

Ordinance & Syllabus
of
M.A Food & Nutrition
Contents w.e.f. Session 2024-2026



Department of Home Science
Jananayak Chandrashekhra University
Ballia, UP – 227001

Rajana Mall Tiwari



About the Department:

The courses in Foods and Nutrition aim at capacity building of students to manage long and short-term intervention within reach of family and community to achieve food and nutrition security. The courses designed will enable students to understand global nutritional problems, current trends in nutrition and food challenges in next millennium and inculcate skill in planning, managing and executing nutrition projects for affected community. The new PG courses planned includes food analysis, processing, nutrition for physical fitness, immunity and special conditions, food toxicology, advanced nutrients, nutrition and agriculture interface to achieve the livelihood security and longevity. The course programme will enable students to understand the nutritional management in natural calamities. The courses will enable the students to manage diet during various communicable and non-communicable diseases for faster recovery. The courses designed will develop competency to plan and prepare designer foods as per the requirement of group/community and to take it as entrepreneur.

Vision:

The Department of Food and Nutrition at Jananayak Chandrashekhar University, Ballia endeavours to achieve excellence in teaching and research for outreach to the community, industry and institutions to ensure promotive health for all.

Mission:

The Department of Food and Nutrition strives to achieve academic excellence in the field of nutrition research and development. The aim is to train a cadre of professionals who work as teachers, researchers, public health nutritionists, dietitians, nutrition consultants, food quality control officers and experts in development of innovative food products. The larger objective is creation of nutrition awareness through community outreach for promotion of healthy lifestyle among the population.

Programme Specific Objectives:

- Cultivating a critical thinking environment in Food Nutrition.
- Integrating theory with practical skills for industry readiness.
- Empowering students to become skilled nutritionists who promote public health.
- Enhancing the field through innovative research and global partnerships.

Specific Programme Outcomes

- To study the fundamentals of the science of nutrition in relation to macro and micro nutrients.
- To understand the working and management of the dietary departments of the various organizations. To develop skill and confidence to make informed decisions about healthy diet in health and disease.
- To learn composition and chemistry of different foods and changes that occur during cooking/processing of foods
- To apply the knowledge of food microbiology, sanitation and hygiene in food production and service

Title: The Title of the course shall be Master of Food & Nutrition.

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Affiliation

The proposed course shall be governed by the Department of Home Science, Jananayak Chandrashekhar University, Ballia, Uttar Pradesh.

Duration: The total duration of the course shall be of two years, spread over in four Semesters. The course will be conducted on regular basis.

Minimum Eligibility for Admission

As per University guidelines or a three/four-year Bachelor's degree or equivalent in any stream /discipline awarded by a University or Institute established as per law and recognised as equivalent by this University with minimum 50 percentage marks for General and OBC categories and 45 percentage of marks for SC, ST and Persons with Disability categories or equivalent grade, shall constitute the minimum requirement for admission to the Master of Arts in Social Work programme. Reservation of seats for various categories shall be as per the Uttar Pradesh State Government rules and regulations.

Admission Procedure

Admission procedure will take place according to the University Norms (Jananayak Chandrashekhar University, Ballia) and guidelines in this regard.

Medium of Instruction

The Medium of Instruction will be English/Hindi.

Attendance

As per University Norms or Minimum 75% shall be compulsory. Structure of the Course Assessment of Theory Papers (Each): (75 Marks)

A.	Internal Marks:	(25 Marks)
	1. Theory Test	15 Marks
	2. Assignment	05 Marks
	3. Attendance and Behaviour	05 Marks
B.	External Marks	(50 Marks)

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MA FOOD AND NUTRITION

Semester-wise Title of the Papers

Year	Sem	Course Code	Course Name	Theory/ Practical	Credit	Maximum marks
1	I	HSFN101	Research Methodology in Home Science	Theory	4	75
		HSFN102	Statistics and Computer Applications	Theory	4	75
		HSFN103	Advanced Nutrition	Theory	4	75
		HSFN104	Applied Physiology	Theory	4	75
		HSFN105	Practical Related to Theory Papers	Practical	4	100
		HSFN106	(Minor Elective for the students of other faculty) Basic Home Science	Theory	4	100
		HSFN107	Research Project Part-I	Report	-	
			Total		24	500
	II	HSFN201	Problems in Human Nutrition	Theory	4	75
		HSFN202	Clinical and Therapeutic Nutrition	Theory	4	75
		HSFN203	Maternal and Child Nutrition	Theory	4	75
		HSFN204	Nutrition and Health of Women	Theory	4	75
		HSFN205	Practical Related to Theory Papers	Practical	4	100
		HSFN206	Research Project Part-II	Report	8	100
		Total		28	500	
2	III	HSFN301	Public Nutrition	Theory	4	75
		HSFN302	Nutrition for Health and Fitness	Theory	4	75
		HSFN303A/ HSFN303B	Optional (any one) Assessment of Nutrition Status/ Advanced Food Science	Theory	4	75
		HSFN304A/ HSFN304B	Optional (any one) Improving Health and Nutrition/ Nutrition Communication and Diet counseling	Theory	4	75
		HSFN305	Practical Related to Theory Papers	Practical	4	100
		HSFN306	Research Project Part-I	Report	-	100
			Total		20	400
	IV	HSFN401	Management of Nutrition Programmes	Theory	4	75
		HSFN402	Institutional Food Administration	Theory	4	75
		HSFN403A/ HSFN403B	Optional (any one) Food Safety and Quality Control/ Applied food Microbiology	Theory	4	75
		HSFN404A/ HSFN404B	Optional (any one) Food processing technology/ Nutrition for fitness and sports	Theory	4	75
		HSFN405	Practical Related to Theory papers	Practical	4	100
		HSFN406	Research Project Part-II	Report	8	100
		Total		28	500	
		GRAND TOTAL			1900	

Note: स्नातकोत्तर के प्रथम सेमेस्टर में प्रत्येक विद्यार्थी को रिसर्च प्रोजेक्ट के लिए एक शीर्षक का चयन करना होगा जिसे वह पूर्ण करके द्वितीय सेमेस्टर में मूल्यांकन के लिए जमा करेगा। इसी प्रकार, स्नातकोत्तर के तृतीय सेमेस्टर में प्रत्येक विद्यार्थी को रिसर्च प्रोजेक्ट के लिए एक शीर्षक का चयन करना होगा जिसे वह पूर्ण करके चतुर्थ सेमेस्टर में मूल्यांकन के लिए जमा करेगा।
In the first semester of Post Graduation, every student will have to select a topic for the Research Project which he/she will complete and submit for evaluation in the second semester. Similarly, in the third semester of Post Graduation, every student will have to select a topic for the Research Project which he/she will complete and submit for evaluation in the fourth semester.

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Semester	I		
Course Code	HSFN101		
Course Title	RESEARCH METHODOLOGY IN HOME SCIENCE		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">To understand the significance of statistics and research methodology in Home Science researchTo understand the types, tools methods of research and develop the ability to construct data gathering instruments appropriate to the research design.To understand and apply the appropriate statistical technique for the measurement scale and design.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Demonstrate knowledge of the scientific method, purpose and approaches to research.Compare and contrast quantitative and qualitative research.Explain research design and the research cycle.Prepare key elements of a research proposal.			
Unit	Course Content		
I	Science, scientific methods, scientific approach. Role of statistics and research in Home Science discipline. Objectives of research: Explanation, control and prediction. Types of Research: Historical, descriptive, experimental, case study, social research, participatory research.		
II	Definition and Identification of a Research Problem. Hypothesis: Concept, Types & Significance Types of variables Population and Sampling Probability sampling: simple random, systematic random sampling, two stages and multi stage sampling, cluster sampling. Non-Probability sampling: purposive, quota and volunteer sampling/snowball sampling.		
III	Research Design: Concept, Types and significance. Sources of Data Collection: Primary and Secondary, Tools of Data Collection: Interview, observation and questionnaire. Methods of data Collection: Interview, Questionnaire, Observation, Case Study, Scaling methods, Home visit, Group discussions		
IV	Measurement and Scaling. Critical analysis of research. Writing a research proposal. Analysis of data and research report.		
References: <ul style="list-style-type: none">Aschengrau A, Seage III GR. (2014) Essentials of Epidemiology in Public Health. (Third Edition). Sudbury, MA: Jones & BartlettCreswell, J. W. (2009). Research design: Qualitative, quantitative, and mixed methods approaches. Thousand Oaks, CA: Sage Publications.Bryman, A. (2008). Social research method. Oxford: Oxford University Press.Bhandarkar, P.L. and Wilkinson, T.S. Methodology and Techniques of Social Research, Himalaya Pub. House, Mumbai, 2000.Bhatnagar, G.L. Research methods and measurement in behavioural and social science, Agri. Cole Publishing Academy, New Delhi, 1990.Mukherjee, R. The quality of Life: valuation in social research, Sage Pub., New Delhi, 1989.			

