, Sanitation and Hygiene) Practices- personal and working area.</li></ul>	25	06
2	<b>General rules to prepare food and Standardization</b> <ul style="list-style-type: none"><li>• Preliminary treatment of food</li><li>• Methods of food preparation</li><li>• Standardization of recipes</li></ul>	40	10
3	<b>Calculation of various nutrients</b> <ul style="list-style-type: none"><li>• Use of RDA table and IFCT exchange list</li><li>• Calculation of Energy, Carbohydrates, Protein and Fat content of foods using ICMR tables.</li></ul>	35	14

**REFERENCE**

**Core references:**

**Reference books**

1. A Manual on Fundamentals of Food and Nutrition (2006) by Vanita Vishram and SNTD.
2. Srilakshmi.B. Food Science, New age international Pvt. Ltd. New Delhi, 2001.
3. Gopalan, G. RamaShastri B.V & Balasubramanian, S.C. (2000). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad 500-007, India.
4. National Institute of Nutrition (2017), Indian Food Composition Tables, ICMR.
5. National Institute of Nutrition (2020), Nutrient Requirements For Indians

**Web references**

1. Food and Nutrition Handbook (2015), Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To understand the concept of serving, exchange sizes and their cooked amount.
CO 2	To learn the various cooking methods and mediums of cooking.
CO 3	To gain knowledge about the use of laboratory apparatus.
CO 4	To determine the nutritive value of different recipes per serving.





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**FNM201-1C: Introduction to Food and Nutrition (Practical)**

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Introduction to Food Laboratory Rules				
2	General rules to prepare food and standardization				
3	Calculation of various nutrients				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						



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**Semester I**

**FNM202-1C: Human Physiology and Applied Science (Th)**

**Credit 3**

**Contact Hour per week 3**

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**Outline of the Course:**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Major)
<b>Purpose of Course</b>	From this course students will learn animal (including human) function and can be investigated at the level of cells, tissues, organ systems and the whole body.
<b>Course Objective</b>	CO 1. To gain basic knowledge and understanding of anatomy. CO 2. To give students in-depth knowledge about the organization, structures and functions of the human body. CO 3. Students will learn the terminology, anatomy and physiology, and pathology of each body system and how they interrelate to maintain homeostasis. CO 4. To ensure that students understand how the body works.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Prerequisite</b>	Elementary knowledge of anatomy and physiology.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**FNM202-1C: Human Physiology and Applied Science (Th)**

**Course Content**

Units	Particulars	% Weightage of Unit	Hours
1	<b>Unit of Life</b> <ul style="list-style-type: none"><li>• General terms- anatomy, physiology, symmetrical arrangement, anatomical position. Median plane / lateral plane, internal/ external, superficial /deep, superior/inferior, anterior/posterior.</li><li>• Basic human tissues. Structure and functions of cells with special reference to Plasma membrane.</li><li>• Mitochondria, Ribosome, Endoplasmic reticulum, Nucleus (nuclear membrane, nuclear chromatin and nucleolus).</li></ul>	10%	04
2	<b>Circulatory and Cardiovascular system</b> <ul style="list-style-type: none"><li>• Blood and its composition, Blood clotting, Blood groups, Structure and functions of heart, Cardiac cycle, cardiac output, blood pressure and its regulation.</li></ul>	15%	08
3	<b>Digestive System</b> <ul style="list-style-type: none"><li>• Structure and functions of G.I. tract, Process of digestion and absorption of food, Structure and functions of liver, gallbladder and pancreas</li></ul>	25%	10
4	<b>Respiratory System</b> <ul style="list-style-type: none"><li>• Respiratory pathway</li><li>• Structure of Lungs and gaseous exchange (oxygen and carbon dioxide transport).</li></ul>	10%	04
5	<b>Reproductive system:</b> <ul style="list-style-type: none"><li>• Male and female reproductive organs.</li><li>• Menstrual cycle.</li></ul>	25%	12
6	<b>Excretory system:</b> <ul style="list-style-type: none"><li>• Excretory organs - structure of kidney and functions, formation of urine, composition of urine. Muscles - physiology of muscular action.</li></ul>	15%	07

**REFERENCE**

**Core references:**

**Reference books:**

1. Sembulingam K, Sembulingam P. (2019,January): Essentials of Medical Physiology, 8<sup>th</sup> edition, Jaypee Brothers Medical Publishers.
2. Ross and Wilson. (2006):Anatomy and Physiology in Health and Illness, 10<sup>th</sup> Edition,



Churchill Livingstone Elsevier.

3. Mahan, L.K. and Escott-Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10<sup>th</sup> Edition, W.B. Saunders Ltd.
4. Chatterjee C.C (2016), Human Physiology 11th Edition, Medical Allied Agency, Kolkata.

**Web references**

1. Microbenotes.com/category/human-physiology
2. www.longdom.org/scholarly/human-physiology...
3. <https://youtu.be/IYQsinv938g>

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To understand human anatomy and physiology
CO 2	To know the basic structure and function of heart and blood composition
CO 3	To learn the structure and function of gastrointestinal and excretory system
CO 4	To understand the mechanism of respiration and reproductive system

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Unit of Life				
2	Circulatory and Cardiovascular System				
3	Digestive System				
4	Respiratory System				
5	Reproductive System				
6	Excretory System				



EFFECTIVE FROM ACADEMIC YEAR 2023-24

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**COURSE ARTICULATION MATRIX**

	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>
<b>CO1</b>						
<b>CO2</b>						
<b>CO3</b>						
<b>CO4</b>						
<b>CO5</b>						
<b>CO6</b>						



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FY B.Sc.**  
**Semester I**

**FNM202-1C: Human Physiology and Applied Science (Pr)**

**Credit 1**

**Contact Hour per week 2**

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**Outline of the Course:**

<b>Course type</b>	Practical
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Major)-Practical
<b>Purpose of Course</b>	Human physiology and Applied science is a discipline that is used to apply existing scientific knowledge to develop more practical applications, for example: technology or inventions.
<b>Course Objective</b>	CO 1. Introduction to laboratory and tools. CO 2. To be able to skillfully perform all the experiments. CO 3. To understand the basic concept of applied science and human physiology. CO 4: To understand the use of microscopic and examine cells & tissues.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of basic chemistry.
<b>Teaching Methodology</b>	Practical, Demonstration, Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNM202-1C: Human Physiology and Applied Science (Pr)**

