# Saurashtra University

# SYLLABUS

# B.Sc (Home Science)
# Major Foods & Nutrition
# Semester V & VI

# W.E.F June - 2021

**SAURASHTRA UNIVERSITY, RAJKOT ANNEXURE 'A'**
**T.Y.B.H.SC. (HOME SCIENCE)**
**SEMESTER – V**
**(MAJOR = FOOD & NUTRITION)**

| Semester | Paper no. | Subject | Credits T + P | Total Credits | Paper Code |
|---|---|---|---|---|---|
| 05 | 01 | FOOD ANALYSIS-I | 3+2 | 5 | 190801010101 |
| 05 | 02 | FOOD SCIENCE-I | 3+2 | 5 | 190801010102 |
| 05 | 03 | DIETETICS- I | 3+2 | 5 | 190801010103 |
| 05 | 04 | FOOD PROCESSING & SAFETY | 3+2 | 5 | 190801010104 |
| 05 | 05 | COMMUNITY NUTRITION | 3+2 | 5 | 190801010105 |
| 05 | 06 | BIOCHEMISTRY | 3+2 | 5 | 190801010106 |
| | | Total | 18+12 | 30 | |

**SEMESTER – VI**

| Semester | Paper No. | Subject | Credits T + P | Total Credits | Subject Code |
|---|---|---|---|---|---|
| 06 | 01 | FOOD ANALYSIS-II | 3+2 | 5 | 190801010201 |
| 06 | 02 | FOOD SCIENCE-II | 3+2 | 5 | 190801010202 |
| 06 | 03 | DIETETICS-II | 3+2 | 5 | 190801010203 |
| 06 | 04 | FOOD PRESERVATION | 3+2 | 5 | 190801010204 |
| 06 | 05 | FOOD BEHAVIOUR | 3+2 | 5 | 190801010205 |
| 06 | 06 | ADVANCED PHYSIOLOGY | 3+2 | 5 | 190801010206 |
| | | Total | 18+12 | 30 | |

**Saurashtra University, Rajkot Annexure 'B'**

**T.Y.B.H.Sc. (Home Science)**

**Semester – V**

**(MAJOR = FOOD & NUTRITION)**

| Semester | Paper No. | Subject | PM | IM | EM | TM | Credits T + P | Total Credits |
|---|---|---|---|---|---|---|---|---|
| 05 | 01 | FOOD ANALYSIS-I | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 05 | 02 | FOOD SCIENCE-I | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 05 | 03 | DIETETICS- I | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 05 | 04 | FOOD PROCESSING & SAFETY | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 05 | 05 | COMMUNITY NUTRITION | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 05 | 06 | BIOCHEMISTRY | 20 | 30 | 50 | 100 | 3+2 | 5 |
| | | Total | 120 | 180 | 300 | 600 | 18+12 | 30 |

**Semester – VI**

| Semester | Paper No. | Subject | PM | IM | EM | TM | Credits T + P | Total Credits |
|---|---|---|---|---|---|---|---|---|
| 06 | 01 | FOOD ANALYSIS-II | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 06 | 02 | FOOD SCIENCE-II | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 06 | 03 | DIETETICS-II | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 06 | 04 | FOOD PRESERVATION | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 06 | 05 | FOOD BEHAVIOUR | 20 | 30 | 50 | 100 | 3+2 | 5 |
| 06 | 06 | ADVANCED PHYSIOLOGY | 20 | 30 | 50 | 100 | 3+2 | 5 |
| | | Total | 120 | 180 | 300 | 600 | 18+12 | 30 |

**PM= Practical Marks IM = Internal Marks EM = External Marks TM = total Marks**

**T = theory P = practical**

**Saurashtra University, Rajkot Annexure 'C'**

**T.Y.B.H.Sc. (Home Science)**

**Semester – V**

**(MAJOR = FOOD & NUTRITION )**

| Semester | Paper No. | Subject | Total Credits | PM | IM | EM | TM | External Exam Time Dura-tion | Practical Exam Time Duration |
|---|---|---|---|---|---|---|---|---|---|
| 05 | 01 | FOOD ANALYSIS-I | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 05 | 02 | FOOD SCIENCE-I | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 05 | 03 | DIETETICS- I | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 05 | 04 | FOOD PROCESSING & SAFETY | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 05 | 05 | COMMUNITY NUTRITION | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 05 | 06 | BIOCHEMISTRY | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| | | Total | 30 | 120 | 180 | 300 | 600 | | |

**Semester – VI**

| Semester | Paper No. | Subject | Total Credits | PM | IM | EM | TM | External Exam Time Duration | Practical Exam Time Duration |
|---|---|---|---|---|---|---|---|---|---|
| 06 | 01 | FOOD ANALYSIS-II | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 06 | 02 | FOOD SCIENCE-II | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 06 | 03 | DIETETICS-II | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 06 | 04 | FOOD PRESERVATION | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 06 | 05 | FOOD BEHAVIOUR | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| 06 | 06 | ADVANCED PHYSIOLOGY | 5 | 20 | 30 | 50 | 100 | 2 Hours | 4Hours |
| | | Total | 30 | 120 | 180 | 300 | 600 | | |

