



# Shri Rawatpura Sarkar University, Raipur

## Faculty of Science

### BACHELOR OF SCIENCE IN NUTRITION & DIETETICS

#### Semester - V

#### Examination Scheme in UGC Pattern

(Effective from the session: 2021-22)

S. No.	Course Code	Th/ Pr	Subject	Teaching Hours/ Week			TC	Examination Scheme				Total Marks
				L	T	P		Theory		Practical		
								EX	IN	EX	IN	
1	SBS06501	Th	HEALTH AND FITNESS	4	-	-	4	70	30	-	-	100
2	SBS06502	Th	FOOD PRODUCT DEVELOPMENT AND MARKETING STRATEGY	4	-	-	4	70	30	-	-	100
3	SBS06503	Th	FOOD STSNDARD AND QUALITY CONTROL	4	-	-	4	70	30	-	-	100
4	SBS06504	Th	GENERAL HOME SCIENCE	4	-	-	4	70	30	-	-	100
5	SBS06591	Pr	LAB COURSE XIII (Combining Health and Fitness & Food Product Development and Marketing Strategy)	-	-	4	2	-	-	35	15	50
6	SBS06592	Pr	LAB COURSE XIV (Food Standard and Quality Control)	-	-	4	2	-	-	35	15	50
7	SBS06593	Pr	LAB COURSE XV (General Home Science)	-	-	4	2	-	-	35	15	50
	Total Credit			16	12		22	Total Marks				550

<p><b>Program Outcome</b></p>	<p><b>PO 1: Development of intra-disciplinary skills-</b> This opens wide range of opportunities for students in job sector. Studying wide range of subjects like Dietetics, Community Nutrition, Family Meal Management, Quantity Food Production &amp; Service, Food Safety and Quality Control, Herbal Science, Bakery Science, General Home Science, Food Adulteration, Dairy Technology, Clinical Nutrition, Sports Nutrition, Geriatric Nutrition - both theory and practical, help students in developing skills related to various fields of nutrition.</p> <p><b>PO 2: Scientific and Critical Thinking-</b> Development of knowledge, skills and holistic understanding of the discipline among students. Encouragement of scientific mode of thinking and scientific method of enquiry in students. This goal is achieved through the on job trainings conducted by the Department in Hospitals and Community and the writing of a report on it.</p> <p><b>PO 3: Health management and community upliftment-</b> The course equips students with ability to manage a healthy society and country. This goes a long way in progress of entire nation and thus world. Students can work at both national and international level after completion of higher studies in this course.</p> <p><b>PO 4: Self dependency-</b> The course gives an opportunity to willing students to establish an enterprise of their own in health &amp; food sectors.</p> <p><b>PO 5: Promoting healthy environment-</b> To inculcate social values promoting healthy environment and reaching out to the community.</p> <p><b>PO 6: Provide advanced knowledge-</b> Provide advanced knowledge and skills in highly job oriented courses in the areas of Food Processing, Quality Control, Food Safety, and Nutritional Sciences.</p> <p><b>PO 7: Identify food based strategies-</b> Identify food based strategies for alleviating nutritional problems to achieve nutrition and health security.</p> <p><b>PO 8: Provide quality education-</b> The course provided quality education to make the students technically competent to face the challenges in the field of Food Science, Nutrition and Dietetics.</p> <p><b>PO 9: Understanding specific diseased conditions-</b> The programme provides in-depth understanding of the role of food under specific diseased conditions.</p> <p><b>PO 10: Inter-disciplinary programme-</b> Basically this is an inter-disciplinary programme with knowledge of human anatomy, microbiology, biochemistry and their role in relation to food and health.</p>
-------------------------------	--