**Course Content**

<b>Units</b>	<b>Particulars</b>	<b>% Weightage of Unit</b>	<b>Hours</b>
1	<b>Introduction to Food Laboratory Rules</b> <ul style="list-style-type: none"><li>• Introduction to laboratory tools and equipment.</li></ul>	5	02
2	<b>Acid - Base Titration</b> <ul style="list-style-type: none"><li>• Strong acid-Weak base</li><li>• Weak acid- Strong base</li><li>• Strong acid-strong base</li></ul>	25	12
3	<b>Determination of pH</b> <ul style="list-style-type: none"><li>• Use of pH paper strips</li><li>• Experiment on various samples-Water, Milk, Buttermilk, Vinegar, Lemon etc</li></ul>	10	04
4	<b>ECG</b> <ul style="list-style-type: none"><li>• To record the normal electrical potential of the heart muscle by electrocardiograph machine and how to analyze the ECG.</li></ul>	20	04
5	<b>Detection of Blood Group</b> <ul style="list-style-type: none"><li>• Detection by Slide Method</li></ul>	25	04
6	<b>Introduction of microscope.</b> <ul style="list-style-type: none"><li>• Microscopic observation of the Cells &amp; tissues</li></ul>	15	04

**REFERENCE**

**Core references:**

**Reference books**

1. Bahl BS (1994) Textbook of Organic Chemistry (13th ed.), New Delhi : Chand & Sons
2. Soni PL (1994) Fundamental Organic Chemistry (16th ed.), New Delhi : Chand & Sons
3. Meyer LJ (1989) Food Chemistry (1st ed.), New Delhi : CBS Publisher
4. Swaminathan M (1997) Food Science and Experimental Foods. Madras : Ganesh & Co.



EFFECTIVE FROM ACADEMIC YEAR 2023-24

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**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNM202-1C: Human Physiology and Applied Science (Pr)**

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To gain knowledge about the use of laboratory apparatus.
CO 2	To determine the concentration of a sample of acid or base.
CO 3	To understand the concept of blood grouping and cardiogram.
CO 4	To observe cells and tissue under the microscope.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Introduction to Food Laboratory Rules				
2	Acid-base titration				
3	Determination of pH				
4	ECG				
5	Detection of blood group				
6	Introduction of microscope				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						
CO4						





EFFECTIVE FROM ACADEMIC YEAR 2023-24  
**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FY B.Sc.**  
**Semester I**  
**FNE201-1C: Physical Health (Th)**

**Credit 3**

**Contact Hour per week 3**

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**Outline of the Course:**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Minor)
<b>Purpose of Course</b>	From this course students will learn bodily functions and processes working at their peak.
<b>Course Objective</b>	CO 1. To learn the basic concept of health and its dimension . CO 2. To study the important parameters of health CO 3. To learn the potential health benefits in relation to individual and environmental hygiene. CO 4. To give emphasis on basic emergency health care and hygiene education in the context of promoting health and life care.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of health.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
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**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNE201-1C: Physical Health (Th)**

**Course Content**

Units	Particulars	% Weightage of Unit	Hours
1	<b>Health and its dimensions</b> <ul style="list-style-type: none"><li>● Definition and Meaning of Health</li><li>● Dimensions of Health<ul style="list-style-type: none"><li>○ Physical Dimension</li><li>○ Mental Dimension</li><li>○ Social Dimension</li><li>○ Emotional Dimension</li><li>○ Spiritual Dimension</li><li>○ Environmental Dimension</li></ul></li></ul>	20	08
2	<b>Indicators of Health</b> <ul style="list-style-type: none"><li>● Types of health indicators<ul style="list-style-type: none"><li>○ Morbidity indicators</li><li>○ Mortality indicators</li><li>○ Indicators of behavioral risk factors</li><li>○ Health service indicators</li></ul></li></ul>	25	11
3	<b>Emergency health care</b> <ul style="list-style-type: none"><li>● Basic life support (Resuscitation)- CPR</li><li>● First aid in emergencies<ul style="list-style-type: none"><li>○ Injuries</li><li>○ Burns</li><li>○ Bleeding</li><li>○ Head and spinal injuries</li><li>○ Injured extremity</li><li>○ Wounds</li></ul></li></ul>	30	14
4	<b>Importance of hygiene</b> <ul style="list-style-type: none"><li>● Meaning of hygiene &amp; WASH</li><li>● Types of Wastes</li><li>● Scenarios of open defecation and their impact</li><li>● Defecation by pets and stray animals</li></ul>	25	10

**REFERENCE**

**Core references:**

**Reference books**

1. INDIAN FIRST AID MANUAL, (2016) (7th edition), St. John Ambulance Association (India) – Indian Red Cross Society National Headquarters 1, RED CROSS ROAD, NEW DELHI - 11001



EFFECTIVE FROM ACADEMIC YEAR 2023-24

**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**

**B. Sc Food & Nutrition Program**

2. Health indicators Conceptual and operational considerations, Pan American Health Organization
3. P Hurst, P Kirby (2014), Health, Safety and Environment: A Series of Trade Union Education Manuals for Agricultural Workers, International Labour Organization ISBN:92-2-115 192-1

**Web references**

1. <https://www.hpsc.ie/a-z/lifestages/schoolhealth/midschapters/File,14317,en.pdf>
2. [https://ncert.nic.in/pdf/publication/otherpublications/Sanitation\\_hygiene.pdf](https://ncert.nic.in/pdf/publication/otherpublications/Sanitation_hygiene.pdf)

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	Improved knowledge and understanding the importance of maintaining good health and its dimensions.
CO 2	To study the health indicators can be used for monitoring population health status.
CO 3	To achieve and maintain health by enhancing the level of personal & societal hygiene.
CO 4	To understand the relationship between physical health and its impact on the environment.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Health and its dimensions	■		■	■
2	Indicators of Health		■		■
3	Emergency health care	■		■	■
4	Importance of hygiene	■		■	■

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1	■	■			■	■
CO2	■	■				■
CO3				■	■	■
CO4	■					■



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FY B.Sc.**  
**Semester I**  
**FNE201-1C: Physical Health (Pr)**

**Credit 1**

**Contact Hour per week 2**

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**Outline of the Course:**

<b>Course type</b>	Practical
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Minor)-Practical
<b>Purpose of Course</b>	This subject is used to apply existing scientific knowledge to develop more practical applications.
<b>Course Objective</b>	CO 1. To gain practical knowledge and understanding important parameters of physical health. CO 2. To enable students to develop skill and ability to work systematically in the laboratory. CO 3. To apply the knowledge in day to day life and perform all experiments skillfully.. CO 4. To understand the qualitative and quantitative analysis of the human body and their implication to clinical conditions.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of Blood.
<b>Teaching Methodology</b>	Practical, Demonstration, Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNE201-1C: Physical Health (Pr)**