**PM= Practical Marks IM = Internal Marks EM = External Marks TM = total Marks**

**T = theory P = practical**

**With effect from academic year 2021-2022**

**SEMESTER V & VI**

**NOTES**

**Marks and credits distribution –**

1) **Where the Paper have 5 credits the distribution of marks are as below**

   **Theory - 50 Marks**

   **Practical – 20 Marks**

   **Internal – 30 Marks**

   **Total – 100 Marks**

2) **Theory credits – 1 hour /credit so 3 hours/week**

   **Practical credits – 2 hours/credit, so 4 hours/Batch**

3) **Duration of Theory Examination for 50 marks – 2 hours.**

4) **Duration of Practical Examination for 20 marks – 4 hours**

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| **YEAR** | **III** | **FOOD ANALYSIS – 1<br>PAPER NO.1** | | **CREDIT** | **05<br>(03+02)** |
| **SEMESTER** | **V** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To know the principles and applications of different techniques used in food and nutrition research<br>2. To gain knowledge about different instruments used<br>3. To enable the students to familiarize with different methods of investigation used in food analysis | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Sampling** | | | |
| | | • Sampling techniques<br>• Preparation of sample<br>• Reporting results | | | |
| **UNIT – II** | | **General methods of analysis of foods** | | | |
| | | • Densitometry<br>• Food rheology<br>• Viscosity<br>• pH metry | | | |
| **UNIT – III** | | **Separation techniques** | | | |
| | | • Paper chromatography<br>• Thin layer chromatography<br>• Gas liquid chromatography | | | |
| **UNIT – IV** | | **To study the different parts, structure principle, working and uses of instruments used in food analysis** | | | |
| | | • Soxhlet apparatus<br>• Oven<br>• Kjeldahl apparatus<br>• Balances<br>• Water bath<br>• Centrifuge machine<br>• Hot plate | | | |
| **PRACTICALS** | | | | | |
| 1 | | Sampling techniques and sample preparation for analysis | | | |
| 2 | | Separation techniques for identification of amino acids and sugars<br>a. Thin layer chromatography<br>b. Paper Chromatography | | | |
| 3 | | Estimation in food<br>a. Moisture<br>b. Protein<br>c. Fat<br>d. Crude fibre<br>e. Ash | | | |

| | |
|---|---|
| | f. Calcium<br>g. Ascorbic acid |
| 4 | Analysis of<br>a. Milk<br>b. Edible oil<br>c. Honey<br>d. Tea |
| **REFERENCES** | |
| 1 | Pomeranz Y and Meloan CE (1996) – Food Analysis – Theory and Practice, BBS Publishers, New Delhi. |
| 2 | Ranganna S (1986) - Handbook of analysis and quality control for fruits and vegetables products, 2nd edi., Tata McGraw Hill Publishing Co., Ltd. New Delhi. |
| 3 | Srivastava AK and Jain PC (1985) – Chemical analysis – An instrumental approach, 2nd edi., S. Chand Company Ltd. New Delhi. |
| 4 | Srivastava VK and Srivastava KK (1987) - Introduction of chromatography – Theory and Practice, S. Chand Company Ltd., New Delhi. |
| 5 | Srivastava VK and Srivastava KK (1987) - Introduction of chromatography – Theory and Practice, S. Chand Company Ltd., New Delhi. |
| 6 | Association of analytical chemists (AOAC 1995) – Official methods of analysis (17th edi.) Virginia, USA. |
| 7 | Sharma B K(1999) – Instrumental methods of chemical analysis, 8th edi., Gel Publishing House. |
| 8 | S. N. Mahindru (1987) – Handbook of food analysis, Swan Publishers, New Delhi. |

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| **YEAR** | **III** | **FOOD SCIENCE – 1<br>PAPER NO. 2** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **V** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To impart knowledge pertaining to the basic properties of food.<br>2. To provide basic understanding of principles behind food and also with processing technology used for different foods.<br>3. Understand the application of science principles to experimental study of foods.<br>4. Develop food preparations and evaluate by sensory methods.<br>5. Select food to meet your requirements both in terms of food quality as well as cost.<br>6. Identify the different types of energy giving, body building and regulatory foods available in market. | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Food acceptability** | | | |
| | | Appearance factors, kinesthetic factor and flavour factor, judged by sensory organs | | | |
| **UNIT – II** | | **Sensory evaluation of food** | | | |
| | | Definition, practical requirement for conducting sensory test, classification of sensory methods, difference tests. | | | |
| **UNIT – III** | | **Unconventional foods** | | | |
| | | Soybean, ragi, unconventional leaves, mushroom, spirulina, oats, barley | | | |
| **UNIT – IV** | | **Energy giving foods** | | | |
| | | • **Cereals**: Selection of cereals and millets. Nutritional factor in selection of cereals.<br>**a. Wheat**- types, structure, composition and milling. Products of wheat (whole flour, bread flour, self raising flour, all purpose cake flour, maida, semolina), macaroni products.<br>**b. Rice**-Composition, milling and parboiling.<br>**c. Roots and tubers** - Selection of roots and tubers.<br>**d. Fats and oils** : Selection of fats and oils: Nutritional importance of fats and oils, Functions of fats and oils.<br>**e. Sugar, jaggery and other sweetening agent**s - Selection of sugar, jaggery and other sweetening agents. White crystalline sugar, cube sugar, brown sugar, liquid sugar glucose, jaggery, honey and saccharin related products, Indian chikki. | | | |

| PRACTICALS | |
|---|---|
| 1 | **Sensory Evaluation by Difference Tests –**<br>**a.** Paired Comparison Test<br>**b** Triangle Test<br>**c** Duo-Trio Test |
| 2 | **Preparation of Unconventional food (one preparation each)**<br>**a**. Soybean product<br>**b**. Unconventional leaves<br>**c.** Ragi & Oats products<br>**d** Roots & Tuber products |
| 3 | **Selecting, preparing and serving items from current restaurant menus. (one preparation each)**<br>**a.** Wheat<br>**b.** Rice<br>**c.** Roots & tubers<br>**d.** Sugar & Jaggery<br>**e.** Fats & oils |
| **REFERENCES** | |
| 1 | N Shukuntala Manay, M. Sadaksharaswamy,"Foods –Facts and Principles. |
| 2 | M Swaminathan "Food Science and Experimental Food." |
| 3 | Peckham G C. "Foundation of Food Preparation" The Mcmillan Co. 1962 |
| 4 | Norman P N "Food Science" The A V I Publishing Co. 1982 |
| 5 | Charley H "Food Science" John Wiley and Sons 1982 |
| 6 | Griswold RM "The Experimental Study of Foods" Houghtan Migglin Co. 1962 |
| 7 | Lowe B "Experimental Cookery" John Wiley and Sons.1965 |
| 8 | ANC-1 Nutrition for the Community- Practical manual Part-1 IGNOU. |
| 9 | ANC-04 IGNOU. |
| 10 | CCCD-02 IGNOU. |
| 11 | Srilaxmi- Food Science. |