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जननायक चन्द्रशेखर विश्वविद्यालय, बलिया

Jananayak Chandrashekar University, Ballia

A State University established under Uttar Pradesh State University Act 1973



Semester	I		
Course Code	HSFN102		
Course Title	STATISTICS AND COMPUTER APPLICATIONS		
Credit	4	Maximum Marks	25+50
Course Objective: <ul style="list-style-type: none">To understand the role of statistics and computer applications in research.To apply statistical techniques to research data for analyzing and interpreting data meaningfully.To understand the role of statistics & Computer Application in research.To understand the significance of statistics and research methodology in Home Science research.To understand and apply the appropriate statistical technique for measurement and testing.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Differentiate between the qualitative and quantitative methods of analysis of data.Suitable apply data reduction strategies and illustrate data using various graphical methods.Use appropriate parametric and non parametric statistical tests .Draw conclusions and interpretations from the analysis of data using various statistical softwares.			
Unit	Course Content		
I	Statistics: Meaning, Uses and Diagrammatic representation of Data. Measures of Central Tendency. Mean, Median, Mode and their uses with examples and their advantages and disadvantages Measures of Dispersion Significance and methods used in studying dispersion (range, quartile deviation, mean deviation and standard deviation) with their uses, advantages and disadvantages		
II	Testing of Hypothesis Type -1 and Type-2 errors, level of significance Correlation: Karl Pearson's Rank Correction Coefficient		
III	Fundamentals of Computer: History of Computers, Generation of Computer, Language, Components, Applications of Computers: Operating System : MS-DOS, MS-Windows,		
IV	Internet: Meaning, Uses, Disadvantage MS-Office: MS-Word, MS Excel, and Power Point.		
References: <ul style="list-style-type: none">Gordis L. (2013) Epidemiology. (Fifth Edition). Philadelphia, PA: Saunders Elsevier,Agresti, A. & Franklin C.A. (2009) Statistics: The Art and Science of Learning from Data (Second Edition) Boston, MA: Pearson Prentice Hall, ISBN 978-0-13-5131992Greene, S. and Hogan, D. (Eds.). (2005). Researching Children's Experiences: Methods and Approaches. London: Sage.Muijs, D. (2004). Doing Quantitative Research in Education with SPSS. London: Sage			

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Semester	I		
Course Code	HSFN103		
Course Title	ADVANCE NUTRITION		
Credit	4	Maximum Marks	25+50
Course Objective:			
<ol style="list-style-type: none">1. To know the concept of physiological fuel value, energy content of various foods, BMR, RMR and the thermic effect of feeding.2. To understand the processes involved in the digestion and transport of carbohydrates in the human body.3. To aware about different types of proteins and lipids, their digestion, absorption, and transport mechanisms in the human body.4. To identify the food sources, explain the bioavailability, and describe the metabolism of various macro, micro, and trace minerals and also understand the historical background, structure, absorption, transport, and metabolism of fat-soluble and water-soluble vitamins.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to:			
<ul style="list-style-type: none">● Explain the concept of physiological fuel value, BMR, RMR and describe how the energy content of different foods is determined.● To explain the types, classification, digestion, and transport of carbohydrates, the role and health benefits of dietary fiber, fructooligosaccharides, and resistant starch, and analyze the glycemic index of foods.● Differentiate types of proteins and lipids, their digestion, absorption, and transport mechanisms in the human body.● Identify the sources and describe the bioavailability and metabolism of essential macro, micro, and trace minerals and articulate the functions, requirements, and potential deficiencies and toxicities of these minerals and vitamins.			
Unit	Course Content		
I	Energy: Energy content of foods. Physiological fuel value, Measurement of Energy Expenditure: BMR, RMR, thermic effect of feeding and physical activity, methods of measurement. Estimating energy requirements of individuals and groups. Regulation of energy metabolism: control of food intake, digestion, absorption and body weight.		
II	Carbohydrates: Types, classification, digestion, and transport; dietary fibre, fructooligosaccharides, resistant starch; chemical composition and physiological effects Glycemic index of foods. Sweeteners nutritive and non-nutritive.		
III	Proteins: Classification, digestion, absorption and transport, Metabolism of proteins, Protein quality, methods of evaluating protein quality. Protein and amino acid requirements. Therapeutic applications of specific amino acids. Lipids: Classification, digestion, absorption, transport. Functions of EFA. Role of n-3, n-6 fatty acids in health and disease. Requirements of total fat and fatty acids. Trans fatty acids. Prostaglandins.		
IV	Minerals: (Note: for each nutrient sources, bioavailability, metabolism, function, requirements, deficiency and toxicity). Macro minerals: calcium, phosphorous, magnesium, sodium, potassium and chloride. Micro minerals: Iron, Copper, zinc, manganese, iodine, fluoride. Trace minerals: Selenium, cobalt, chromium, vanadium, silicon, boron, nickel. Vitamins: Historical background, structure, food sources, absorption and transport, metabolism, biochemical function, assessment of status. Interactions with other nutrients. Physiological, pharmacological and therapeutic effects, toxicity and deficiency with respect to the following: Fat soluble: Vitamins A, D, E & K. Water soluble: Thiamine, riboflavin, niacin, biotin, pyridoxine, folic acid, pantothenic acid, ascorbic acid, cyanocobalamin, choline, inositol.		

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References:

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- Shils, M.E.; Olson, J.; Shike, M. and Roos, C. (1998): Modern Nutrition in Health and Disease. 9th edition. Williams and Williams. A Beverly Co. London.
- Bodwell, C.E. and Erdman, J.W. (1988) Nutrient Interactions. Marcel Dekker Inc. New York.
- World Reviews of Nutrition and Dietetics.
- European Journal of Clinical Nutrition.
- International Journal of Vitamin and Nutrition Research.
- Srilakshmi, B. (2023). *Nutrition Science* (Eight Edition). New Delhi: New Age Publishers Private Limited.

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Semester	I		
Course Code	HSFN104		
Course Title	APPLIED PHYSIOLOGY		
Credit	4	Maximum Marks	25+50
Course Objective:			
<ol style="list-style-type: none"> 1. Advance their understanding of some of the relevant issues and topics of human physiology. 2. Enable the students to understand the integrated function of all system and the grounding of nutritional science in physiology. 3. To enable the students to understand the anatomy and functions of human body and techniques/methods of blood and urine analysis. 4. Understand alterations of structure and function in various organs and systems in disease conditions. 			
Learning Outcomes: After successful completion of the syllabus, learners will be able to:			
<ul style="list-style-type: none"> • Understand the current state of knowledge about the functional organization of the human body. • Develop insight of normal functioning of all the organ systems of the body and their interactions. • Comprehend the pathophysiology of commonly occurring diseases. • Correlate physiology with various disorders and their pathogenesis. 			
Unit	Course Content		
I	<p>Cell structure and function Levels of cellular organization and function-organelles, tissues and systems Brief review. Cell membrane, transport across cell membrane and intercellular communication.</p> <p>Regulation of cell multiplication.</p> <p>Nervous System - Review of structure and function of neuron, conduction of nerve impulse synapses and role of neurotransmitters. -Organisation of central nervous system, structure and function of Brain and spinal cord, Afferent and efferent nerves. Blood Brain Barrier, CSF, Hypothalamus and its role in various body function- obesity, sleep, memor</p> <p>Endocrine system - Endocrine glands- structure, function, role of hormones, regulation of hormonal secretion. The neuro endocrine axis. Disorders of endocrine glands. Emphasis on physiology of diabetes and stress hormones.</p>		
II	<p>Sense organs - Review of structure and function. Role of skin, eye, nose and tongue in perception of stimuli.</p> <p>Digestive system - Review of structure and function Secretary, Digestive and absorptive function. Role of liver, pancreas and gall bladder and their dysfunction Motility and hormones of GIT.</p> <p>Respiratory system - Review of structure and function. Role of lungs in the exchange of gases, Transport of oxygen and CO, Role of haemoglobin and buffer systems Cardiorespiratory response to exercise and physiological effects of training.</p>		
III	<p>The circulatory system - Structure and function of heart and blood vessels Regulation of cardiac output and blood pressure, heart failure, hypertension.</p> <p>Blood formation, composition, blood clotting and haemostasis: Formation and function of plasma proteins, Use of blood for investigation and diagnosis of specific disorders, Anaemia.</p> <p>The excretory system - Structure and function of nephron. Urine formation. Role of kidney in maintaining pH of blood. - Water, electrolyte and acid base balance, diuretics.</p>		
IV	<p>The Musculo-skeletal system - Structure and function of bone cartilage and connective tissue. Disorders of the skeletal system. -Types of muscles- structure and function</p> <p>Immune system - Cell mediated and humeral immunity activation of WBC and production of antibodies. Their Role in inflammation and defence.</p> <p>Reproduction - Menstrual cycle, spermatogenesis, physiological changes in pregnancy.</p>		