**Course Content**

Units	Particulars	% Weightage of Unit	Hours
1	<b>Determination of Pulse Rate</b> <ul style="list-style-type: none"><li>Experiment of pulse rate at various time period: Standing, Sitting, Running and after Exercise</li></ul>	20%	04
2	<b>Determination of Blood Pressure</b> <ul style="list-style-type: none"><li>Introduction to Blood Pressure</li><li>Introduction to Sphygmomanometer</li><li>Demonstration of the instrument</li><li>Measuring of Blood Pressure</li></ul>	15%	06
3	<b>Determination of Bleeding Time (BT) and Clotting Time (CT)</b> <ul style="list-style-type: none"><li>Introduction to Lancet Needles</li><li>Pricking Technique and time</li></ul>	15%	06
4	<b>Determination of Haemoglobin level</b> <ul style="list-style-type: none"><li>Detection by Sahli's or Drabkin Method</li></ul>	30%	08
5	<b>First aid kit</b> <ul style="list-style-type: none"><li>Aims of first aid &amp; the role of a first aider</li><li>Incident management</li><li>Contents of a first aid kit</li></ul>	20%	06

**REFERENCE**

**Core references:**

**Reference books**

1. ManeyShakuntala (1987) Foods, Facts and Principles. New Delhi : Wiley astern.
2. Raghuramulu N, Madhavan KN and Kalyansundaram S (1983) A manual of laboratory techniques. Hyderabad: National Institute of Nutrition
3. Wilson (1989) Anatomy and Physiology in Health and Illness, Edinburgh, Churchill Livingstone
4. Chatterjee Chandi Charan (1988) Textbook of Medical physiology, London, W.B.
5. Pearce Evelyn (1992 ) Anatomy and Physiology for Nurse, London : Faber & Faber Ltd

**Web references**

1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4925780/>
2. <https://www.youtube.com/watch?v=PLhbRulwNV0>
3. <https://www.youtube.com/watch?v=GaQZihajUyo>



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**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNE201-1C: Physical Health (Pr)**

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To observe the fluctuation in pulse rate in different situations.
CO 2	To determine the blood pressure using different techniques.
CO 3	To understand the concept of blood and relative techniques.
CO 4	To learn how to manage the emergency/accidental situation.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Determination of pulse rate				
2	Determination of blood pressure				
3	Determination of Bleeding Time (BT) and Clotting Time (CT)				
4	Measurement of Haemoglobin level				
5	First aid kid				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						
CO4						



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**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FY B.Sc.**

**Semester I**

**FNE201-1C: Child Development and Personality(Th)**

**Credit 3**

**Contact Hour per week 3**

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**Outline of the Course:**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Minor)
<b>Purpose of Course</b>	This subject is used to apply existing scientific knowledge to develop more practical applications.
<b>Course Objective</b>	CO 1. To develop an awareness of certain aspects of development during early and late childhood CO 2. To develop an understanding of the multiple interactive forces and socializing agents during childhood and early adolescence. CO 3. To impart factual knowledge about some significant aspects of development. CO 4. To develop skills of collecting information through various sources.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of growth and development.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNE201-1C: Child Development and Personality(Th)**

**Course Content**

<b>Units</b>	<b>Particulars</b>	<b>% Weightage of Unit</b>	<b>Hours</b>
1	<b>Physical and motor development</b> <ul style="list-style-type: none"><li>Principles of growth and development</li><li>Components of motor ability</li><li>Essentials of learning motor skills</li><li>Handedness</li><li>Factors affecting physical/motor development</li></ul>	20	7
2	<b>Emotional development</b> <ul style="list-style-type: none"><li>Understanding emotions</li><li>Characteristics of children's emotions</li><li>Emotional characteristics</li><li>Emotional control/ tolerance</li></ul>	25	12
3	<b>Social development</b> <ul style="list-style-type: none"><li>Meaning and process of socialization</li><li>Common forms of social and unsocial behavior</li><li>Role of family, schools and community</li></ul>	30	14
4	<b>Language and cognition</b> <ul style="list-style-type: none"><li>Meaning and functions of language</li><li>Development of language in early childhood, middle childhood, special vocabulary during late childhood</li><li>Factors affecting language development</li><li>Bilingualism and multilingualism</li><li>Speech defects</li></ul> <b>Cognition – Meaning</b> <ul style="list-style-type: none"><li>Basic concepts of cognitions (Jean Piaget)</li><li>Social and meta cognition</li></ul>	25	12

**REFERENCE**

**Core references:**

**Reference books**

1. Berk L. E. (1989): Child Development, Allyn and Bacon, U.S.A.
2. Chakravarty M (2000). Child Psychology. Common Wealth Publishers, New Delhi.
3. Craig, G.J. (1979): Child Development, Prentice Hall Inc. Englewood cliffs, New Jersey.
4. Hawkes and Pease (1976). "Behavior and Development from 5-12 years". Harper and Row, New York.
5. Hurlock, E.B. (1970): Child Development, Tata MacGraw Hill publishers, Delhi.
6. Hurlock E.B. (1997): Child Development, Tata MacGraw Hill, Delhi.





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**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

7. Jafar M (2004). Developmental Psychology. APH Publishing Corporation, New Delhi.
8. Mussen, Conger, Kagan and Huston (1984): Child Development and Personality, Harper and Row, Publishers. Inc. New York.
9. Papalia D.E & Olds S. W. (1975): A Child's world, Macgraw Hill publication, New York.
10. Shrivastava. A.K (2004). Advance Child Psychology. ABC Publications. Jaipur. India.
11. Tara Chand (1993). Modern Child Psychology. Amol Publication, New Delhi.