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| **YEAR** | **III** | **DIETETICS - I**<br>**PAPER NO. 3** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **V** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To understand the applications of principles of diet therapy<br>2. Plan and prepare diets for different diseases<br>3. Learn the assessment of patients' need, counseling, education of the patient and follow-up | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Etiology, diagnosis and Dietary Management of Diabetes Mellitus** | | | |
| | | • Type / Classification, symptoms and diagnosis<br>• Role of diet in the management of various types of diabetes mellitus and preparation of diet plans (clinical V/s chemical control)<br>• Secondary complications of Diabetes mellitus and its control<br>• Tests used for diagnosing and monitoring diabetes mellitus including glucose monitoring at home.<br>• Names of tests used for diagnosing and monitoring diabetes mellitus<br>• Insulin therapy, oral hypoglycemic control<br>• Role of diet<br>• Diabetes in pregnancy, surgery, illness diabetic coma, insulin reaction<br>• Use of sweet alternatives, their composition and contra indications.<br>• Patient Education and counseling | | | |
| **UNIT – II** | | **Etiology, Diagnosis and dietary management of Liver Disorders** | | | |
| | | • Liver Function normal and Deranged<br>• Role of diet in liver health<br>• Liver function test and nutritional care in liver diseases<br>• Viral hepatitis<br>• Cirrhosis<br>• Alcoholic liver diseases<br>• Choleycystitis, Cholelithiasis, Pancreatitis | | | |
| **UNIT – III** | | **Some Special conditions requiring nutritional support** | | | |
| | | • Burns : Nutritional management<br>• Metabolic disorder : Diseases of the adrenal cortex, thyroid and parathyroid glands, gout, spontaneous hypoglycemia, phenylketonuria | | | |
| **UNIT – IV** | | **Therapeutics food products** | | | |
| | | a. Antihyperglycemic agents<br>b. Functional foods<br>• Wheat grass<br>• Spirulina<br>• Mashroom<br>• Flaxseeds (Alsi) | | | |

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| | • Nigerseeds (Kala Til)<br>• Drumstick Leaves (Saragvo)<br>• Barley (Jav)<br>• Purslane (Moti Loni)<br>• Soya<br>• Amylase Rich Food |
| **UNIT – V** | **Interactions between drugs, nutrients and nutritional status** |
| | • Drugs used for infection, inflammations and fevers<br>• Drugs used for Diabetes Mellitus-oral hypoglycemic and insulin<br>• Drugs used for Hypertension/Renal control – Diuretics, K Sparing, Ca channel blockers, ACE inhibitors etc.<br>• Drugs used for reducing cholesterol in blood |
| **UNIT – VI** | **Dietetic Techniques and Patient Counseling** |
| | • Dieticians as part of the medical term and outreach services<br>• Medical history assessment-techniques of obtaining relevant information for patient profiles<br>• Dietary diagnosis and tests for nutritional status-Correlating clinical and dietary information<br>• Patient education and counseling-assessment of patient needs, establishing rapports, counseling relationship, resources and aids to counseling.<br>• Aesthetic attributes of diets.<br>• Follow up visits and patients' education. |
| | **PRACTICALS** |
| **UNIT – I** | 1) Prepare of List of foods rich in protein, fats, fiber sodium, calcium phosphorus, oxalic acid in each food exchange.<br>2) List of foods rich in cholesterol(SFA), PUFA AND MUFA<br>3) Glycemic Index of food |
| **UNIT – II** | Planning, Preparation and calculation by use of exchange List for<br>a. Diabetes Mellitus<br>i. Normal Weight<br>ii. Pregnancy<br>b. Liver Disorder<br>i. Hepatitis<br>ii. Cirrhosis of Liver with ascites<br>c. Diet in metabolic disorders<br>i. Gout<br>ii. Hypothyroidism<br>iii. Hypoglycemia<br>iv. Phenylketonuria |
| **UNIT – III** | Plan and prepare recipes from Therapeutic food products |

| REFERENCES | |
|---|---|
| 1 | Anderson, Dibble, Tukki, Mitchell, Rynbergen – NUTRITION IN HEALTH AND DISEASE, 17TH Edi, J.B. Lippincott Co. USA. |
| 2 | B. Snlakshmi – DIETETICS, 3rd Edi, New Age International (P) Ltd. Publisher, New Delhi |
| 3 | Carol West Suitor, Merriyl Forbes, Crowley – Nutrition – Principles and application in Health Promotion, 2nd Edi J.E Lippincott Co. Philadelphia |
| 4 | Clifford R Anderson – MODERN WAYS TO HEALTH, Southern Publishing Association, Nashville Tennessee. |
| 5 | Corinee H Robinson, Marilyn R Lawler – Normal and Therapeutic Nutrition, 17th Edi Oxford and IBH Publishing Co., New Delhi |
| 6 | Dr. R. Kumar, Dr. Meenal Kumar – Guide To Healthy Living, Deep and Deep Publications Pvt. Ltd., New Delhi. |
| 7 | FOODS THAT HARM FOODS THAT HEAL Reader's Digest Association Ltd., 2001 |
| 8 | F.P. Antia and Philip Abraham – Clinical Dietetics and Nutrition, 4th Edi, Oxford Universtiy Press, New Delhi |
| 9 | S.R. Williams – ESSENTIALS OF NUTRITION AND DIET THERAPY, 5TH Edi, Times Mirror / Mosby College Publishing, Boston. |
| 10 | Kathleen Mahan, Sylvia Stamp – Food, Nutrition and Diet Therapy – 11th Edi, W.B. Saunders Co., Philadelphia |
| 11 | Krause M.V. and Hinster M.- Food, Nutrition and Diet Therapy, W.B. Saunders |
| 12 | SOME THERAPETUTIC DIETS, NIN, Hyderabad |
| 13 | Vaid B. M. - Diet Therapy, Saurashtra University |
| 14 | Vaid B. M. - Therapeutic Nutrition, Saurashtra University |