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References:

- Ganong W.F.(2003)-Review of Medical Physiology.21st ed. McGraw Hill.
- Guyton A.C. and Hall J.E.(2000)Textbook of Medical Physiology.10th ed. India: Harcourt Asia..
- Jain A. K (2014) Human Physiology for BDS(5th Edition), Publisher: Avichal Publishing Company; ISBN:9788177394337 .
- Marieb E.N(2001) Human Anatomy and Physiology(5th ed)Pearson Education ,Inc, publishing as Benjamin Cummings.
- Tortora G.J and Grabowski S.R.(2000) Principles of Anatomy and Physiology.9th ed. John Wiley and Sons.Inc.

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Semester	I		
Course Code	HSFN105		
Course Title	PRACTICAL RELATED TO THEORY PAPERS		
Credit	4	Maximum Marks	100
Course Objective: <ul style="list-style-type: none">To understand the different types of low cost high nutritive recipe.To understand the different recipes from different Indian statesTo Identification of foods, weights and measures			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">To learn the napkin folding and table settingTo learn the nutritive rich recipe like proteins, Fat, Carbohydrate.			
Unit	Course Content		
I	Preparation of research proposal in Home Science and its report writing. National and International food preparation using food groups.		
II	Identification of foods, weights and measures. Preparing market order, napkin folding and table setting.		
III	Preparation of recipes from different Indian states. Preparation of low cost high nutritive value recipes.		
IV	Developing and preparing recipes rich in – Carbohydrates, Proteins, Fat, Fibre, Calcium, Iron, Vitamin A and Vitamin C etc. Developing and Preparing millets recipe.		
References: <ul style="list-style-type: none">Khanna K, Gupta S, Seth R, Mahna R, Rekhi T (2004). The Art and Science of Cooking: A Practical Manual, Revised Edition. Elite Publishing House Pvt Ltd.Raina U, Kashyap S, Narula V, Thomas S, Suvira, Vir S, Chopra S (2010). Basic Food Preparation: A Complete Manual, Fourth Edition. Orient Black Swan Ltd.Srilakshmi (2007). Food Science, 4th Edition. New Age International Ltd.Wardlaw and Insel MG, Insel PM (2004). Perspectives in Nutrition, Sixth Edition. Mosby.Chadha R and Mathur P (eds). Nutrition: A Lifecycle Approach. Orient Blackswan, Delhi. 2015			

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Semester	I		
Course Code	HSFN106		
Course Title	(Minor Elective for the students of other faculty) BASIC OF HOME SCIENCE		
Credit		Maximum Marks	100
Course Objective: <ol style="list-style-type: none">To understand the relationship between food nutrition and health.To understand the functions of food, basic concepts of food groups and balanced diet.To develop an understanding about the discipline of life span development.To enable student to understand the fundamentals of resource management in changing scenario and available resources.To learn the concept of extension, It's Philosophy, Principles and Scope.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Comprehend the relationship between food nutrition and health.Understand the function of food, basic concepts of food groups and balanced diet.Comprehend the fundamentals of resource management in changing scenarios.Learn the concept of extension, its philosophy, principles and scope.Describe textile fibers in terms of their production and properties			
Unit	Course Content		
I	Home Science - Meaning, Importance, objective, History. Different branch of Home Science. Food & Nutrition - Basic Concepts in food and nutrition. Basic terms used in study of food & Nutrition. Understanding relationship between food, nutrition and health. Function of food - Physiological, psychological and social.		
II	Human Development- Concept, Definition, Principles and types. Importance of Human Development from life span perspective. Different stages of Human Development.		
III	Home Management - Meaning, Definition, characteristics. Step - Planning, Origination. Control Evaluation. Elements of Art. Principles of Design. Extension Education - Concept, Scope, Principles, objectives and Philosophy of Extension. Extension Methods & Approaches, Classification, Characteristics and Selection.		
IV	Textile - Terminology and classification of textile fibers and their properties. Identification fibers. Care and storage of textiles. Laundering of textiles. Stain removal labels.		

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References:

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- Chanchal, Arora, C., Chopra S. and Rastogi, D. Textile science.
- Crain W 11992) Theories of Development concepts and applications, New Jersey: Prentice Hall.
- Goel s (2016). Management of Resources for sustainable development. New Delhi. Orient BlackswanPVt. Ltd.
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- Mikkelsen, Britha (2002); Methods for Development work and Research, New Dell: Sage Publications.
- Rakhi T and Yadav H (2014) Fundamentals of Food and Nutrition. Elite Publishing House PVt Ltd. Delhi.

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Semester	I		
Course Code	HSFN107		
Course Title	RESEARCH PROJECT PART – 1 (Report)		
Credit		Maximum Marks	
Learning Outcomes: Students who complete their master's programme in Home Science are mentally equipped to pursue research in the same discipline. It is generally accepted that research is nothing but an extension and application of knowledge in a certain specialized field. Students will be allowed to get exposed to a few elements of social research and also, they are expected to complete a research project, Elementary knowledge of research methodology shall consolidate the deepen their understanding of dynamic changes in the field of Home Science.			
<ul style="list-style-type: none">• Research project on the current trends in the Home Science.• The project report will be prepared using Research Techniques.			
References: <ul style="list-style-type: none">• Kerlinger F.N. and Lee, H.B. (200): Foundations of Behavioral Research 4th Ed. Harecourt College Publishers.• Kumar, R. (2005): Research Methodology: A Step by by Step Guide for Beginners. Sage Publication, New Delhi.• Ramamurthy, G.C. (2011): Research Methodology, Dreamtech Press Indian Private Ltd. New Delhi.• Strauss, G.C. (201): Research Methodology, Dreamtech Press India Private Ltd. New Delhi.• Strauss, A. and Corbin, J. (1990): Basic of Qualitative Research: Grounded theory procedure and Techniques, Sage Publication, California.			

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Semester	II		
Course Code	HSFN201		
Course Title	PROBLEMS IN HUMAN NUTRITION		
Credit	4	Maximum Marks	25+50
Course Objective:			
<ol style="list-style-type: none">1. To familiarize the students with newer concepts in dietary management of various disorders and diseases.2. To analyze the historical background, prevalence, etiology, clinical features, biochemical and metabolic changes, prevention strategies, and nutritional requirements for Protein-Energy Malnutrition (PEM) and Vitamin A deficiency.3. To evaluate the historical background, prevalence, etiology, clinical features, biochemical and metabolic changes, prevention strategies, and nutritional requirements for Nutritional Anemia, Rickets, Osteomalacia, and Osteoporosis.4. To examine the historical background, prevalence, etiology, clinical features, biochemical and metabolic changes, prevention strategies, and nutritional requirements for obesity, overweight, and diabetes mellitus.5. To investigate the historical background, prevalence, etiology, clinical features, biochemical and metabolic changes, prevention strategies, and nutritional requirements for coronary heart disease (CHD) and cancer.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to:			
<ul style="list-style-type: none">• Describe the historical background, identify the prevalence, and understand the etiology and clinical features of Protein-Energy Malnutrition (PEM) and Vitamin A deficiency.• Describe the historical background, identify the prevalence, and understand the etiology and clinical features of Nutritional Anemia, Rickets, Osteomalacia, and Osteoporosis.• Describe the historical background, identify the prevalence, and understand the etiology and clinical features of obesity, overweight, and diabetes mellitus.• Describe the historical background, identify the prevalence, and understand the etiology and clinical features of coronary heart disease (CHD) and cancer.			
Unit	Course Content		
I	Historical background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following: - PEM Vitamin A deficiency		
II	Historical background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following: - Nutritional anaemia Rickets, osteomalacia and osteoporosis		
III	Historical background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following: - Obesity and overweight Diabetes mellitus		
IV	Historical background, prevalence, etiology, biochemical and clinical manifestations, preventive and therapeutic measures for the following: - CHD Cancer		
References:			
<ul style="list-style-type: none">• McCollum, E.V. (1957): History of Nutrition, Houghton Mifflin Co.• WHO (1970): Fluorides and Human Health• Mahan, L.K. & Ecott-Stump, S. (2000): Krause's Food, Nutrition and Diet Therapy, 10th Edition, W.B.Saunders Ltd.• World Health Organisation's Reports, Monographs and Technical Report Series.			