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To learn growth and development during childhood.
CO 2	To impart knowledge about significant aspects of development.
CO 3	To develop their knowledge and learning abilities.
CO 4	To improve their social, emotional and spiritual bonding through learning.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Physical and motor development				
2	Emotional development				
3	Social development				
4	Language and cognition				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						
CO4						



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FY B.Sc.**  
**Semester I**  
**FNE201-1C: Child Development and Personality (Pr)**

**Credit 1**

**Contact Hour per week 2**

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**Outline of the Course:**

<b>Course type</b>	Practical
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Discipline Specific Course (Minor)-Practical
<b>Purpose of Course</b>	This subject is the practical approach of child care and development.
<b>Course Objective</b>	CO 1. To impart factual knowledge about some significant aspects of development. CO 2. To develop skills of collecting information through various sources. CO 3. To train the students in various techniques of presenting and communicating the information. CO 4. To develop an awareness of certain aspects of development during childhood.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of child care.
<b>Teaching Methodology</b>	Practical, Demonstration, Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNE201-1C: Child Development and Personality (Pr)**

**Course Content**

Units	Particulars	% Weightage of Unit	Hours
1	Bulletin board display for parents, school teachers and community activities	30	10
2	Preparing material to enhance <ul style="list-style-type: none"><li>• Language</li><li>• Cognition</li><li>• Motor development</li></ul>	40	10
3	Creating awareness in community regarding importance of discipline, types of rewards and punishment (assignment as per the given theme).	30	10

**REFERENCE**

**Core references:**

**Reference books**

1. Berk L. E. (1989): Child Development, Allyn and Bacon, U.S.A.
2. Chakravarty M (2000). Child Psychology. Common Wealth Publishers, New Delhi.
3. Craig, G.J. (1979): Child Development, Prentice Hall Inc. Englewood cliffs, New Jersey.
4. Hawkes and Pease (1976). "Behavior and Development from 5-12 years". Harper and Row, New York.
5. Hurlock, E.B. (1970): Child Development, Tata MacGraw Hill publishers, Delhi.
6. Hurlock E.B. (1997): Child Development, Tata MacGraw Hill, Delhi.
7. Jafar M (2004). Developmental Psychology. APH Publishing Corporation, New Delhi.
8. Mussen, Conger, Kagan and Huston (1984): Child Development and Personality, Harper and Row, Publishers. Inc. New York.
9. Papalia D.E & Olds S. W. (1975): A Child's world, Macgraw Hill publication, New York.
10. Shrivastava. A.K (2004). Advance Child Psychology. ABC Publications. Jaipur. India.
11. Tara Chand (1993). Modern Child Psychology. Amol Publication, New Delhi.

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To learn growth and development during childhood.
CO 2	To enhance their inner talent and provide a suitable platform.
CO 3	To develop their knowledge and learning abilities through different activities.
CO 4	To make them aware about their responsibilities towards society.



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
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**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FNE201-1C: Child Development and Personality (Pr)**

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Bulletin board display				
2	Preparing material to enhance development				
3	Creating awareness in community				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						
CO4						



EFFECTIVE FROM ACADEMIC YEAR 2023-24  
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**Department of Food and Nutrition**  
**B. Sc Food & Nutrition Program**

**FY B.Sc.**  
**Semester I**

**MDC201-1C: Agricultural Techniques**

**Credit 4**

**Contact Hour per week 4**

**Outline of the Course:**

<b>Course type</b>	Theory
<b>Purpose of Course</b>	To make female students well versed with the fundamental techniques of ornamental and kitchen gardening and maintaining them.
<b>Course Objective</b>	CO 1. To impart knowledge basics of gardening tools and techniques. CO 2. To impart knowledge of how to beautify the home interiors, terrace or roof and gardens with the help of ornamental plants. CO 3. To make students able to prepare their own nutrient gardens even within the small space. CO 4. To impart knowledge of bio based organic gardening.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of plant cultivation and interest in so doing.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	Continuous And Comprehensive Evaluation (CCE) (50%) Semester End Evaluation (SEE) (50%)



## MDC201-1C: Agricultural Techniques

## Course Content

Units	Particulars	% Weightage of Unit	Minimum Nos. of Hours
<b>1</b>	<b>Gardening: Introduction</b> <ul style="list-style-type: none"><li>• Types of Gardens: Roof, Sunken, Vertical, Terrace, Water, Bog, Shade, Rock, Terrarium, Bottle &amp; Dish Gardens</li><li>• Home gardens: Importance, Characteristics, Important things to be considered, types of home gardens</li><li>• Different production systems: Bed planting, Pit planting, Sack planting, Trellis growing, Vertical Growing, Multilayer Growing, Hydroponics</li><li>• Ornamental gardening and Kitchen gardening</li><li>• Tools &amp; basic equipment used in gardening</li><li>• Soil care: soil testing &amp; amendments</li><li>• Preparation of soil for gardening: Beds (raised bed, open bed, sheet mulch), Pots/Planters (Container tote method), Hanging/Vertical Garden</li><li>• Working with the seedlings: differentiation between good and bad seeds, heirloom, hybrid and GMO seeds</li><li>• Working with direct seeded crops</li><li>• Various ways to propagate plants</li><li>• Watering</li><li>• Companion planting</li></ul>	<b>25</b>	<b>15</b>
<b>2</b>	<b>Home Gardening: In door Out door</b> <ul style="list-style-type: none"><li>• Interior scaping: Significance, Environmental factors in indoor gardening (Light, Humidity), Selection of indoor plants, Management, Methods of indoor gardening (Hanging baskets and window boxes, terrariums)</li><li>• Landscape design for a Home Garden: Introduction, Plan designing, Principal areas of a home garden, Points to be considered in designing home garden, processing of home garden, Garden plans for small areas, Trees suitable for small areas, Roof gardening &amp; vertical gardening</li><li>• Lawn: Introduction, Common grass species used for lawn making, its establishment and maintenance</li><li>• Roof/terrace gardening: Construction of roof, Pot, containers, constructed bed or adoption of suitable</li></ul>	<b>25</b>	<b>15</b>



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	horticulture roof, Sun loving plants and shade loving plants (use of agro-shade net and UV stabilized polythene), Lawn in roof garden		
3	<p>Kitchen Garden</p> <ul style="list-style-type: none"><li>● Introduction to kitchen garden:</li><li>● Importance &amp; Benefits of kitchen garden</li><li>● Principles &amp; components of kitchen gardening: Site selection, selection of plants, garden design &amp; layout, containers/site preparation, protection, seed sowing &amp; transplanting, water management, nutrient management, extraction &amp; storage of vegetable seeds</li><li>● Cropping system suitable for kitchen garden: crop rotation, inter-planting, mixed planting, relay planting, succession planting, edge planting</li><li>● Advantages &amp; disadvantages of kitchen gardens</li><li>● Ganga Ma Mandal Model for House hold Nutrition</li><li>● Microgreens: an ultimate superfood, nutritional composition, indoor outdoor cultivation, harvesting and packaging of microgreens</li></ul>	25	15
4	<p>Organic Farming</p> <ul style="list-style-type: none"><li>● Introduction, concept, ethics, objectives and characteristics of organic farming</li><li>● Compost: Principles of composting, Methods of composting</li><li>● Green manuring: Types &amp; Advantages</li><li>● Vermicomposting: preparation, Benefits, Uses, Origin, Basic characteristics of earthworms suitable for vermicomposting, maintenance of base cultures and Methods of vermicomposting</li><li>● Recycling of Organic residues</li><li>● Biofertilizers: Importance &amp; Benefits</li><li>● Organic weed management</li><li>● Soil Improvement &amp; soil amendments</li><li>● Water management: Rain water harvesting, Importance of reuse and recycling of water, Drip irrigation</li><li>● Biopesticides/Pest control methods: Home remedies for Pest and Plant Diseases</li></ul>	25	15
<b>List of References &amp; Text Books:</b> <ul style="list-style-type: none"><li>● <a href="http://ecoursesonline.iasri.res.in/">http://ecoursesonline.iasri.res.in/</a></li><li>● Kalpana Yadav, "Microgreens: An ultimate superfood".Indian Horticulture May-June 2021</li></ul>			