<b>Course Title</b>	<b>Health and Fitness</b>				
<b>Course Code</b>	<b>SBS06501</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	4	-	-	4	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li><b>Fundamental knowledge of Health and Fitness.</b></li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li><b>This course aims to help the realization of goals and the concept of Health and Fitness.</b></li> </ul>				
<b>Course Contents</b>	<p><b>UNIT I</b>  <b>Concept of Physical Education and Health:</b> Definition, Aims and Objectives of Physical Education Importance and Scope of Physical Education Modern concept of Health, Physical fitness and Wellness.</p> <p><b>UNIT II</b>  <b>Components of Physical Fitness:</b> Physical fitness components- Speed, Strength, Endurance, Flexibility and Coordinative Abilities, Types of Physical Fitness - Health related Physical Fitness, Performance Related Physical Fitness, Cosmetic fitness, Fitness Balance.</p> <p><b>UNIT III</b>  <b>Principles of Exercise Programme:</b> Activities for developing Physical Fitness Components Exercise and Heart rate Zones Principles of First Aid, Nutritional Balance.</p> <p><b>UNIT IV</b>  <b>Yoga and Stress Management:</b> Asanas and its effects- Padmasana, Halasana, Bhujangasana, Shalabhasana, Dhanurasana, Shavasana, Vajrasana, Chakrasana.</p> <p><b>UNIT V</b>  <b>Dietary Intake and Optimal Exercise Performance:</b> Nutritional Requirement of sports person as compare to normal active person, Factor affecting fuel utilization, Aerobic and Anaerobic Activities, Carbohydrate as an energy source for sports and exercise.</p>				
<b>Course Outcomes</b>	<p><b>Student will be able to</b></p> <ul style="list-style-type: none"> <li>Clear the basic concept of health and education.</li> <li>Gain knowledge of components of physical fitness.</li> <li>Learn about the exercise programme.</li> <li>Learn about the yoga and stress management.</li> <li>Know about the dietary intake and optimal exercise.</li> </ul>				

<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Chu, S.Y. &amp; Kim, L. J. (2007). Maternal obesity and risk of stillbirth: a meta-analysis. Am J Obstet Gynecol, 197(3), 223-228.</li> <li>2. William D McArdle, Frank I Katch and Vitor I Katch, Essential of Exercise Physiology, Second edition, New York: LipincoffWilliams and wilkins, 2000.</li> <li>3. Melwin H. Williams. Nutrition for Health Fitness and sport. McGraw Hill Company, Newyork: 1995.</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Puri. K.Chandra.S.S. (2005). Health and Physical Education. New Delhi: Surjeet Publications.</li> <li>2. Corbin.Charles Beetal. C.A., (2004) Concepts of Fitness and Welfare Boston McGraw Hill.</li> <li>3. Ziegler. E .F. (2007). An Introduction to Sports &amp; Phy. Edn. Philosophy Delhi.</li> <li>4. Mahan, L. K &amp; Ecott- Stump, S. (2000): Krause's Food, Nutrition and Diet Therapy.</li> </ol>

<b>Course Title</b>	<b>Food Product Development and Marketing Strategy</b>				
<b>Course Code</b>	<b>SBS06502</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	4	-	-	4	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• <b>Fundamental knowledge of Food Product Development and Marketing Strategy.</b></li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>This course aims to help the realization of the organizational goal and the concept of methods for developing food products.</b></li> </ul>				
<b>Course Contents</b>	<p><b>UNIT I</b>  <b>Food:</b> Physical properties and chemical composition of food, Food preservation, storage and packaging, The role of ingredients and their interaction in food preparation, Application of dietary requirements, guidelines, and guidance tools to food planning, Food labeling.</p> <p><b>UNIT II</b>  <b>Food Service Systems:</b> Recipe development, standardization and evaluation, Quantity food production and distribution, Cost control, Human resource, financial, technical and equipment needs, Hazard Analysis and Critical Control Points (HACCP)</p>				

	<p><b>UNIT III</b></p> <p><b>Understanding Marketing Management:</b> Defining marketing for the 21st Century, Marketing Insight, Marketing Memo, Company Orientations toward the market place, Marketing Insight, Fundamental Marketing Concepts, trends and tasks.</p> <p><b>UNIT IV</b></p> <p><b>Strategic Planning:</b> Marketing management process, analysis marketing opportunities, selecting target consumers and developing marketing mix, Analysis of macro and micro environment.</p> <p><b>UNIT V</b></p> <p><b>Marketing Research:</b> Marketing research as an aid to marketing, Marketing research process, sales forecasting, techniques, Buyer behaviour, influence factors on consumer behaviour, buying situations, buying decision process, industrial buyer behaviour, Marketing segmentation, targeting and positioning.</p>
<b>Course Outcomes</b>	<p><b>Student will be able to</b></p> <ul style="list-style-type: none"> <li>• Clear the basic concept of food preservation, storage and packaging.</li> <li>• Gain knowledge of Food service system.</li> <li>• Learn about the marketing management.</li> <li>• Learn about the strategic planning.</li> <li>• Know about the marketing research.</li> </ul>
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Beckley, J.H. 2007. Accelerating new food product design and development. Blackwell Pub. (e resource) William D McArdle, Frank I Katch and Vitor I Katch, Essential of Exercise Physiology, Second edition, New York: Lipinc off Welliams and wilkins, 2000.</li> <li>2. Ramaswamy &amp; Namkumari, Marketing Management, 3rd Edition, McMillan Publications, 2009.</li> <li>3. Rajan Saxena, Marketing Management, 3rd Edition, Tata McGraw Hill, 2008.</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Philip Kotler, Principles of Marketing Management, 12th Edition, Pearson Publications, 2009.</li> <li>2. William J Stanton, Fundamentals of Marketing Management, 10th Edition, Tata McGraw Hill, 2004.</li> <li>3. Fuller, G.W. 1994. New Food Product Development: From Concept to Marketplace. Boca Raton, FL: CRC Press.</li> </ol>