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| **YEAR** | **III** | **FOOD PROCESSING AND SAFETY PAPER NO.4** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **V** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To make the students understand the importance of food additives and fortification.<br>2. To gain knowledge of food packaging and convenience food<br>3. To orient students to food safety laws and standards | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Food Additives** | | | |
| | | • Meaning<br>• Classification of additives | | | |
| **UNIT – II** | | **Food Fortification** | | | |
| | | • Purpose and meaning of food fortification<br>• Different fortified foods available in market | | | |
| **UNIT – III** | | **Food Packaging** | | | |
| | | • Types and importance of food packaging<br>• Material used for packaging<br>• Qualities of packaging materials | | | |
| **UNIT – IV** | | **Convenience Foods** | | | |
| | | • Types of convenience foods<br>• Advantages and disadvantages<br>• Extruded food | | | |
| **UNIT – V** | | **Vinegar preparation** | | | |
| | | • Types of vinegar<br>• Yeast used for vinegar preparation<br>• Method of preparation | | | |
| **UNIT – VI** | | **Food safety laws and food standards** | | | |
| **PRACTICALS** | | | | | |
| 1 | | Market survey of fortified foods. | | | |
| 2 | | Market survey of convenience food with food additives used in it. | | | |
| 3 | | To prepare any one convenience food in the laboratory.<br>To package, prize and label convenience food prepared in the laboratory. | | | |
| 4 | | Visit of a food laboratory or food standard institute or food packaging industry or lecture of a food inspector. | | | |
| **REFERENCES** | | | | | |
| 1 | | G.Subbulakshmi – Shobha A. Udipi, “Food Processing and Preservation”, New Age International Publisher. | | | |
| 2 | | Girdharilal, G.S. Siddappa – G.L. Tandon, Preservation of Fruits and Vegetables. | | | |
| 3 | | M. Swaminathan, “Food Science, Chemistry and Experimental Foods”. | | | |
| 4 | | B. Lakhtariya – “Food Safety and standard act 2006 with food safety and standard rules, 2011”. The new Gujarat Law house Ahmedabad. | | | |

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| **YEAR** | **III** | **COMMUNITY NUTRITION**<br>**PAPER NO. 5** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **V** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To orient students to the basic principles of community nutrition<br>2. To acquire knowledge regarding the recent theories and components of communication as relevant to nutrition health<br>3. To learn about Nutrition-Health-Communication (NHC) programmes and experiences in the developing world of India<br>4. To gain skills in planning and conducting NHC projects | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Demography and Vital statistics** | | | |
| | | • Demographic profile<br>• Vital statistics of developed and developing countries<br>• National Population Policy (NPP) | | | |
| **UNIT – II** | | **Introduction to assessment of nutritional status** | | | |
| | | • **Direct Parameters**<br>**a. Anthropometry**<br>**i**. Concepts, methods, advantages and disadvantages and interpretations.<br>Weight, height, BMI, MUAC, Head & chest circumference, SFT, Waist / Hip ratio.<br>Classifications – WHO Standards , IAP etc<br>**ii** WHO Nutrition Targets to be achieved by 2025<br>**iii**. Various standards for reference for different age groups<br>**iv** Use of growth charts<br>**b. Diet Surveys**<br>**i**. Family food questionnaire and record procedure<br>**ii.** Weighed food inventory<br>**iii**. Recipe method<br>**iv**. Weigh as you eat<br>**v**. Food composite analysis method<br>**vi**. Food diaries and others<br>• **Adult consumption unit**<br>**c. Clinical assessment**<br>**d. Biochemical estimations, their estimations and critique**<br>• **Indirect Parameters**<br>**I**. Socio-economic status | | | |

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| | **II.** Morbidity Rates, Burden of NCD in India,<br>**III**. Mortality Rates (IMR, NMR, MMR, CDR, CBR) U5- MR |
| **UNIT – III** | **Nutrition and Health Programmes in India** |
| | a. National Nutrition Policy (NNP )<br>b. Janani Suraksha Yojana<br>c. National Fluorosis Control Programme<br>d. Antyodaya Anna Yojana (AAY)<br>e. Annapurna Scheme<br>• **National organizations working for community Nutrition and Health** –<br>ICAR, NIN, CFTRI<br>• **International Organizations working for Community Nutrition and Health---**<br>FAO, WHO, UNICEF, CARE |
| **UNIT – IV** | **Severe Acute Malnutrition (SAM): A silent Nutrition Emergency and Community based Management of SAM** |
| | • Severe Acute Malnutrition, its definition, types of malnutrition. Identification and screening of SAM child.<br>• Ten steps for treatment of SAM child according to Standard WHO protocol<br>• Composition of F- 75 and F-100 and indigenous locally used replacement of WHO formulas.<br>• Use of ready to use therapeutic food in management of SAM in Community (RUTF)<br>• Concept, objectives and functions of NRC ( Nutrition Rehabilitation centre.) |
| **PRACTICALS** | |
| 1 | **Diet Survey**<br>**a**. Survey of food habits of various communities viz between rural and urban of ethnic groups of different socio-economic groups<br>**b**. Assessing the frequency of consumption of various foods in the community. |
| 2 | **Anthropometric measurements for children in poor and affluent or urban and rural groups comparisons with the standards and interpretations.**<br>**a.** Weight<br>**b**. Height<br>**c.** BMI<br>**d.** waist/hip ratio<br>**e.** MUAC |
| 3 | **Understanding clinical signs and symptoms of various nutritional disorders**<br>**a**. Visit to the corporation schools<br>**b**. Visit to the pediatric ward in the civil hospital |