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- Hasiru Dala, "Organic Terrace Gardening Training: Growing Your Own Food"
- Ministry of Human Resource Development, Department of School Education & Literacy, "School Nutrition (Kitchen) Gardens Guidelines."
- Kartik Pramanik, Priyadarshini Mohapatra, "Construction of kitchen garden"
- S S Reddy, Siddartha Naik, Biswajit Pramanik, "ganga ma mandal model: a nutri-garden model for household nutrition"
- Thunam Srikanth, Dr. K. Venkata laxmi and Mrs. Gadde. Jyothi, "Terrace Gardening".
- Mugisa, I.O., Molly, A., Muyinda, M., Gafabusa, R., Kituuka, G., Kyampeire, B., Atim, J., Nampeera, M., Nafula. R., Sseruwu, G., Kabanyoro, R., and Akello, B.O. 2016. A farmers' guide to home gardening: how to establish and manage home gardens. NARO- Mukono Zonal Agricultural Research and Development Institute, Uganda.
- Bidyuth K. Mahalder, FAO; Md. Moksed Ali, FAO; Saimunnahar Ritu, FAO, "HOMESTEAD GARDENING GUIDELINES: Vegetable production for household consumption using minimal space in Rohingya camps and host communities"

**Practicals/Assignment:**

1. Nutrient garden model preparation for Gujarat
2. Preparation of Ganga Ma Mandal Model

**COURSE OUTCOMES**

Upon successful completion of the course, students will be able to:

CO 1	Understand how the home garden are to be constructed, their benefits, requirements for construction, etc.
CO 2	Understand how the ornamental plants can be cultivated both in door and our door.
CO 3	Understand how the vegetables can be cultivated in small space.
CO 4	Understand the usage and manufacturing of biological fertilizers, composts, pesticides at home, water management, etc.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
1	Gardening: Introduction					
2	Home Gardening: In door Out door					
3	Kitchen Garden					
4	Organic Farming					

**COURSE ARTICULATION MATRIX**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							





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**B. Sc Food & Nutrition Program**

**FY B.Sc.**  
**Semester I**

**MDC201-1C : Pharmaceutical Products**

**Credit 4**

**Contact Hour per week: 4**

**Outline of the Course:**

<b>Course type</b>	<b>Theory</b>
<b>Purpose of Course</b>	The course aims to provide a foundation for understanding the concept of pharmaceutical compounds. It equips students with essential skills to use herbal medicines in daily life.
<b>Course Objective</b>	CO 1. To learn about Molecules of life. CO 2. To study the basics of pharmaceutical science. CO 3. To study the drug administration and classification CO 4. To learn about home remedies.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	August 2023
<b>Pre-requisite</b>	Elementary knowledge of Chemistry
<b>Teaching Methodology</b>	Class Room Teaching, Use of ICT, Class exercise, Discussion and Assignment
<b>Evaluation Method</b>	40% Continuous Assessment (CA) 60% End Semester Examination (ESE)



## MDC201-1C : Pharmaceutical Products

Units	Particulars	Weightage of Unit	Minimum Nos. of Hours
1	Molecules of Life Amino acids, classification of amino acids, peptides, Structure of protein, Carbohydrates, nucleic acids, lipids and fatty acids, importance of biomolecules in pharma industry.	25%	15
2	Introduction: Historical background of Pharmaceutical science, Definition: Drug, Prodrug, Medicine, Pharmacodynamic, Pharmacokinetics, Agonist, Antagonist	25%	15
3	Classification of Pharmaceutical compounds & Drug administration: Classification of drug based on pharmacological action, Routes of drug administration, adsorption, distribution, metabolism, Excretion, Toxicity	25%	15
4	Herbal medicine: Introduction to herbal medicine, Herbal sensory gardens, herbs and plants, important herbs, caution when treating with herbs, treating tension, headaches and soreness, depression and anxiety, natural acne, wounds and blisters, cancer, body detox, lung and respiratory condition treatments.	25%	15

**REFERENCE:**

- Medicinal Chemistry by Ashutosh Kar.
- Traditional Home remedies for primary Health care by WHO, Regional office of South-East Asia.
- Simple home remedies for common illness.
- <http://naturalremediesbase.com/home-remedies/simple-home-remedies-common-illnesses.html>
- <http://creativehomemakers.blogspot.ca/2010/10/sore-throat-home-remedy.html>



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**B. Sc Food & Nutrition Program**

**MDC201-1C : Pharmaceutical Products**

**COURSE OUTCOMES:**

Upon successful completion of the course,

<b>CO 1.</b>	Students are able to know about the importance of molecules.
<b>CO 2.</b>	Know the history of profession of pharmacy
<b>CO 3.</b>	Know the classification and basic concepts of pharmaceuticals
<b>CO 4.</b>	Students will gain the knowledge of herbal medicine and some home remedies.

**COURSE OUTCOMES MAPPING**

Unit No.	Title of the Unit	Course Outcomes			
		CO 1	CO 2	CO 3	CO 4
1	Molecules of Life				
2	Introduction				
3	Classification of Pharmaceutical compounds & Drug administration				
4	Herbal medicine				

**COURSE ARTICULATION MATRIX**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						
CO4						



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**FY B.Sc.**  
**Semester I**

**MDC201-1C: Food Map**

**Credit 4**

**Contact Hour per week 4**

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**Outline of the Course**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Multi-Disciplinary (MD)
<b>Purpose of Course</b>	From this course students will learn in-depth study of the foundations of different food groups, their nutrition and health benefits to individuals.
<b>Course Objective</b>	CO 1. To understand in brief the need of a balanced diet and requirement of Nutrients at various age groups. CO 2. To be familiar with different methods of cooking, their advantages and disadvantages help in improving nutritional quality of food. CO 3. To understand the food labelling, food safety and hygiene CO 4. To plan resources, budgeting and management of food for the family.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of food.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	50% Continuous Comprehensive Evaluation (CCE) 50% Semester End Evaluation (SEE)