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Semester	II		
Course Code	HSFN202		
Course Title	CLINICAL AND THERAPEUTIC NUTRITION		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">1. To familiarize students about estimation of RDA, deficiency of nutrients, estimation of different nutrients and metabolites in normal and diseased conditions.2. Understand the etiology, physiological and metabolic anomalies of acute and chronic diseases and patient needs.3. Know the effect of the various diseases on nutritional status and nutritional and dietary requirements.4. Be able to recommend and provide appropriate nutritional care for prevention/and treatment of the various diseases.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Understand the importance of nutritional assessment in the care of patients.• Gain knowledge about causative factors and metabolic changes in various diseases/disorders and the associated principles of diet therapy.• Learn the principles of dietary counseling.• Comprehend the rationale of prevention of various diseases/disorders.			
Unit	Course Content		
I	Principles of diet therapy Modification of normal diet for therapeutic purposes, full diet, soft, Fluid diet, Bland diet. Nutritional support- Recent advance in techniques and feeding substrates.		
II	Etiopathophysiology, metabolic and clinical aberrations, complications, prevention and recent advances in the medicalnutritional management of: - <ul style="list-style-type: none">• Weight imbalances• Cardio vascular disorders• Diabetes mellitus		
III	Etiopathophysiology, metabolic and clinical aberrations, complications, prevention and recent advances in the medicalnutritional management <ul style="list-style-type: none">• Musculo-skeletal disorders• Immuno-deficiency disorders• Respiratory problems• GI Tract Disorders• Liver and gall bladder, Pancreatic disorders• Renal disorders		
IV	Etiopathophysiology, metabolic and clinical aberrations, complications, prevention and recent advances in the medicalnutritional management of: - Childhood problems/disorders including inborn errors ofmetabolism and their nutritional management. Genetic disorders Infections AIDS		
References: <ul style="list-style-type: none">• Mahan, L. K. and Escott Stump. S. (2016) Krause's Food & Nutrition Therapy 14th ed. Saunders-Elsevier• Lee RD & Neiman DC. (2009). Nutritional Assessment. 5th Edition. Brown & Benchmark.• Gibney MJ, Elia M, Ljungqvist &Dowsett J. (2005) Clinical Nutrition. The Nutrition Society TextbookSeries. Blackwell Publishing Company• Gibson SR. (2005). Principles of Nutritional Assessment. 2nd Edition. Oxford University press• Shils, M.E., Shike, M, Ross, A.C., Caballero B and Cousins RJ (2005) Modern			

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Semester	II		
Course Code	HSFN203		
Course Title	MATERNAL AND CHILD NUTRITION		
Credit	4	Maximum Marks	75
Course Objective: <ul style="list-style-type: none">To enable the students to understand the role of nutrition during pregnancy, lactation and infancy.Understand physiological changes in pregnancy and lactation.Get acquainted with growth and developmental changes from conception till adolescence.Understand the inter-relationship between nutrition and growth and development during life cycle.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">To learn Human milk composition and factors affecting breastfeeding and fertility.To learn child Policies and programmes for promoting maternal and nutrition and healthTo Nutritional requirements during Adolescent Pregnancy			
Unit	Course Content		
I	Current Nutrition and Health Status of Women and Children in India. Changing concepts and controversies in Maternal and Child Nutrition.		
II	Importance of Maternal Nutrition: Importance of Nutrition during pregnancy. Pre-requisites for successful outcome. Effect of under nutrition on mother-child diad including pregnancy outcome and Maternal and Child Health-Short term and Long term. Physiology and endocrinology of pregnancy and embryonic and foetal growth and development. Nutritional requirements during Adolescent Pregnancy Pregnancy and AIDS Pregnancy and TB Intra-uterine growth retardation Complications of pregnancy and management and importance of antenatal care. Congenital malformation, foetal alcohol syndrome and gestational diabetes mellitus.		
III	Lactation Development of mammary tissue and role of hormones. Physiology and endocrinology of lactation-synthesis of milk components. let down reflex, role of hormones, lactation amenorrhea, effect of breast feeding on maternal health. Human milk composition and factors affecting breastfeeding and fertility. Management of lactation-Prenatal breastfeeding skill education, rooming in, problems, sore nipples, engorged breast, inverted nipples etc. Exclusive breastfeeding Baby friendly hospitals initiative. Breast feeding in the age of AIDS		
IV	Growth and development during infancy, childhood and adolescence. Malnutrition in mother and children: etiology and management (in brief) child Policies and programmes for promoting maternal and nutrition and health		
References: <ul style="list-style-type: none">UNICEF (1997). The Care initiative: Assessment, Analysis and Action to improve care for Nutrition, New York, UNICEFWHO (1999) Management of severe malnutrition, A manual for physicians and other senior healthworkers. Geneva, WHO.			

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Semester	II		
Course Code	HSFN204		
Course Title	NUTRITION AND HEALTH OF WOMEN		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">1. Be acquainted with the status of women in family and society.2. Understand how various factors influence the health and nutritional status of women.3. Plan and undertake various activities to improve the status of women.4. Understand how health of women influences family, community and national development.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Address & resolve women & family related issues.• Make use of Audio-visual aids in planning & conducting group communication• Understand the role of Government bodies in development of the community.• Organizing people for their own development.			
Unit	Course Content		
I	Role of Women in National Development. Women in Family and Community: Demographic changes, menarche, marriage, fertility, morbidity, mortality, life expectancy, sex ratio, ageing and widowhood, female-headed families.		
II	Women and work: Environmental Stress, production activities, nutrition, health and gender, living conditions, occupational health, health facilities. Women and Society: Women's role, their resources and contribution to family and community and effect on nutritional status. Effect of urbanisation on women. Impact of economic policies, industrialization, and globalization on women.		
III	Women and Health: Women's Nutritional Requirement and Food Need, Health facilities, Disease patterns and Reproductive health, Gender and health, Health seeking behaviour Women-pregnancy and lactation ,Safe Motherhood, Care of at-risk mothers, Family planning Women and ageing Special concerns in developed and developing societies: Menopause, Osteoporosis, Chronic diseases, neurological problems. Women and AIDS. Women and Nutrition: Nutrition in women, Women's empowerment and nutrition status: The case of iron deficiency in India Situation of women in global, national and local context. Improving the nutritional and health status. Interventions throughout the life cycle.		
IV	Policies and Legislations: CEDAW (Convention on Elimination of all forms of Discrimination Against Women), Women's Right to Life and Health (WRLH) Empowerment of Women: Role of Education and various national schemes. Women Empowerment: Acts and Schemes		
References: <ul style="list-style-type: none">• UNICEF (1994): The Urban Poor and Household Food Security, UNICEF.• NGO Committee on UNICEF (1997) : Women and Children in Urban Poverty- What Way Out -Census Reports, Government of India .• International Nutrition Foundation -Micronutrient Initiative (1999) : Preventing Iron Deficiency in Women and Children : Technical Consensus on Key Issues.• Gopalan, C. and Kaur, S. (Eds.) (1989): Women and Nutrition in India, Nutrition Foundation of India.			