<b>Course Title</b>	<b>Food Standard and Quality Control</b>				
<b>Course Code</b>	<b>SBS06503</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	4	-	-	4	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>Advanced knowledge of Food Standard and Quality Control.</li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>This course aims at enabling the students to gain knowledge of Food Standard and Quality based food.</li> </ul>				
<b>Course Contents</b>	<p><b>UNIT I</b></p> <p><b>Standardization of Foods:</b> Definition, Standards of Quality, for cereals, starchy foods, spices and condiments, sweetening agents, meat and meat products, vinegar, sugar and confectionary, beverages-alcoholic and non alcoholic , carbonated water etc., Milk and milk products , oils and fats , Canned foods , fruits and vegetables products.</p> <p><b>UNIT II</b></p> <p><b>Food laws and regulation:</b> Mandatory and voluntary food laws, International quality systems and standards like ISO and Food Codex, BRC; International trades &amp; federal agencies, Indian act-Food Safety and Standards Act, 2006.</p> <p><b>UNIT III</b></p> <p><b>Various food acts:</b> PFA, FPO, AGMARK, MMPO, MFPO, edible oil acts, standard weight acts. HACCP AND WTO (briefly).</p> <p><b>UNIT IV</b></p> <p><b>Concept of quality:</b> Quality attributes: physical, chemical, nutritional and microbial evaluation and measurement. Sensory evaluation- Types of sensory evaluation.</p> <p><b>UNIT V</b></p> <p><b>Microbial quality control:</b> Determination of microorganisms in foods by cultural, microscopic, physical, chemical methods.</p> <p><b>Food adulteration:</b> Definition, types of adulteration and toxic constitutes.</p>				

<b>Course Outcomes</b>	<p><b>Student will be able to</b></p> <ul style="list-style-type: none"> <li>• To provide an opportunity to learn food quality standards.</li> <li>• To develop the skills on the standardization of food products with respect to quality maintain according to universal food standards worldwide.</li> <li>• To understand the principles of sensory evaluation.</li> <li>• To develop skills to carry out sensory evaluation of a newly developed product.</li> <li>• To understand the terms food adulteration and adulterant.</li> </ul>
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Srivastava, R. P. &amp; Sanjeev Kumar. 2002. Fruits and vegetable Preservation – Principles and Practice. International Book Distributing Co., Lucknow.</li> <li>2. Vijay, K. 2001. Text Book of Food Sciences and Technology. ICAR, New Delhi.</li> <li>3. Siddappaa, G. S., Girdhari Lal and Tandon, G.L. 1998. Preservation of Fruits and Vegetables. ICAR, New Delhi</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. B Srilakshmi, Food Science, 8<sup>th</sup> Edition, New Age International (P) limited, publishers</li> <li>2. Swaminathan, M. 1988. Hand book of Food Science &amp; Experimental Foods. Bappco publishers, Bangalore.</li> <li>3. Sivasankar, B. 2002. Food Processing and Preservation. PHI Learning Pvt. Ltd. Delhi.</li> </ol>

<b>Course Title</b>	<b>General Home Science</b>				
<b>Course Code</b>	<b>SBS06504</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	4	-	-	4	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• <b>Fundamental knowledge of General Home Science.</b></li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>This course aims to help the realization of the organizational goal of home science.</b></li> </ul>				
	<b>UNIT I</b> <b>Textile:</b> Definition, Terminology and Classification of textile fibers. Basic unit and Polymer bonds in textile fiber, Physical and Chemical Properties of fibers. <b>Processing of Manufacture of all Natural and Man: Made Fibers –</b> Plant, Protein, Man-Made, Cellulosic, Synthetic, Metallic, Mineral and Elastomeric Fibers. <b>UNIT II</b>				