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| | **c**. Visit to NRC |
| 4 | Visit to NRC for SAM children**.** |
| **REFERENCES** | |
| 1 | Gibson(1992) Principles of nutritional assessment, New York, Oxford University Press |
| 2 | Gopalan C (1989) Combating undernutrition – Basic issues and practical approaches. New Delhi, Nutrition foundation of India |
| 3 | Gopaldas T., Sheshadri S. (1989) Nutrition Monitoring and Assessment, New Delhi Oxford University Press. |
| 4 | Jlliffee DB and Jelliffe EP (1980) Community Nutritional Assessment Oxford University Press New Delhi |
| 5 | Food and Nutrition Board(1995) National Plan of Action on Nutrition, Department of Women and Child Development, Ministry of HRD, Govt of India |
| 6 | IGNOU - DNE – 2 Block – 6 |
| 7 | IGNOU DNE -3 Block – 6 |
| 8 | IGNOU DNE -3 Block – 2 |
| 9 | IGNOU DNE -2 Block – 6 |
| 10 | IGNOU Public Nutrition-MFN006 |
| 11 | Preventive and Social medicine by Park & Park 21st Edition |
| 12 | WHO-Child Growth Standards for SAM children-2009 |
| 13 | WHO Guidelines for Inpatient treatment for SAM child-2003 |
| 14 | Community based Management of SAM-UNICEF-2009 |
| 15 | National guidelines and consensus on Management of SAM-2009 |
| 16 | Indian Pediatrics,vol-47,2010-Management of Acute Malnutrition |

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| **YEAR** | **III** | **BIOCHEMISTRY**<br>**PAPER NO. 6** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **V** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | This course will enable students to -<br>1. Develop an understanding of the principles of biochemistry ( as applicable to human nutrition )<br>2. Obtain an insight into the chemistry of major nutrients and physiologically important compounds.<br>3. Understand the biological processes and systems as applicable to human nutrition.<br>4. Apply the knowledge acquired to human nutrition and dietetics. | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Carbohydrates** | | | |
| | | • Definition & classification<br>• Biological importance of Carbohydrates<br>• Classification of Carbohydrates<br>• Reactions of monosaccharide<br>A. Osazone formation<br>B. Oxidation reaction<br>C. Reduction reaction<br>• Metabolism- Reactions & energetic of<br>A. Glycolysis_-Aerobic and anaerobic<br>B. Krebs Cycle<br>C. Electron Transport Chain | | | |
| **UNIT – II** | | **Proteins And Amino Acids** | | | |
| | | • General structure of Amino acid<br>• Biological Importance of Protein<br>• Classification of Protein<br>• Transamination<br>• Deamination (Oxidative)<br>• Decarboxylation<br>• Urea cycle | | | |
| **UNIT – III** | | **Lipids** | | | |
| | | **Fatty Acids**<br>• Classification of fatty acids<br>**Fat**<br>• Biological Importance of Lipids<br>• Physical and chemical properties of fats<br>• Hydrolysis<br>• Saponification | | | |

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| | • Rancidity<br>• Acid number<br>• Iodine number<br>B - Oxidation of saturated fatty acid and it's energetics<br>• Metabolism of ketone bodies and ketosis |
| **UNIT – IV** | **Enzymes** |
| | • Importance and specificity.<br>• Chemical nature<br>• Classification and nomenclature<br>• Enzyme kinetics (factors affecting enzyme action)<br>• Coenzymes and isoenzymes.<br>• Inhibitors<br>• Clinical importance of enzymes |
| **PRACTICALS** | |
| 1 | Cole's method – Glucose, Lactose |
| 2 | Acid value |
| 3 | Iodine value |
| 4 | Preparation of casein from milk |
| 5 | Preparation of standard solution. |
| 6 | Effect of pH on amylase activity |
| 7 | Effect of Temperature on amylase activity |
| 8 | Estimation of calcium |
| 9 | Estimation of chloride |
| **REFERENCES** | |
| 1 | Biochemistry by Lehninger |
| 2 | Biochemistry by Harper |
| 3 | Biochemistry by West and Todd |
| 4 | Biochemistry by Conn and Stumph |
| 5 | Biochemistry by Stryer |

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| **YEAR** | **III** | **FOOD ANALYSIS – II**<br>**PAPER NO.1** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **VI** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To know the principles and applications of different techniques used in food and nutrition research<br>2. To gain knowledge about different instruments used<br>3. To enable the students to familiarize with different methods of investigation used in food analysis | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Separation technique** | | | |
| | | Electrophoresis | | | |
| **UNIT – II** | | **Tracer techniques** | | | |
| | | Use of radioactive isotopes in biology and medicine and food | | | |
| **UNIT – III** | | **General methods of analysis of foods** | | | |
| | | • Refractometry<br>• Polarimetry | | | |
| **UNIT – IV** | | **Principles, operation and use of the techniques** | | | |
| | | • Colorimetry<br>• Flame photometry<br>• Fluorimetry | | | |
| **UNIT – V** | | **Analytical Microbiology** | | | |
| **UNIT – VI** | | **Thermal analysis of foods** | | | |
| **PRACTICALS** | | | | | |
| 1 | | Estimation in food<br>a. Iron | | | |
| 2 | | Analysis of<br>a. Butter<br>b. Ghee<br>c. Coffee<br>d. Spices<br>e. Grains<br>f. Pulses<br>g. Cold drinks/Soft drinks | | | |
| **REFERENCES** | | | | | |
| 1 | | Pomeranz Y and Meloan CE (1996) – Food Analysis – Theory and Practice, BBS Publishers, New Delhi. | | | |
| 2 | | Ranganna S (1986) - Handbook of analysis and quality control for fruits and vegetables products, 2nd edi., Tata McGraw Hill Publishing Co., Ltd. New Delhi. | | | |
| 3 | | Srivastava AK and Jain PC (1985) – Chemical analysis – An instrumental approach, 2nd edi., S. Chand Company Ltd. New Delhi. | | | |
| 4 | | Srivastava VK and Srivastava KK (1987) - Introduction of | | | |