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Semester	II		
Course Code	HSFN205		
Course Title	PRACTICAL RELATED TO THEORY PAPERS		
Credit	4	Maximum Marks	100
Course Objective: <ul style="list-style-type: none">To Visit to local health centre to identify clinical signs and symptoms of nutritional problems.Planning and Preparation of diets for Pregnant and Lactating women.Visit to an ICDS Block and report writing.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">To learn Assessment of nutritional status like 24 hour dietary recall, Anthropometry, Clinical assessment.To visit to local health centre to identify clinical signs and symptoms of nutritional problemsPlanning and Preparation of diets for different age groups Infancy, Preschool age, School age, Adolescent Adult and Old age.			
Unit	Course Content		
I	<ul style="list-style-type: none">Planning and Preparation of diets/dishes for individuals suffering from: PEM, Nutritional Anaemia, Obesity and Overweight, Diabetes mellitus and other metabolic disorders, Cardio vascular disorders, Underweight, Peptic ulcer, Jaundice, Diarrhoea, Constipation and Diet in surgery.Visit to local health centre to identify clinical signs and symptoms of nutritional problems.Visit to an ICDS Block and report writing.		
II	<ul style="list-style-type: none">Assessment of nutritional status- 24 hour dietary recall, Anthropometry, Clinical assessment.Planning and Preparation of diets for different age groups – Infancy, Preschool age, School age, Adolescent, Adult and Old age.		
III	<ul style="list-style-type: none">Planning and Preparation of diets for special occasions – Birthdays, Festivals and Packed Lunches.Market survey of commercial nutritional supplements and nutritional support substrate to		
IV	Make Scrap Book related to any field- Health of women, Women and society, Women and work, Role of women in National Development. Planning and Preparation of diets for Pregnant and Lactating women		
References: <ul style="list-style-type: none">UNICEF (1997). The Care initiative: Assessment, Analysis and Action to improve care for Nutrition, New York, UNICEFInternational Nutrition Foundation -Micronutrient Initiative (1999) : Preventing Iron Deficiency in Women and Children : Technical Consensus on Key Issues.Gopalan, C. and Kaur, S. (Eds.) (1989): Women and Nutrition in India, Nutrition Foundation of India			

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जननायक चन्द्रशेखर विश्वविद्यालय, बलिया

Jananayak Chandrashekhar University, Ballia

A State University established under Uttar Pradesh State University Act 1973



Semester	II		
Course Code	HSFN206		
Course Title	RESEARCH PROJECT PART - II		
Credit	8	Maximum Marks	100
Learning Outcomes: Students who complete their master's programme in Home Science are mentally equipped to pursue research in the same discipline. It is generally accepted that research is nothing but an extension and application of knowledge in a certain specialized field. Students will be allowed to get exposed to a few elements of social research and also, they are expected to complete a research project, Elementary knowledge of research methodology shall consolidate the deepen their understanding of dynamic changes in the field of Home Science.			
<ul style="list-style-type: none">• Research project on the current trends in the Home Science.• The project report will be prepared using Research Techniques.			
References:			
<ul style="list-style-type: none">• Kerlinger F.N. and Lee, H.B. (200): Foundations of Behavioral Research 4th Ed. Harecourt College Publishers.• Kumar, R. (2005): Research Methodology: A Step by by Step Guide for Beginners. Sage Publication, New Delhi.• Ramamurthy, G.C. (2011): Research Methodology, Dreamtech Press Indian Private Ltd. New Delhi.• Strauss, G.C. (201): Research Methodology, Dreamtech Press India Private Ltd. New Delhi.• Strauss, A. and Corbin, J. (1990): Basic of Qualitative Research: Grounded theory procedure and Techniques, Sage Publication, California.			

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Semester	III		
Course Code	HSFN301		
Course Title	PUBLIC NUTRITION		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">1. To know the concept of community nutrition, the relationship between health and nutrition, and the role of public nutritionists in the healthcare delivery system.2. To analyze food and nutrition security, understand the factors influencing nutritional status at both individual and population levels, and identify socio-cultural, biological, environmental, and economic determinants affecting nutrition.3. To examine the etiology, prevalence, clinical features, and preventive and therapeutic measures for major nutritional problems, including macro and micronutrient deficiencies.4. To evaluate food and nutrition policies, plans of action, and programs, including health-based and food-based interventions such as fortification, genetic improvement of foods, supplementary feeding, and nutrition education for behavior change.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Describe the concept of community nutrition, explain the relationship between health and nutrition, and analyze the role of public nutritionists in the healthcare delivery system.• Describe food and nutrition security, analyze the determinants of nutritional status at individual and population levels, and interpret socio-cultural, biological, environmental, and economic factors influencing nutrition.• Describe the etiology, identify the prevalence, recognize the clinical features, and evaluate preventive and therapeutic measures for major nutritional problems.• Describe food and nutrition policies, plans of action, and programs. They will analyze health-based interventions, food-based interventions like fortification and genetic improvement of foods, supplementary feeding programs, and nutrition education strategies for behavior change.			
Unit	Course Content		
I	Concept of community nutrition: Relationship between health and nutrition, Role of public nutritionists in the health care delivery. Primary Health Care of the Community: National Health Care Delivery System, Determinants of Health Status, Indicators of Health.		
II	Food and Nutrition Security: Nutritional Status; Determinants of nutritional status of individual and populations, Nutrition and Non-nutritional indicators; socio-cultural, biologic, environmental and economic.		
III	Major Nutritional Problems: Etiology, prevalence, clinical features, preventive and therapeutic measures; Macro and micro nutrient deficiencies, Other nutritional problems like lathyrism, dropsy, aflatoxicosis, alcoholism and fluorosis/Overweight, obesity and chronic degenerative diseases.		
IV	Food and Nutrition Policy, Plan of Action and Programmes: Health-based interventions, Food-based interventions, including fortification and genetic improvement of foods, supplementary feeding, Nutrition education for behaviour change.		
References: <ul style="list-style-type: none">• Owen, A.Y. and Frankle, R.T. (1986): Nutrition in the Community, The Art of Delivering Services, 2nd Edition, Times Mirror/Mosby.• Park, K. (2000): Park's Textbook of Preventive and Social Medicine, 18th Edition, M/s Banarasidas Bhanot, Jabalpur.• State of the World's Children, UNICEF.• Census Reports.• Bamji, M.S., Rao, P.N. Reddy, V. (Eds.) (1996): Textbook of Human Nutrition; Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.			

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Semester	III		
Course Code	HSFN302		
Course Title	NUTRITION FOR HEALTH AND FITNESS		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">To learn the concepts of fitness, methods of assessing fitness, exercises for physical fitness and bioenergetics of exercise and role of macro- and micronutrients in sports performance and to gain knowledge & application skills with respect to nutrition for high performance sports, through the lifecycle and diet & nutritional care of special groups of athletes.To enable the students to know the recent techniques of body composition and energy metabolism for the assessment of nutritional status.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Understand the components of health and fitness and the role of nutrition in these.Make nutritional, dietary and physical activity recommendations to achieve fitness and well-being.Develop ability to evaluate fitness and well-being.Provide diet and nutritional care in terms of nutrition education, diet plans and counselling to special groups of athletes.			
Unit	Course Content		
I	Fitness - Definition, components and assessment criteria of age: Specific fitness and health status. Holistic approach to the management of fitness and health: Energy input and output. Diet and Exercise. Effect of specific nutrients on work performance and physical fitness. Nutrition, exercise, physical fitness and health and their inter-relationships. Review of different energy systems for endurance and power activity: Fuels and nutrients to support physical activity. Shift in carbohydrate and fat metabolism. Mobilization of stores during exercise.		
II	Nutrition in Sports: Sports specific requirement. Diet manipulation. Pregame and post game meals. Assessment of different nutrigenic aids and commercial supplements. Diets for persons with high energy requirements, stress, fracture and injury. Water and electrolyte balance: Losses and their replenishment during exercise and sports events, effect of dehydration, sports drinks.		
III	Physical Fitness - Significance of physical fitness and nutrition in the prevention and management of weight control, obesity, diabetes mellitus, CV disorders, bone health and cancer. Nutritional and exercise regimes for management of obesity: Critical review of various dietary regimes for weight and fat reduction. Prevention of weight cycling.		
IV	Defining nutritional goals/guidelines appropriate to health, fitness and prevention and management of the above chronic degenerative disorders. Nutrition and exercise regimes for pre and post-natal fitness. Alternative systems for health and fitness like Ayurveda, yoga, meditation, vegetarianism and traditional diets		
References: <ul style="list-style-type: none">Mahan LK. & Ecott-Stump S. (2000): Krause's Food, nutrition and Diet Therapy, Ref 10th Edition, W.B Saunders Ltd.Sizer F. & Whitney, E. (2000): Nutrition - Concepts & Controversies, 8th Edition, Wadsworth Thomson Learning.Whitney ENN. & Rolfes SRR. (1999): Understanding Nutrition, 8th Edition, West/Wadsworth, An international Thomson Publishing Co.Ira Wolinsky (Ed) (1998): Nutrition in Exercise and Sports, 3rd Edition, CRC Press.			