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**MDC201-1C: Food Map**

**Course Content**

Units	Particulars	% Weightage of Unit	Hours
1	<b>Introduction to Nutrition</b> <ul style="list-style-type: none"><li>● Basic terminologies related to Nutrition and Health:</li><li>● Definition of Health, Nutrition, Nutrients, Foods, Balanced Diet, Malnutrition, Undernutrition, Over Nutrition</li><li>● Functions of food, Basic five food groups</li><li>● Sources and Nutritive value for various food groups- Based on IFCT</li><li>● Nutrients, its classification and their functions</li></ul>	25	12
2	<b>Balanced Diet</b> <ul style="list-style-type: none"><li>● RDA and its use</li><li>● My plate</li><li>● Portion size</li><li>● Nutrition labelling</li></ul>	15	10
3	<b>Improving Nutritional quality of foods</b> <ul style="list-style-type: none"><li>● Healthy practices of Cooking, their advantages and disadvantages and effect on Nutritive Value</li><li>● Methods of Improving Nutritional quality of foods: Germination, Fermentation, Supplementation, Fortification and Enrichment</li><li>● Food Safety and Personal Hygiene</li></ul>	25	16
4	<b>Principles of Family meal planning</b> <ul style="list-style-type: none"><li>● Meal and meal frequency</li><li>● Importance of meal planning for the family</li><li>● Food Budgeting and Market Survey</li><li>● Food Patterns</li><li>● Tradition, belief and myths</li><li>● Importance of Garnishing and plate decoration</li></ul>	35	22

**REFERENCE**

**Core references:**

**Reference books**

1. Mudambi, S.R., Rajgopal, M.V.(1990) Fundamentals of Foods and Nutrition, New Age International Pvt. Ltd.



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2. Nutrient Requirements and Recommended Dietary Allowances for Indians- I.C.M.R. Publication 1999.
3. Guthrie Helen (1986) Introductory Nutrition. Times Mirror/ Mosby College Publishing.
4. Robinson, and Lawler. (1986) Normal and Therapeutic Nutrition. Mac Millan Pub.Co.
5. Elenor N., Whitney S., Rady R. (1993): Understanding Nutrition, West Publishing Company, Minneapolis.
6. Wardlaw (1993): Perspectives in Nutrition, Paul Insel Mosby.
7. Bhatia Arti: Nutrition & Dietetics- Anmol Publication Pvt. Ltd.- New Delhi.
8. Khanna K. (1998): The Art and Science of Cooking, Phoenix Publishing House Pvt. Ltd., New Delhi.

**COURSE OUTCOMES:**

Upon successful completion of the course, students will be able to (keep number of COs according to units)

CO 1	To understand the basic concept of food, their function and physiological importance.
CO 2	To understand the concept of serving, exchange sizes and RDA.
CO 3	To learn the various cooking methods and their health benefits.
CO 4	To know the principle of meal management for different age groups.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes			
		CO1	CO2	CO3	CO4
1	Introduction to Nutrition				
2	Balanced Diet				
3	Improving Nutritional quality of foods				
4	Principles of Family meal planning				

**COURSE ARTICULATION MATRIX**

	PO1	PO2	PO3	PO4	PO5	PO6
CO1						
CO2						
CO3						



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**FY B.Sc.**

**Semester I**  
**AEC201-1C: Functional English -I**

**Credit 4**

**Contact Hour per week 4**

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**Outline of the Course**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Ability Enhancement Course (AEC)
<b>Purpose of Course</b>	To equip individuals with the necessary language skills and confidence to communicate effectively in English, enabling them to succeed academically, professionally, and in various social settings
<b>Course Objective</b>	CO 1. Utilize their knowledge of grammar effectively for communicative purposes. CO 2. Learn language in authentic contexts. CO 3. Use English efficiently for routine. CO 4. Sharpen receptive skills for better comprehension by providing authentic resources, explain how all the above-mentioned skills are much needed for career growth. CO 5. Make students understand how the development of these skills will lead to their holistic development.
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Elementary knowledge of English Language.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	Continuous And Comprehensive Evaluation (CCE) (50%) Semester End Evaluation (SEE) (50%)



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**AEC201-1C: Functional English -I**

**Course Content**

<b>Unit No.</b>	<b>Title of the Unit</b>	<b>% Weightage of Unit</b>	<b>Minimum Nos. of Hours</b>
1	Foundational Grammar <ul style="list-style-type: none"><li>• Functional use of pronoun, adjective, adverb, preposition, and conjunction</li><li>• Narration of Past, Present and Future events</li></ul>	20	10
2	Receptive Skills <ul style="list-style-type: none"><li>• Introduction to Receptive Skills</li><li>• Techniques/strategies of Reading (Skimming and Scanning)</li><li>• Reading for Summarizing</li><li>• Comprehensive Listening: Note Taking and Note Making</li><li>• Types of Listening Skills</li></ul>	40	20
3	Productive Skills <ul style="list-style-type: none"><li>• Speech modulation and its importance</li><li>• Introduction to Phonetics for pronunciation</li><li>• Technical Writing (Leave Application/ Enquiries and Replies/ Orders and their Execution/ Complaint Letter)</li><li>• Paragraph Writing</li><li>• Report Writing</li><li>• Dialogue Writing</li></ul>	40	30

**REFERENCE**

**Reference books:**

1. Asha S. Kaul. Effective Business Communication. New Delhi: Prentice-Hall of India Private Ltd.
2. Gupta, S.C. English Grammar & Composition. Arihant Publication. 2022.
3. Mitra, Barun K. Personality Development and Soft Skills. Oxford University Press, 2015.
4. Mohan, Krishna and Banerji, Meera. Developing Communication Skills. Macmillan India Private Ltd, 2015.
5. Urmila Rai and S.M. Rai. Business Communication. 1st Edition, Mumbai: Himalaya Publishing House.
6. Wren and martin. English Grammar. MB publication, 2022.