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| | chromatography – Theory and Practice, S. Chand Company Ltd., New Delhi. |
| 5 | Srivastava VK and Srivastava KK (1987) - Introduction of chromatography – Theory and Practice, S. Chand Company Ltd., New Delhi. |
| 6 | Association of analytical chemists (AOAC 1995) – Official methods of analysis ($17^{th}$ edi.) Virginia, USA. |
| 7 | Sharma B K(1999) – Instrumental methods of chemical analysis, $8^{th}$ edi., Gel Publishing House. |
| 8 | S. N. Mahindru (1987) – Handbook of food analysis, Swan Publishers, New Delhi. |

| B. Sc (HOME SCIENCE) | | | | | |
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| **YEAR** | **III** | **FOOD SCIENCE -II**<br>**PAPER NO. 2** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **VI** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To impart knowledge pertaining to the basic properties of food.<br>2. To provide basic understanding of principles behind cooking foods and also with processing technology used for different foods.<br>3. Understand the application of scientific principles to experimental study of foods.<br>4. Develop food preparation and evaluate by sensory methods.<br>5. Select food to meet your requirements both in terms of food quality as well as cost'<br>6. Identify the different types of energy giving, body building and regulatory foods available in market. | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Rating tests** | | | |
| | | • Ranking test<br>• Two sample difference test<br>• Multiple sample difference test<br>• Hedonic test<br>• Numerical scoring test<br>• Composite scoring test | | | |
| **UNIT – II** | | **Body building food** | | | |
| | | • **Pulses:** Selection of pulses, commonly used pulses, nutritional factors in selection of pulses, toxic factors in pulse<br>• **Milk and Products:** Selection of milk and milk products, chemical composition, standardizing<br>pasteurization, kinds of milk available, food products derived from milk such as cream, ghee, curd, paneer, khoa, milk powder, cheese<br>• **Selection of Flesh Foods:** Selection of flesh foods, meat, poultry, eggs, fish and other sea foods<br>• **Nuts:** Selection of nuts | | | |
| **UNIT – III** | | **Protective/Regulatory foods** | | | |
| | | • **Vegetables:** Selection of vegetables, chemical composition of vegetables and effect of heat on them, salad<br>• **Fruits:** Selection of fruits, composition, ripening and storage of fruits, banana, orange, mango, lime, custard apple, pineapple, papaya, chiku, guava, amla, melons, grapes, peach, berries | | | |
| **PRACTICALS** | | | | | |

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| 1 | **Sensory Evaluation by Rating Tests**<br>a) Sensory evaluation of different products by Ranking test<br>b) Sensory evaluation of different products by Two sample difference test<br>c) Sensory evaluation of different products by Multiple sample difference test<br>d) Sensory evaluation of different products by Hedonic test<br>e) Sensory evaluation of different products by Numerical scoring test<br>f) Sensory evaluation of different products by Composite scoring test |
| 2 | **Selecting, preparing and serving items from current restaurant menus (one preparation each).**<br>a) Legumes<br>b) Milk & milk products<br>c) Vegetables<br>d) Fruits |
| **REFERENCES** | |
| 1 | N Shukuntala Manay, M. Sadaksharaswamy,"Foods –Facts and Principles. |
| 2 | M Swaminathan "Food Science and Experimental Food." |
| 3 | Peckham G C. "Foundation of Food Preparation" The Mcmillan Co. 1962 |
| 4 | Norman P N "Food Science" The A V I Publishing Co. 1982 |
| 5 | Charley H "Food Science" John Wiley and Sons 1982 |
| 6 | Griswold RM "The Experimental Study of Foods" Houghtan Migglin Co. 1962 |
| 7 | Lowe B "Experimental Cookery" John Wiley and Sons.1965 |
| 8 | ANC-1 Nutrition for the Community- Practical manual Part-1 IGNOU. |
| 9 | ANC-04 IGNOU. |
| 10 | CCCD-02 IGNOU |
| 11 | Srilaxmi- Food Science. |

| B. Sc (HOME SCIENCE) | | | | | |
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| **YEAR** | **III** | **DIETETICS - II**<br>**PAPER NO. 3** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **VI** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To understand the applications of principles of diet therapy<br>2. Plan and prepare diets for different diseases<br>3. Learn the assessment of patients' need, counseling, education of the patient and follow-up | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Etiology, diagnosis and dietary management of Cardiovascular disorders** | | | |
| | | **1. Hypertension**<br>• Types, role of diet in the management of various types of hypertension<br>• Consequences and complications of hypertension<br>• Lifestyles change and behavior modification in hypertension<br>• Use of salt alternatives, their composition and contraindications<br>**2. Atherosclerosis / Ischemic heart diseases**<br>• Types and risk factors<br>• Role of diet<br>• Diet after bypass surgery and heart attack<br>• Prevention : control of risk factors and lifestyle changes | | | |
| **UNIT – II** | | **Etiology, diagnosis and dietary management of Renal Disorders** | | | |
| | | • Renal functions : normal and deranged Diagnosis : names of Renal function Tests<br>• Glomerulonephritis<br>• Nephrotic Syndrome<br>• Acute and Chronic renal failure<br>• Dialysis/ Renal transplant<br>• Renal Calculi | | | |
| **UNIT – III** | | **Etiology, diagnosis and dietary management** | | | |
| | | • Cancer, types and etiological factors<br>• Role of diet in prevention of all types of cancers<br>• Nutritional management of cancer patients undergoing<br>i. Radiotherapy<br>ii. Chemotherapy<br>iii. Diet to be followed after treatment<br>iv. Cachexia<br>• Side effects of cancer therapy and suggested diet modifications | | | |
| **UNIT – IV** | | **Some special conditions requiring nutritional support** | | | |
| | | • Bone disorders<br>• Allergy | | | |