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Semester	III		
Course Code	HSFN303A		
Course Title	ASSESSMENT OF NUTRITION STATUS		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">To enable the students to know the recent techniques of body composition and energy metabolism for the assessment of nutritional status.Orient the students with all the important state-of-the-art methodologies applied in nutritional assessment and surveillance of human groups.Develop Specific skills to apply the most widely used methods.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Understand the concept and purpose of nutritional status assessment in community setting.Develop an understanding of the concept of nutrition monitoring and nutrition surveillance.Gain knowledge with regard to standard methods and techniques for assessing nutritional status.			
Unit	Course Content		
I	Nutritional assessment as a tool for improving the quality of life of various segments of the population including hospitalized patients. Nutrition Anthropometrics -need and importance, standards for references, techniques of measuring height, weight, head, chest and arm circumference, interpretation of these measurements and use of growth charts.		
II	Clinical signs - need, importance, identifying signs of PEM, Vit A, Anemia, Iodine deficiency. Interpretation of descriptive list of clinical signs. Biochemical tests Biophysical methods		
III	Dietary assessment Secondary sources of Community health data: sources of relevant vital statistics, importance of infant, child and maternal mortality rates .Epidemiology of nutritionally related diseases. Sociological factors in etiology and prevention of malnutrition, food production and availability, Cultural influences, socio-economic factors, food consumption, conditioning infections, Psychosocial, emergency/disaster conditioning, Famine, Floods.		
IV	Nutritional Surveillance - Basic concepts, uses and setting up of surveillance systems. Monitoring and Evaluation.		
References: <ul style="list-style-type: none">Jelliffe D.B. and Jelliffe E.F.P. (1989): Community Nutritional Assessment, Oxford University Press.Sauberlich, H.E. (Ed) (1999): Laboratory Tests for the Assessment of Nutrition Status, CRC Press.Bingham, S.A. (1987): The Dietary Assessment of Individuals, Methods, Accuracy, New Techniques and Recommendations. Nutrition Abstracts and Reviews, 57:705- 743.Collins, K.J. (Ed)(1990) Handbook of Methods for the measurement of Work Performance, Physical Fitness and Energy Expenditure in Tropical Populations, International Union of Biological Sciences.Himes, J.H. (1991): Anthropometric Assessment of Nutritional Status. Wiley-Liss, New York.			

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Semester	III		
Course Code	HSFN303B		
Course Title	ADVANCED FOOD SCIENCE		
Credit	4	Maximum Marks	75
Course Objective: 1. The course aims to enable students to acquaint with fundamentals of food processing technology and its process and to understand concepts of various engineering principles and processing methods. 2. To make the students aware about common food processing techniques and understand the physico-chemical properties of foods.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Gain knowledge of principles of Unit operations involved in food processing industry.• Learn fundamentals of food processing technology and its process.• Understand concepts of various engineering principles and processing and preservation methods and their application.• Understand various post processing operations important from industrial point of view.			
Unit	Course Content		
I	Processing and preservation by heat Principle, theory and effect of blanching, pasteurization, sterilization, UHT, canning, extrusion cooking and frying on food.		
II	Processing and preservation by low temperature Principle, theory and effect of refrigeration, chilling, freezing, freeze-drying (lyophilization) and freeze-concentration on food.		
III	Processing and preservation by non-thermal technologies Principle, theory and effect of irradiation, high pressure, pulsed electric field and other innovative technologies on food		
IV	Processing and preservation by other methods Principle, theory and effect on food of drying, osmotic dehydration, concentration, evaporation and distillation, Hurdletechnology		
References: <ul style="list-style-type: none">• Mahindru, S N (2000) Food Additives- Characteristics Detection and Estimation. Tata Mc Graw Hill Publishing Co. Ltd• Branen AL, Davidson PM & Salminen S. (2001) Food Additives. 2nd Ed. Marcel Dekker.• Fellows P J (2002) Food Processing Technology- Principles and Practices, 2nd Edition. Woodhead Publishing Ltd.• Food and Agriculture Organization (1980) Manual of Food Quality Control, Additive Contaminants Techniques. Rome• Fuller, G.W. (1999) New Food Product Development. From concept to market place. CRC press, New York.			

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Semester	III		
Course Code	HSFN304A		
Course Title	IMPROVING HEALTH AND NUTRITION		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">1. Develop understanding regarding the vital aspects of communication and various Audio and Visual Media/Mass Media and their use in Nutrition and Health Education.2. Be familiar with important IEC programmes.3. Develop skills to plan and use IEC.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Gain knowledge on the basics of communication strategies and best suited methods of communicating with individuals to select appropriate strategies presented with dietary problems .• Understand the importance of IEC in managing nutrition related problems .• Gain knowledge on traditional and alternate methods to manage disorders.			
Unit	Course Content		
I	<ul style="list-style-type: none">• Concept of Communication<ul style="list-style-type: none">- Concept of Communication and Mass Communication- Scope of Communication- Elements of Communication- Models of Communication- Communication Process- Approaches to Communication- Barriers to Communication- Communication for Extension Education and Development• Introduction to IEC (Information, Education and Communication). Aims and Objectives: Importance of IEC, relevance to programmes. IEC for Behavioural Changes: Behaviour and determinants of behaviour need for IEC.		
II	<ul style="list-style-type: none">• Deferent Media, their characteristics and use• Audio visual aids (Graphics aids, puppets and other three dimensional aids, display boards and projected and non- projected aids).• Mass Media: Print, Radio/Recordings, Films, Television/video, Advertising, Journalism• Methods, Techniques and Tools.		
III	<ul style="list-style-type: none">• Planning effective IEC Programmes- Broad-based strategy and for specific objectives. Identification of key messages for re- enforcement, preparation of IEC material. Refining of IEC messages. Social mobilisation, social marketing and role of community. Training to use IEC.• Implementation - Use of IEC, training supportive supervision and monitoring.• IEC for different target groups: Policy makers, Managerial level and middle level officials from Government donor agencies and NGOs, Grassroots functionaries, Community.		
IV	<ul style="list-style-type: none">• Impact Assessment• Case studies of various IEC programmes• Specific National Programmes and IEC - Influence at mass level.		
References: <ul style="list-style-type: none">• Matarazzo J.D.; Weiss S.M.; Herd J.A.; Muller N.E.; Weiss S. (Eds) (1984): Behavioural Health: A handbook of health enhancement and disease prevention, John Wiley, New York.• Wallach L.; Dorfman L., Jemigan D., Themba M. (1993): Media Advocacy and Public Health: Power for Prevention, Newbury Park, CA: Sage.			

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Semester	III		
Course Code	HSFN304B		
Course Title	NUTRITION COMMUNICATION AND DIET COUNSELING		
Credit	4	Maximum Marks	50+25
Course Objective:	<ol style="list-style-type: none">1. Develop understanding regarding the vital aspects of communication and various Audio and Visual Media/Mass Media and their use in Nutrition and Health Education.2. To equip students to understand the influence of counseling on disease management and identify components of counselling skills and to provide skills of counselling for specific disease conditions.		
Learning Outcomes:	After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Gain knowledge on the basics of communication strategies and best suited methods of communicating with individuals to select appropriate strategies presented with dietary problems.• Understand the importance of BCC in managing nutrition related problems .• Draw out a complete counseling plan for individuals based on their physiological conditions using the appropriate tools.• Understand how best to maintain adherence to changed dietary practices for specific physiological conditions.• Gain knowledge on traditional and alternate methods to manage disorders.		
Unit	Course Content		
I	Basics of Communication <ul style="list-style-type: none">• Meaning of Communication, Forms of communication: Verbal and Non-verbal• Communication Communication methods• Traditional, Current and Emerging methods/tools of communication• Characteristics of effective communication, Skills and attributes of a communicator• Approaches in communication• Barriers to effective communication		
II	Nutrition Counselling <ul style="list-style-type: none">• Concept and importance of counseling in the nutrition care process• Understanding dietary patterns and food choices and their impact on counseling• Behaviour Change Communication and Models for behaviour change• Counseling strategies• Factors to be considered for counseling• Conventional and non-conventional tools in counseling		
III	Processes involved in dietary counselling <ul style="list-style-type: none">• Managing resources of the communicator/counselor• Designing of counseling plans – goals & objectives, evaluation instruments.• Implementation: facilitating self-management of disease condition• Evaluation: evaluating adherence to dietary changes• Counseling approaches after evaluation		
IV	Dietary counseling through the life span <p>Considerations for counseling plans for:</p> <ul style="list-style-type: none">• Prenatal and pregnant women• Lactating women• Childhood nutrition problems like SAM, weight management, vitamin and mineral deficiencies, School children, adolescents, young adults• fitness, weight management, eating disorders, Managing diet• Related chronic diseases in adults: Obesity, Diabetes, dyslipidemia, hypertension, cancer risk prevention, renal disease, liver disorders, Geriatric counselin. <p>Nutritional/medicinal role of traditional foods: traditional food beliefs, role of Ayurveda, Naturopathy, Yoga and other traditional medicines in disease management.</p>		