<b>Course Contents</b>	<p><b>Clothing:</b> Origin of Clothing, Principles of Clothing, Clothing Construction – Drafting flat pattern and Dapping. Textile Designing, Fashion Designing – Influence Factors, Fashion Cycle, Broken fashion cycles, Fashion adoption theories and Business and Merchandizing.</p> <p><b>UNIT III</b></p> <p><b>Home Management:</b> Definition, Characteristic of Management , Importance of Home Management, Motivation Factors of Management (Values, Goals, Standards) , Home Management Process</p> <p><b>UNIT IV</b></p> <p><b>Family Resource Management:</b> Types and Characteristics of Family Resource. Family Decision Making – Definition and Types of Decision Making. Housing – Definition, Importance and Functions of a House, Principles of Planning, Space Allocation and Organization in Independent Houses, Apartments and Flats. Symbols used in Drafting Plans, Reading Plans and Blueprint.</p> <p><b>UNIT V</b></p> <p><b>Interior Design:</b> Definition, Principles and Classification.</p> <p><b>Household Equipments Colors:</b> Definition, Classification, Factors Influencing Choice of Colors <b>Furniture and Lighting:</b> Definition and Types.</p>
<b>Course Outcomes</b>	<p><b>Student will be able to</b></p> <ul style="list-style-type: none"> <li>• Develop an understanding of concepts and basics of textiles.</li> <li>• Understands and define the key textile terms.</li> <li>• Understand basic principles of clothing construction.</li> <li>• Concept, definition, universality and scope of family resource management.</li> <li>• Practicing knowledge gained on selection of site and building principles in real life situations.</li> </ul>
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Sunita Mishra (2018), Selective and Scientific Books, New Delhi.</li> <li>2. Bhargava, B. (2001).Family Resource Management and Interior Decoration, Delhi: University Book House. Bhargava, B. (2001).</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Housing and Space Management. Jaipur: University Book House Ltd.</li> <li>2. Seetharaman, P., Batra, S. &amp; Mehra, P. (2005). An Introduction to Family Resource Management. New Delhi: CBS Publishers &amp; Distributors (ISBN 13: 9788123911861).</li> <li>3. Shukul, M., and Gandotra, V . (2006). Home Management and Family Finance. New Delhi: Dominant Publishers and Distributors. (ISBN No. 81-7888-403-8).</li> </ol>



<b>Course Title</b>	<b>Lab Course XIII</b>				
<b>Course Code</b>	<b>SBS06591</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	-	-	2	2	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• <b>Health and Fitness &amp; Food Product Development and Marketing Strategy theory paper.</b></li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>This course aims at enabling the students to reach the calculative and analytical level of Health and Fitness &amp; Food Product Development and Marketing Strategy.</b></li> </ul>				
<b>Course Contents</b>	<ol style="list-style-type: none"> <li>1. PARQ Assessment and Interpretation for fitness.</li> <li>2. Planning a diet for weight management.</li> <li>3. Planning and preparation a day's diet for ultra endurance.</li> <li>4. Planning a counseling module for high performance athletes.</li> <li>5. Survey of sports supplements.</li> <li>6. Supervising the preparation of diets.</li> <li>7. Supervising the delivery of trays to the patient.</li> <li>8. Analysis the packaging process.</li> <li>9. Market survey for the demand for the product in the market.</li> <li>10. Market study on –Cost of different types of food products.</li> </ol>				
<b>Course Outcomes</b>	<p><b>Student will be able to</b></p> <ul style="list-style-type: none"> <li>• Know about the assessment and diet planning.</li> <li>• Gain knowledge of diet calculation for condition of physical fitness.</li> <li>• Learn about the supervising and market survey.</li> <li>• Clear the basic concepts of food system.</li> <li>• Know about the demand basis food products.</li> </ul>				
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Shukul, M., and Gandotra, V . (2006). Home Management and Family Finance. New Delhi: Dominant Publishers and Distributors.(ISBN No. 81-7888-403-8).</li> <li>2. R. Srilaskshmi, Dietetics, New Age International Publishers.B. K.Mahajan, Methods in Biostatistics, Jaypee Publishers.</li> </ol>				

<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Antia &amp; Abraham, Clinical Dietetics and Nutrition, Oxford University Press.</li> <li>2. Beckley, J.H. 2007. Accelerating new food product design and development. Blackwell Pub. (e resource) William D McArdle, Frank I Katch and Vitor I Katch, Essential of Exercise Physiology, Second edition, New York: Lipinc off Welliams and wilkins, 2000.</li> <li>3. Ramaswamy &amp; Namkumari, Marketing Management, 3rd Edition, McMillan Publications, 2009.</li> <li>4. Rajan Saxena, Marketing Management, 3rd Edition, Tata McGraw Hill, 2008.</li> </ol>
------------------------	---