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| **UNIT – V** | **Prebiotics and Probiotics** |
| | • Introduction<br>• Types and their structures<br>• Role in health and disease<br>• Functional characteristics and applications<br>• Legal and regulatory status |
| **PRACTICALS** | |
| **UNIT – I** | **Prepare an appendix**<br>i. Inulin content of foods<br>ii. List of resistant starch values in raw food products<br>iii. List of resistant starch values in processed food products |
| **UNIT – II** | Planning, Preparation and calculation by use of exchange List for<br>1 Cardiovascular disease<br>i. Hypertension<br>ii. Atherosclerosis<br>iii. Diet for a patent after heart attack<br>iv. Diet for a patent after bypass surgery<br>2 Renal disorders<br>a. Diet for acute nephritis<br>b. Diet for chronic renal failure<br>c. Diet for a patient on dialysis<br>d. Diet for renal calculi<br>4 Cancer :<br>a. Oral diet for Cancer Patients<br>b. Tube feeding for cancer patients |
| **UNIT – III** | Case study :<br>a. Select any one patient and record the diagnosis, laboratory findings and detailed dietary and clinical history<br>b. Write down the steps in counseling and formulate a new diet for the diagnosed disease<br>c. Prepare a report and do a formal presentation |
| **REFERENCES** | |
| 1 | Anderson, Dibble, Tukki, Mitchell, Rynbergen – NUTRITION IN HEALTH AND DISEASE, 17$^{TH}$ Edi, J.B. Lippincott Co. USA. |
| 2 | B. Snlakshmi – DIETETICS, 3$^{rd}$ Edi, New Age International (P) Ltd. Publisher, New Delhi |
| 3 | Carol West Suitor, Merriyl Forbes, Crowley – Nutrition – Principles and application in Health Promotion, 2$^{nd}$ Edi J.E Lippincott Co. Philadelphia |
| 4 | Clifford R Anderson – MODERN WAYS TO HEALTH, Southern Publishing Association, Nashville Tennessee. |
| 5 | Corinee H Robinson, Marilyn R Lawler – Normal and Therapeutic Nutrition, 17$^{th}$ Edi Oxford and IBH Publishing Co., New Delhi |

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| 6 | Dr. R. Kumar, Dr. Meenal Kumar – Guide To Healthy Living, Deep and Deep Publications Pvt. Ltd., New Delhi. |
| 7 | FOODS THAT HARM FOODS THAT HEAL Reader's Digest Association Ltd., 2001 |
| 8 | F.P. Antia and Philip Abraham – Clinical Dietetics and Nutrition, 4th Edi, Oxford Universtiy Press, New Delhi |
| 9 | S.R. Williams – ESSENTIALS OF NUTRITION AND DIET THERAPY, 5TH Edi, Times Mirror / Mosby College Publishing, Boston. |
| 10 | Kathleen Mahan, Sylvia Stamp – Food, Nutrition and Diet Therapy – 11th Edi, W.B. Saunders Co., Philadelphia |
| 11 | Krause M.V. and Hinster M.- Food, Nutrition and Diet Therapy, W.B. Saunders |
| 12 | SOME THERAPETUTIC DIETS, NIN, Hyderabad |
| 13 | Vaid B. M. - Diet Therapy, Saurashtra University |
| 14 | Vaid B. M. - Therapeutic Nutrition, Saurashtra University |

| B. Sc (HOME SCIENCE) | | | | | |
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| **YEAR** | **III** | **FOOD PRESERVATION<br>PAPER NO. 4** | | **CREDIT** | **05<br>(03+02)** |
| **SEMESTER** | **VI** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | To enable students to<br>1. To gain knowledge regarding principles of food preservation.<br>2. To prepare students for home scale production of preservation products such as jam, jelly, tomato ketchup etc.<br>3. To teach students different methods of food preservation.<br>4. To appraise the students of the latest development in food preservation.<br>5. To understand cookery as science<br>6. To apply science to food preparation | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Introduction of Food Preservation** | | | |
| | | • Importance of food preservation<br>• Principles of food preservation<br>• Bacteriostatic methods – Dehydration, fermentation, freezing or Low temperature, salt, sugar, oil, vinegar, chemicals etc.<br>• Bactericidal methods – Use of higher temperature, pasteurisation, canning, boiling, Irradiation | | | |
| **UNIT – II** | | **Food Spoilage** | | | |
| | | • Food fit for consumption<br>• Deterioration of food quality – non perishable, semi perishable and perishable foods<br>• Causes of food spoilage | | | |
| **UNIT – III** | | • Methods of Food Preservation | | | |
| | | **Canning** | | | |
| | | • Principles, steps in canning<br>• Spoilage in canned foods | | | |
| | | **Freezing and refrigeration** | | | |
| | | • Principles involved, types of storage at low temperature<br>• Selection criteria for freezing material | | | |
| | | **Drying and dehydration** | | | |
| | | • Principles – sun drying<br>• Types of driers- (home made dryer, spry dryer, vacuum dryer, tunnel dryer)<br>• Packaging and storage of dehydrated food | | | |
| | | **Food Irradiation** | | | |
| | | • Ionizing radiation and its sources<br>• Effects of radiation on nutritive value of food<br>• Use of radiation for different food groups | | | |

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| **UNIT – IV** | **Preservation of food products, preparation and principles of Preservation** |
| | • Fruit juice and squashes<br>• Jam, Jelly, Marmalade.<br>• Tomato products (Chutney and ketchup)<br>• Pickles |
| **PRACTICALS** | |
| 1 | **Prepare the following food products in the laboratory**<br>1. Syrup<br>2. Squash<br>3. Jam<br>4. Jelly<br>5. Marmalade<br>6. Pickles<br>7. Chutney<br>8. Tomato ketchup<br>9. Freezing<br>10. Drying of vegetables and fruits |
| **REFERENCES** | |
| 1 | Foundations of food preparation - Peckham. Macmillan Publishing Co. Inc. New Work. |
| 2 | Modern Cookery Vol. I and II - Thangam E. Phillip. Orient Longman Publication. |
| 3 | "Basic food preparation" Department of Foods and Nutrition, Orient Longman Publication, New Delhi |
| 4 | G. Subbulakshmi – Shobha A. Udipi, "Food Processing and Preservation", New Age International Publisher. |
| 5 | Girdharilal, G.S. Siddappa – G.L. Tandon, Preservation of Fruits and Vegetables. |
| 6 | M. Swaminathan, "Food Science, Chemistry and Experimental Foods". |