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**AEC201-1C: Functional English -I**

**COURSE OUTCOMES**

Upon successful completion of the course, students will be able to:

CO 1	Enable themselves to express ideas clearly and accurately with fluent speaking & writing skills.
CO 2	Gain confidence in speaking & writing English in an academic and professional context.
CO 3	Analyze and improve pronunciation. Prepare themselves better for placements and beyond.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes		
		CO1	CO2	CO3
1	Foundational Grammar			
2	Receptive Skills			
3	Productive Skills			

**COURSE ARTICULATION MATRIX**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							



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**FY B.Sc.**  
**Semester I**  
**SEC201-1C : Instrumentation**

**Credit 2**

**Contact Hour per week 2**

**Outline of the Course:**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Skill Enhancement Course (SEC)
<b>Purpose of Course</b>	The course aims to provide a foundation for understanding the fundamental principles, construction and working of laboratory instruments. The purpose of this course is to equip students with essential skills and knowledge in analytical techniques, including the operation of analytical balances, principles of centrifugation, accurate pH measurements using pH meters, and proficiency in colorimetry for diverse scientific applications.
<b>Course Objective</b>	CO 1. Learning the principle of laboratory instruments CO 2. Learning the working mechanism of an instrument provides better accessibility to operate instruments. CO 3. Learning the basic application and uses of a variety of instruments provides a range of application knowledge . CO 4. Understanding operation, care and maintenance of laboratory techniques and instrument handling,
<b>Minimum weeks per Semester</b>	15 (Including Class work, examination, preparation, holidays etc.)
<b>Last Review / Revision</b>	July 2023
<b>Pre-requisite</b>	Elementary knowledge of Chemistry
<b>Teaching Methodology</b>	Class Room Teaching, Use of ICT, Class exercise, Discussion and Assignment
<b>Evaluation Method</b>	Continuous And Comprehensive Evaluation (CCE) (50%) Semester End Evaluation (SEE) (50%)



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**SEC201-1C : Instrumentation**

**Course Content**

<b>Units</b>	<b>Particulars</b>	<b>% Weightage of Unit</b>	<b>Minimu m Nos. of Hours</b>
<b>1</b>	<b>Analytical Balance and Centrifugation</b> Introduction to Mass and Weight, Two-Pan Balance and Electronic Balance. Calibration of weighing balances and accuracy in measurement, Care and Use of Analytical Balance Principle, working and Components of Centrifuge, Care, maintenance, Prevention, Differentiate between various types of centrifugation methods, application of centrifugation method.	50%	<b>15</b>
<b>2</b>	<b>pH Meter and Colorimeter</b> Introduction, Structure of a pH Meter, Glass Membrane Electrode, Reference Electrode Measurement of pH, Application of pH Measurements Definition, Principle, Instrumentation, Colorimeter, Spectronic 20 Spectrocolorimeter, Choice of Instruments for Colorimetry, Applications.	50 %	<b>15</b>

**REFERENCE:**

1. Introduction to Instrumentation in Life Sciences by Prakash Bisen and Anjana Sharma
2. Instrumental Methods of Chemical Analysis by B.K. Sharma
3. Principle of Instrumental Analysis by Skoog, Holler and Crouch
4. Analytical Chemistry by Gary D. Christian
5. Physical Chemistry by Bahl & Bahl

**COURSE OUTCOMES:**

Upon successful completion of the course,

<b>CO 1.</b>	Analyze and operate analytical balances with precision and understand the principles and application of centrifugation methods.
<b>CO 2.</b>	Utilize pH meters effectively for accurate pH measurements and interpret results for various applications.
<b>CO 3.</b>	Demonstrate proficiency in colorimetry using appropriate instruments, gaining a solid understanding of its principles and practical applications.



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**SEC201-1C : Instrumentation**

**COURSE OUTCOMES MAPPING**

Unit No.	Title of the Unit	Course Outcomes		
		CO 1	CO 2	CO 3
		1	Analytical Balance and Centrifugation	
2	pH Meter and Colorimeter			

**COURSE ARTICULATION MATRIX**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1						
CO2						
CO3						



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**FY B.Sc.**  
**Semester I**  
**IKS201-1C: Indian Knowledge System**

**Credit 2**

**Contact Hour per week 2**

**Outline of the Course:**

<b>Course type</b>	Theory
<b>Level of the Course</b>	200-299 Intermediate-level
<b>Course Category</b>	Value Added Courses (VAC)
<b>Purpose of Course</b>	The course is intended to provide undergraduates with a foundational guide to the history, culture and philosophy of India and introduce them to the main themes and debates relating to that history.
<b>Course Objective</b>	CO 1. To provide a general introduction to Indian Knowledge System (IKS) and sensitize the students to the contributions made by ancient Indians in the field of Science, Philosophy and related applications and concepts. CO 2. Understanding the scientific value of the traditional knowledge of Bharata CO 3. Promoting the youths to do research in the various fields of Bhartiya knowledge system CO 4. Converting the Bhartiya wisdom into the applied aspect of the modern scientific paradigm
<b>Minimum weeks per Semester</b>	15
<b>Last Review / Revision</b>	June 2023
<b>Pre-requisite</b>	Eagerness to learn our ancient culture, our tradition.
<b>Teaching Methodology</b>	Class Room Teaching, Discussion and Assignment
<b>Evaluation Method</b>	Continuous And Comprehensive Evaluation (CCE) (50%) Semester End Evaluation (SEE) (50%)



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**IKS201-1C: Indian Knowledge System**

**Course Content**

<b>Units</b>	<b>Particulars</b>	<b>% Weightage of Unit</b>	<b>Minimum Nos. of Hours</b>
<b>1</b>	<b>Indian Knowledge System</b> <ul style="list-style-type: none"><li>● Definition, Importance &amp; The IKS Corpus: classification framework</li><li>● Caturdasa vidyasthanas (introductory information)<ul style="list-style-type: none"><li>o 14 branches of learning in ancient India- Purana, Nyaya, Mimamsa, Dharma sastra</li><li>o Six Vedanga- Siksha, Vyakarana, Nirukta, Chanda, Jyotisa, Kalpa</li><li>o Four Vedas: Rigveda, Yajurveda, Samaveda and Atharvaveda</li></ul></li><li>● Upavedas and Upanishads: introductory information on them</li><li>● Sastras and some introductory information on them</li><li>● 18 Puranas: Their names and five general characteristics</li><li>● The Itihasas: Ramayana and Mahabharata (Learnings from them in brief)</li></ul>	<b>20</b>	<b>6</b>
<b>2</b>	<b>Indian Astronomy:</b> <ul style="list-style-type: none"><li>● Unique aspects of Indian Astronomy</li><li>● Historical development of Astronomy in India</li><li>● The Celestial coordinate system: observation of motion of celestial bodies in the Vedic corpus. Sun, Moon, Nakshatra &amp; Graha</li><li>● Elements of Indian calendar systems as followed in different regions of India</li><li>● Aryabhatiya and the Siddhantic tradition</li><li>● Panchang- The Indian calendar system</li><li>● Astronomical Instruments (Yantras)</li><li>● Jantar Mantar of Raja Jai Singh Sawai</li><li>● Prediction of monsoon rains; Parashar, Varahamithira, Pachanga, comparison with modern methods.</li></ul>	<b>20</b>	<b>6</b>
<b>3</b>	<b>Indian Health Science</b> <ul style="list-style-type: none"><li>● Basic concept of Ayurveda- Definition of Health</li><li>● Vedic foundations of Ayurveda and its relevance with</li></ul>	<b>20</b>	<b>6</b>