<b>Course Title</b>	<b>Lab Course XIV</b>				
<b>Course Code</b>	<b>SBS06592</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	-	-	2	2	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• <b>Food Standard and Quality Control theory paper.</b></li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>This course aims at enabling the students to reach the calculative and analytical level of practicing dietetics.</b></li> </ul>				
<b>Course Contents</b>	<ol style="list-style-type: none"> <li>1. To observe processing of cereals, oils at various food manufacturing Units.</li> <li>2. Preservation of fruits and vegetables by following methods: a. Canning, b. Squash/Jam/Nectar, c. Pickles, d. Drying.</li> <li>3. To process and preserve fruit and vegetable based products.</li> <li>4. To study canned food products.</li> <li>5. Visit to food industries to study preparation of processed food.</li> <li>6. Evaluation of bakery products.</li> <li>7. Common adulterants in milk, chilly, turmeric powder and their detection.</li> <li>8. Identification of different packaging materials.</li> <li>9. Quality evaluation of Egg.</li> <li>10. Visit to beverage industry.</li> </ol>				

<b>Course Outcomes</b>	<b>Student will be able to</b> <ul style="list-style-type: none"> <li>• Know about the various food manufacturing and food preservation.</li> <li>• Gain knowledge of fruit, vegetables and canned food processing.</li> <li>• Evaluate the bakery products and processed food.</li> <li>• Identify the adulterate food and packed materials.</li> <li>• Know about the quality evaluation and industry visit.</li> </ul>
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. Swaminathan, M. 1988. Hand book of Food Science &amp; Experimental Foods. Bappco publishers, Bangalore.</li> <li>2. Sivasankar, B. 2002. Food Processing and Preservation. PHI Learning Pvt. Ltd. Delhi.</li> </ol>
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. Gordon Robertson, Food Packaging Principles, 3<sup>rd</sup> Edition 2013, CRC Press.</li> <li>2. Eram S. Rao, Food Quality Evaluation, Variety Books Publisher and Distributors (2013).</li> </ol>

<b>Course Title</b>	<b>Lab Course XV</b>				
<b>Course Code</b>	<b>SBS06593</b>				
<b>Course Credits</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>TC</b>	
	-	-	2	2	
<b>Prerequisites</b>	<ul style="list-style-type: none"> <li>• <b>General Home Science theory paper.</b></li> </ul>				
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• <b>This course aims at enabling the students to reach the uses and preparation of home science.</b></li> </ul>				
<b>Course Contents</b>	<ol style="list-style-type: none"> <li>1. To prepare first aid kit.</li> <li>2. Drawing kitchen layout for different families.</li> <li>3. Preparation of an album on development milestones of children.</li> <li>4. Table setting-Fruit and vegetable carving.</li> <li>5. Prepare one poster/chart on environmental/personal hygiene and sanitation.</li> </ol>				

	6. To prepare simple dishes using different germination methods (any five food). 7. Preparation and evaluation of label- Evaluation of label on different type of food products, Prepare label. 8. Use of waste material for making decorative and utility materials. 9. Kitchen gardens-use the waste container (any four greens). 10. Paper cutting for decorating a house for special occasions.
<b>Course Outcomes</b>	<b>Student will be able to</b> <ul style="list-style-type: none"> <li>• Know about first aid kit and kitchen lay out.</li> <li>• Gain knowledge of milestone children and table setting.</li> <li>• Prepare of different teaching aids and dishes.</li> <li>• Evaluate the different type of food products and uses of waste material.</li> <li>• Learn about the uses of waste products in home science.</li> </ul>
<b>Text Books</b>	1. Sunita Mishra (2018), Selective and Scientific Books, New Delhi. 2. Bhargava, B. (2001).Family Resource Management and Interior Decoration, Delhi: University Book House. Bhargava, B. (2001).
<b>Reference Books</b>	1. Housing and Space Management. Jaipur: University Book House Ltd. 2. Seetharaman, P., Batra, S., & Mehra, P. (2005). An Introduction to Family Resource Management. New Delhi: CBS Publishers & Distributors (ISBN 13: 9788123911861). 3. Shukul, M., and Gandotra, V. (2006). Home Management and Family Finance. New Delhi: Dominant Publishers and Distributors. (ISBN No. 81-7888-403-8).