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References:

- Holli B Betsy and Beto A Judith. (2014). Nutrition Counseling and Education Skills for Dietetics Professionals. Sixth edition. USA: Lippincot Williams and Wilkins; Wolters Kluwer.
- Gable J. (2016). Counseling Skills for dietitians. Florida, USA: JohnWiley and Sons.
- Midwinter R and Dickson J.(2015). Embedding Counseling and Communication Skills. A Relational Skills Model. Routledge 2015
- Devito Joseph A. (2015) Human Communication: The Basic Course. New York:Pearson
- King K and Klawitter B.(2007). Nutrition Therapy. Advanced Counseling Skills. Third Edition. Philadelphia, USA: Lippincot Williams and Wilkins; Wolters Kluwer. 2007

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Semester	III		
Course Code	HSFN305		
Course Title	PRACTICAL RELATED TO THEORY PAPERS		
Credit	4	Maximum Marks	100
Course Objective: <ul style="list-style-type: none">To understand the develop the low cost nutritional recipes.To understand the Development of audio, visual aids-radio script, popular article , chart/posters, Graphics aids, puppets, projected and non-projected aids.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Understand the concept and purpose of nutritional status assessment in community setting. Learn fundamentals of food processing technology and its process.Understand concepts of various engineering principles and processing and preservation methods and their application.			
Unit	Course Content		
I	<ul style="list-style-type: none">Visit to Primary Health Care and report writing.Comparison of rural, urban and tribal communities for – (a)Determinants of malnutrition,(b) Social-Economic groups,(c) Thetypes of nutritional problems in different segments and age groups through analysis of secondary data.Visit to an ongoing NHC program in ICDS- one rural, one urban(eg.mahila mandal meeting or nutrition week celebration .) and report writing.		
II	<ul style="list-style-type: none">Development of Low cost nutritional recipes suitable for variousvulnerable groups at micro,meso and macro levels.Preparation of High/Low energy, High/low protein, High/Low fiber, Low sodium, Low cholesterol, Low glycemic index, Low Fluid , High and Low fat foods.		
III	<ul style="list-style-type: none">Assessment of nutritional status –Methods and Application.Make Scrap Book Related to any field-Health and Nutrition, National Food and Nutrition Policy, Health and Fitness		
IV	<ul style="list-style-type: none">Development of audio, visual aids-radio script, popular article , chart/posters, Graphics aids, puppets, projected and non-projected aids.Food for sports person in intensive activites and endurance activities		
References: <ul style="list-style-type: none">Owen, A.Y. and Frankle, R.T. (1986): Nutrition in the Community, The Art of Delivering Services, 2nd Edition, Times Mirror/Mosby.Park, K. (2000: Park’s Textbook of Preventive and Social Medicine, 18th Edition, M/s Banarasidas Bhanot, Jabalpur.Holli B Betsy and Beto A Judith. (2014). Nutrition Counseling and Education Skills for Dietetics Professionals. Sixth edition. USA: Lippincot Williams and Wilkins; Wolters Kluwer.Gable J. (2016). Counseling Skills for dietitians. Florida, USA: JohnWiley and Sons.Midwinter R and Dickson J.(2015). Embedding Counseling and Communication Skills. A Relational Skills Model. Routledge 2015			

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Semester	III		
Course Code	HSFN306		
Course Title	RESEARCH PROJECT PART – 1 (Report)		
Credit		Maximum Marks	
Learning Outcomes: Students who complete their master's programme in Home Science are mentally equipped to pursue research in the same discipline. It is generally accepted that research is nothing but an extension and application of knowledge in a certain specialized field. Students will be allowed to get exposed to a few elements of social research and also, they are expected to complete a research project, Elementary knowledge of research methodology shall consolidate the deepen their understanding of dynamic changes in the field of Home Science. <ul style="list-style-type: none">• Research project on the current trends in the Home Science.• The project report will be prepared using Research Techniques.			
References: <ul style="list-style-type: none">• Kerlinger F.N. and Lee, H.B. (200): Foundations of Behavioral Research 4th Ed. Harecourt College Publishers.• Kumar, R. (2005): Research Methodology: A Step by by Step Guide for Beginners. Sage Publication, New Delhi.• Ramamurthy, G.C. (2011): Research Methodology, Dreamtech Press Indian Private Ltd. New Delhi.• Strauss, G.C. (201): Research Methodology, Dreamtech Press India Private Ltd. New Delhi.• Strauss, A. and Corbin, J. (1990): Basic of Qualitative Research: Grounded theory procedure and Techniques, Sage Publication, California.			

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जननायक चन्द्रशेखर विश्वविद्यालय, बलिया

Jananayak Chandrashekhra University, Ballia

A State University established under Uttar Pradesh State University Act 1973



Semester	IV		
Course Code	HSFN401		
Course Title	MANAGEMENT OF NUTRITION PROGRAMMES		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">1. Be familiar with various programmes which can be undertaken to prevent and control nutritional problems at regional and national level.2. Be able to plan, implement, monitor and evaluate programmes.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Become familiar with the process of planning and management of nutrition programmes.• Develop an understanding of the concept of nutrition monitoring and nutrition surveillance.• To learn Financial Management, Cost benefits, Cost effectiveness and Cost efficiency			
Unit	Course Content		
I	<ul style="list-style-type: none">• Global, National and Regional Concerns - Situation of vulnerable groups vis-a-vis food, nutrition and health security.• Programme Development - Overview of programme development models. Formative evaluation approach. Precede- proceed planning mode. Sussmean's fourstep modelof empirical curriculum development, chain model.		
II	<ul style="list-style-type: none">• Programme Planning - Pre-requisites for planning vis-a-vis short term and long term objectives. Planning at various levels Government local health department, state, voluntary sector and community-based. Approaches used in planning - Top- down approach, need-based approach. Community participation and partnership, rightsbased approach.• Appraisal of existing programmes and interventions- Merits, demerits. Lacunae ,gaps vis-a-vis objectives and goals.		
III	<ul style="list-style-type: none">• Implementation of Programmes- Developing prototypes, training and HRD aspects of the programmes. Pilot and prototype studies, innovations.• Scaling - up of programme- Centralisation and decentralisation, vertical and horizontal linkages, intersectorallinkages, involvement of corporate sectors. Legal issues.• Financial Management, Cost benefits, Cost effectiveness andCost efficiency.		
IV	Management Information Systems (MIS)- Study of development of suitable Information Systems for NutritionProgrammes.		
References: <ul style="list-style-type: none">• Sethi Mohini (2005) Institution Food Management. New Age International Publishers• Dessler Gary (2007) Human Resource Management 11th edition Prentice Hall New Jersey• Taneja S and Gupta SL (2001) Entrepreneurship development, Galgotia Publishing• Luthans Fred (2004) Organisational Behaviour 10th Edition Mc Graw Hill International			

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Semester	IV		
Course Code	HSFN402		
Course Title	INSTITUTIONAL FOOD ADMINISTRATION		
Credit	4	Maximum Marks	25+50
Course Objective:			
<ol style="list-style-type: none"> To enable the students to understand the process of planning, organizing and controlling the management of food and other resources in institutions. To develop a knowledge base about the facilities required for different types of food service units and to equip individuals in understanding and managing resources in a food service institution. To provide practical field level experience in Institutional Food administration. To impart necessary expertise to function as a food service manager. To develop critical abilities and provide basic grounding in research techniques. 			
Learning Outcomes: After successful completion of the syllabus, learners will be able to:			
<ul style="list-style-type: none"> Gain expertise to function as a food service manager. Develop knowledge in managing various food service systems. Understand and manage resources in a food service institution. Provide practical experience in managing food material for food service management. 			
Unit	Course Content		
I	<ul style="list-style-type: none"> Introduction to Food Service Systems Evolution of the food service industry, Characteristics of the various types of food service units. Approaches to Management Theories of management, Aspects of management, Styles of management, Management tools. 		
II	<ul style="list-style-type: none"> Strategies in Planning Conceptual strategy, Marketing strategy, Financial Strategy, Types of plans Management of Resources Finance Determining the finance needed to establish or run an unit, Budgets, Sources of finance, Planning adequate cash flow. Space & Equipment Steps in planning layouts, Determining equipment, Selection and placement, Maintenance of equipment, Layout analysis. 		
III	<ul style="list-style-type: none"> Management of Resources Menu planning, Planning the material needed, Methods of selection, Storage, Quantity food production, Service and modes of delivery. Staff Manpower planning, Manpower placement, Recruitment, induction, training. Motivation and performance appraisal Time and Energy - Measures for utilisation and conservation. Cost accounting/analysis Food cost analysis Records to be maintained Reports and trend analysis 		
IV	<ul style="list-style-type: none"> Marketing and sales management Marketing strategies Sales analysis Market promotion Quality assurance Food quality Total quality management 		
References:			
<ul style="list-style-type: none"> West, B Bessie & Wood, Level (1988) Food Service in Institution 6th Edition. Revised by Harger FV. Shuggart SG & Palgne-Palacio: Macmillian Publication Company, New York. Dessler, Garry (1987) Personnel Management Modern Concepts and Techniques, Pce Hall New Jersey Khari, W.L. (I) (1977): Introduction To Modern Food and beverage Service. (1979) Advanced Modern Food and Beverage service: Prentice Hall series 			