	<p>maintenance of good health and treatment of diseases</p> <ul style="list-style-type: none"> <li>● Concepts of Three Doshas, Pancha-Mahabhuta and Sapta-dhatu and their relationship to Health</li> <li>● The importance of Agni (digestion). Six Rasas and their relation to Doshas.</li> <li>● Ayurvedic view of the cause of diseases.</li> <li>● Daily regimen for health and wellness &amp; Ritucharya or seasonal regimen.</li> <li>● Disease management               <ul style="list-style-type: none"> <li>○ Diagnostic techniques</li> <li>○ Sleep and food – importance to health</li> <li>○ Drugs and physical therapy</li> </ul> </li> <li>● Yoga way of life – relevance to health and wellness</li> </ul>		
<b>4</b>	<p><b>Indian Agriculture</b></p> <ul style="list-style-type: none"> <li>● Agricultural heritage – early history &amp; its importance • Ancient agricultural practices</li> <li>● Indus civilization, Vedic civilization and relevance of heritage to present day agriculture</li> <li>● Status of farmers in society from ancient time to till date</li> <li>● Plant protection through indigenous traditional knowledge during harvesting, threshing and storage</li> <li>● Indigenous &amp; introduced crops: rice, sugarcane and cotton.</li> <li>● Gardening in ancient and medieval period, Vegetable farming, floriculture (perfumes), Medicinal plants and their relevance today</li> </ul>	<b>20</b>	<b>6</b>
<b>5</b>	<p><b>Indian Metallurgy</b></p> <ul style="list-style-type: none"> <li>● Vedic references to metals and metal working: The Indian S &amp; T heritage</li> <li>● Mining and ore extraction</li> <li>● Metals and metalworking technology: gold, inc, copper, mercury, lead and silver</li> <li>● Extraction of Iron from Biotite by Ayurvedic method &amp; Manufacturing of steel</li> <li>● Wax casting of idols and artifacts</li> </ul>	<b>20</b>	<b>6</b>

**REFERENCE**

**Core references:**

**Reference books**



EFFECTIVE FROM ACADEMIC YEAR 2023-24

**VANITA VISHRAM WOMEN'S UNIVERSITY, SURAT**

**SCHOOL OF SCIENCE AND TECHNOLOGY**

**Department of Food and Nutrition**

**B. Sc Food & Nutrition Program**

- Mahadevan B., Bhat V. R., Nagendra P. R. N., Introduction to Indian Knowledge System: Concepts and Applications.
- Nene, Y.L. and Choudhary, S.L. 2002. Agricultural heritage of India. Asian Agri – History foundation, Secundrabad.
- A History of Hindu Chemistry. By Praphulla Chandra. Ray

**Web references**

- <https://kiran.nic.in/Agri-Heritage.html>

**COURSE OUTCOMES**

Upon successful completion of the course, students will be able to:

CO 1	Course will aware students about greatest epic historical texts which will demonstrate real meaning of life as well as students will get knowledge about religious rituals of India
CO 2	Studies will also influence students about everything present in the universe and briefly about the Indian calendar system which will be followed by various religions in India.
CO 3	Students will learn ancient techniques and treatment related to health science which is a treasure of the Indian knowledge system.
CO 4	Course will impart knowledge about agriculture and its importance in Indian history as well as in present time.
CO 5	Course will provide knowledge about the importance of metals., its mining and working technology of metals.

**COURSE OUTCOMES MAPPING**

Unit No.	Unit Name	Course Outcomes				
		CO1	CO2	CO3	CO4	CO5
1	Indian Knowledge System					
2	Indian Astronomy					
3	Indian Health Science					
4	Indian Agriculture					
5	Indian Metallurgy					

**COURSE ARTICULATION MATRIX**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7
CO1							
CO2							
CO3							
CO4							
CO5							





### 13 Teaching Methodology

A teaching method comprises the principles and methods used by teachers to enable student learning. In order to achieve its objective of focused process- based learning and holistic development, the teacher/faculty may use a variety of knowledge delivery methods:

#### 1.1 LECTURES/CLASS WORKS:

Lectures should be designed to provide the learners with interesting and fresh perspectives on the subject matter. Lectures should be interactive in a way that students work with their teachers to get new insights in the subject area, on which they can build their own bridges to higher learning. Classwork has the ability to enhance relationships between teachers and students. Create goal- oriented tasks for students to prepare and enable self-learning.

#### 1.2 DISCUSSIONS/ SEMINARS/PRESENTATION:

Discussions / seminars / presentation are critical components of learning and can be used as a platform for students to be creative and critical with old and new ideas. Besides developing critiquing skills, arriving at consensus on various real-life issues and discussion groups lead to innovative problem-solving and ultimately to success.

#### 1.3 CASE STUDIES/ SELF-STUDY:

Real case studies, wherever possible, should be encouraged in order to challenge students to find creative solutions to complex problems of individual, community, society and various aspects of knowledge domain concerned. Technology is transforming higher Education learning and teaching through various case studies to improve overall standards.

#### 1.4 PRACTICAL/PROBLEM SHEET:

Practical ability is the essential requirement for computer science undergraduates' ability structure, and it emphasizes that computer science undergraduates should have a good grasp of theory from practice and then apply the theory to practice, improving their own software developing skills and employability.

#### 1.5 ASSIGNMENTS:

Computer science assignments not only help students overcome their fear and stress but also help them learn more interesting facts about the subjects of computer science which are part of their syllabus and also out of curriculum.

#### 1.6 INDUSTRIAL TOURS:

Computer Science students have to know the things practically through interaction, working methods and employment practices. Moreover, it gives exposure from an academic point of



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view. Main aim industrial visit is to provide an exposure to students about practical working environment.

**1.7 TEAM WORK:**

Teamwork based projects challenge the student to apply the technical knowledge they gain in college to solve meaningful and complex problems. Positive collaboration in the form of team work is critical in the classroom environment, for which it is necessary to transcend one's prejudices and predilections so as to achieve the desired outcomes. In the process of team work, learners will acquire the skills of managing knowledge acquisition and other collaborative learners, thereby understanding how to incorporate and balance personalities.

**14. KEYWORDS**

- Bachelor of Science (B.Sc.) in Food and Nutrition