| B. Sc (HOME SCIENCE) | | | | | |
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| **YEAR** | **III** | **FOOD BEHAVIOUR**<br>**PAPER NO. 5** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **VI** | **MAJOR – FOODS & NUTRITION** | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | 1. To impart knowledge pertaining to the basic properties of food.<br>2. To provide basic understanding of principles behind cooking of foods and also with processing technology used for different foods.<br>3. Understand the application of scientific principles to experimental study of foods. | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Colloidal System in Foods** | | | |
| | | • Definition - Difference between colloid , suspension and solution<br>• Types of colloidal dispersion, properties of colloidal dispersion<br>• Dispersion of substances in food preparation | | | |
| **UNIT – II** | | **Evaluation of food by Objective methods** | | | |
| | | • Definition, advantages and disadvantages<br>• Classification of objective methods | | | |
| **UNIT – III** | | **Introduction to Food Experimentation** | | | |
| | | • Controlling ingredients, controlling techniques, basic recipe, labelling, evaluating the product, recording the experiment, interpreting data, drawing conclusion | | | |
| **UNIT – IV** | | **Scientific Principles and Techniques in Preparation** | | | |
| | | • Control of nutritive loss – Good purchasing procedures, storage at proper temperatures, avoid long storage periods, minimum pre-preparation time, careful pre-preparation methods, proper cooking methods, minimum post-store time.<br>• Colour changes in food processing<br>• Preserving and developing desirable flavours<br>• Texture and consistency changes<br>• Desirable temperatures of foods<br>• Food safety | | | |
| **PRACTICALS** | | | | | |
| 1 | | Vegetable and fruit cooking – factors colour, texture, flavours, browning reaction and preventive methods. | | | |
| 2 | | Quality of fruit juices - squeezes orange / lime and allows juice to stand in refrigerator, covered and uncovered, for short period and overnight. Note flavor changes. | | | |
| 3 | | Experiments on starch gelatinization and gelation factors affecting gelations. | | | |
| 4 | | Milk cookery – milk and acid soup combining and evaluation of soup (cream of tomato) and ice cream | | | |

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| 5 | Pulses – softening of legumes |
| 6 | Fats and oils – fat absorption and deep frying |
| 7 | Gelatinisation of cereals and legumes |
| **REFERENCES** | |
| 1 | N Shukuntala Maney, M Shadaksharaswamy, "Foods – facts and principles." |
| 2 | M Swaminathan, " Food Science and Experimental foods." |
| 3 | Peckham GC, "Foundations of Food Preparation" The Mc Millan Co. 1962. |
| 4 | Norman P N, " Food Science" The AVI Publishing Co. 1982. |
| 5 | Charley H, "Food Science" John Wiley and Sons, 1982. |
| 6 | Griswold RM, " The Experimental Study of Foods" Houghtan Migglin Co. 1962. |
| 7 | Lowe B, " Experimental Cookery " John Wiley and Sons.1965. |
| 8 | Crusius V, Quantity Food Management – Principles and Applications" Surjeet Publications, 1984. |
| 9 | McWilliams M, "Experimental Foods Laboratory Manual" Surjeet Publications, 1984. |

| B. Sc (HOME SCIENCE) | | | | | |
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| **YEAR** | **III** | **ADVANCED PHYSIOLOGY**<br>**PAPER NO. 6**<br><br>**MAJOR – FOODS & NUTRITION** | | **CREDIT** | **05 (03+02)** |
| **SEMESTER** | **VI** | | | **HOURS/ WK** | **07** |
| **Total Marks: 100** | | **Internal: 30** | **Theory: 50** | **Practical: 20** | |
| **OBJECTIVES** | | The course will enable students to<br>1. Advance their understanding of scope of the relevant issues and topics of human physiology.<br>2. Enable the students to understand the integrated function of all systems and the grounding of nutritional science in physiology.<br>3. Understand alterations of structure and function in various organs and systems in disease conditions. | | | |
| **COURSE CONTENT: THEORY** | | | | | |
| **UNIT – I** | | **Homeostasis** | | | |
| | | • Concept of Homeostasis<br>• Role of Body system in maintaining Homeostasis | | | |
| **UNIT – II** | | **Body temperature, Temperature Regulation** | | | |
| | | • Normal Body Temperature<br>• Heat Production& Heat loss<br>• Regulation of Body Temperature | | | |
| **UNIT – III** | | **Blood** | | | |
| | | • Composition of blood<br>• Plasma, plasma proteins and its functions<br>• Blood cells – Types and functions<br>• Coagulation of blood<br>• Blood group & Rh factor<br>• Structure of heart, junctional tissue & its regulation<br>• Blood pressure & factors affecting blood pressure | | | |
| **UNIT – IV** | | **Reproductive System** | | | |
| | | • Types and Structure of Chromosome, Karyotype<br>• Spermatogenesis and ogenesis<br>• Pregnancy- development of fertilized ovum up to placental stages<br>– Different stages of development of fetus.<br>• Parturition –different stages of labour<br>• Structure of breast- lactation & secretion of milk | | | |
| **UNIT – V** | | **Nervous System** | | | |
| | | • Types of neurons<br>• transmission of nerve impulse in nerve fibers & synapse | | | |

| PRACTICALS | |
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| 1 | Demonstration of barr body |
| 2 | Blood group and Rh –factor |
| 3 | Estimation of Hemoglobin |
| 4 | Total count of WBC and RBC |
| 5 | Differential count of WBC |
| 6 | Measurement of blood pressure (After Exercise & during rest) |
| 7 | Abnormalities of urine- sugar, protein, bile salt, ketone bodies & blood |
| 8 | Measurement of body temperature and pulse rate (After Exercise & During rest) |
| 9 | Study of permanent slides different organs of System - Digestive, Respiratory, Circulatory, Reproductive, Endocrine and Nervous. |
| **REFERENCES** | |
| 1 | Human physiology – C.C.Chatterjee |
| 2 | Human Physiology – Agrawal |
| 3 | Text book of Medical Physiology – Guyton |
| 4 | Essentials of Medical Physiology- By- K Sembulingam ; Prema Sembulingam Jaypee Brother Medical Publishers Ltd |
| 5 | Essentials of Medical Physiology- Guyton sanders, Oxford University, London |
| 6 | Human Physiology-By C.B. Fox |