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Semester	IV		
Course Code	HSFN403A		
Course Title	FOOD SAFETY AND QUALITY CONTROL		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">To know the concepts of food safety assurance and quality assurance, the importance of food standards, quality assurance programs, and the principles of Hazard Analysis Critical Control Points (HACCP).To evaluate product specifications and food standards, both international and national, distinguishing between mandatory and voluntary standards.To examine common adulterants found in food, understand the methods and tests used for detecting adulterants, and analyze the various hazards to food products, including microbiological, environmental, natural toxins, toxicants, pesticide residues, and food additives.To analyze food standards, laws, and regulations related to food safety.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Describe the principles of food safety assurance and quality assurance and understand the implementation of HACCP principles and their role in preventing foodborne illnesses and ensuring food safety throughout the food production chain.Describe product specifications and food standards at international and national levels and analyze the differences between mandatory and voluntary standards and explain the tests used for specific raw food ingredients and processed foods.Identify common adulterants in food and describe the methods and tests used for detecting them and understand the hazards posed to food products by microbiological agents, environmental contaminants, natural toxins, toxicants, pesticide residues, and food additives.Describe the food standards, laws, and regulations designed to ensure food safety.			
Unit	Course Content		
I	Introduction to food safety assurance and quality assurance, Importance of food standards, Quality assurance programme, HACCP.		
II	Product Evaluation: Specifications and food standards. International, National, Mandatory, Voluntary, Tests for specific raw food ingredients and processed, Proximate principles, Nutrient analysis, Quality parameters and tests to adulterants, Consumer Protection.		
III	Food Adulteration: Common Adulterants, Methods and Tests for detecting Adulterants. Hazards to Food Products: Micro-biological, environmental, natural, toxicants, pesticideresidues and food additives.		
IV	Food standards, laws and regulations to ensure safety of food: Prevention of Food Adulteration Act, 1954; Essential Commodities Act, 1955; Fruit Product Order, 1946; Directorate of Grading, Marketing and Inspection of Agricultural Products; Bureau of Indian Standards, 1952; Standards Weights & Measures Act 1976.		
References: <ul style="list-style-type: none">Martens, M.; Dalen, G.A.; Russwurm, H. (eds) (1987): Flavour Science and Technology, John Wiley and Sons, Chichester.Jellinek, G. (1985): Sensory Evaluation of Food Theory and Practice. Ellis Horwood, Chichester.Piggott, J.R. (ed.) (1988): Sensory Analysis of Foods. Elsevier Applied Science, London.Moskowitz, H.R. (1983): Product Testing and Sensory Evaluation of Foods: Marketing and R & D approaches. Food and Nutrition Press, Connecticut.Watts, B.M., Ylimaki, G.L., Jeffery, L.E. and Elias, L.G. 91989): Basic Sensory Methods for Food Evaluation. The International Development Research Centre, Ottawa, Canada.Certainly! Here is the reference in APA style.Srilakshmi, B. (2024). Food Science(8th multi ed.). New Delhi; Kolkata: New Age International.			

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Semester	IV		
Course Code	HSFN403B		
Course Title	APPLIED FOOD MICROBIOLOGY		
Credit	4	Maximum Marks	25+50
Course Objective: 1. To provide knowledge of the microbial flora associated with food 2. To understand the role of microorganisms, microbiological safety of food, food borne pathogens and their toxins.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">• Understand the microbial flora associated with food and acquire knowledge on beneficial role of microorganism and relevance of microbiological safety of food.• Understand the conventional and rapid methods for detection of food borne pathogens and their toxins.• Understand the role of microbes in waste water treatment.			
Unit	Course Content		
I	<ul style="list-style-type: none">• Microorganisms associated with Foods Bacteria, Fungi, Yeasts and Viruses.• Useful Microorganisms Food Cultures, Fermentation, Fermented products and role of microorganisms. Cultivation of microorganisms: Fermenter design and various types of fermentation systems (submerged, surface and solid state); Fermentation substrates, Principles and production of enzymes, Baker's yeast, vinegar.		
II	<ul style="list-style-type: none">• Food microbiological quality and safety Estimating number of microorganisms. ICMSF criteria for microbiological safety of food- Microbiological standards. Microbiological guidelines, Microbiological specifications. Microbiological criteria for various food products. ICMSF sampling plan: Two class plan, Three class plan. Repair and detection of micro organisms Indicators of food quality and food safety-Coliforms, Enterococci, Bifidobacteria, coliphages.		
III	<ul style="list-style-type: none">• Techniques for detection of pathogens associated with food Analysis of food for detection of Salmonella and E.coli. Rapid methods for detection of food borne pathogens and their toxins: ATP Photometry, Direct epifluorescent filter technique, Immunological Methods (Immunodiffusion, ELISA), Molecular method (PCR based).		
IV	<ul style="list-style-type: none">• Waste disposal and Effluent treatment Identification of waste, Utilization and disposal of industrial wastes. Different methods of waste disposal. Contemporary technologies for management of waste		
References: <ul style="list-style-type: none">• Jay JM, Loessner DA, Martin J. (2005) Modern Food Microbiology. 7th ed. Springer• Banwart GJ. (1987) Basic Food Microbiology . CBS Publishers and Distributors.• Frazier WC, Westoff DC. (1998). Food Microbiology. 4th ed. Tata McGraw-Hill Publishing Co. Ltd.• Garbutt J. (1997). Essentials of Food Microbiology. Arnold London.			

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Semester	IV		
Course Code	HSFN404A		
Course Title	FOOD PROCESSING TECHNOLOGY		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">To know processing technology of various food stuffs, physical and chemical principles in food processing and ways of quality control, waste disposal and sanitation in food industries.To gain in depth knowledge of technological aspects involved in processing of cereals, bakery products, meat, fish, poultry ,eggs, milk and milk products and fruits and vegetable preservation.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">The course intends to provide knowledge of cereals and animal food processing.Students will learn the processes and ingredients involved in breads, cakes and biscuit processing industry.The course will train students to analyse all quality aspects of cereals and animal foods.Students will gain knowledge of methods of preservation of meat, fish and poultry along with value added products from meat industry.Understand various aspects of processing and quality of milk and milk products.			
Unit	Course Content		
I	Technology of cereals, Legumes and oils Introduction to Wheat: Structure, types/varieties, harvesting, physical & chemical properties, composition and commercial value. Introduction to other cereals and millets: Rice, maize, oats, rye, corn, pearl millet; their nutritional importance and commercial value (Puffed rice, Rice flakes, parboiling of rice, extruded and fortified rice). Milling of wheat: Roller milling process, flour grade, flour treatments (bleaching, maturing), flour for various purposes, Products and By-products. Introduction to Baking technology: Types of bakery products, nutritional quality and safety of products, pertinent standards & regulations. Bread, cakes, biscuits /crackers Breakfast cereals, macaroni products and malt.		
II	Technology of meat, fish, poultry, egg and their products Milk and milk products- Introduction to market milk, Milk processing Milk products (Cream, butter, ice cream, curd, cheese, khoa and ghee)-Introduction, definition, classification, methods of manufacture, quality aspects.		
III	Introduction to Fruits and Vegetables Classification of fruits and vegetables, general composition, enzymatic browning and its prevention.		
IV	Preservation of fruits and vegetables Canning, Fruit Beverages, Jams, jellies and marmalades, Pickles, chutneys and sauces, Tomato products.		
References: <ul style="list-style-type: none">Fabriani, G and Lintas C. (1988) Durum Wheat Chemistry and Technology. American Association of Cereal Chemistry Inc.Kent N L. (1993) Technology of Cereals. 4th Edi. Pergamon Press.Winton & Winton, (1991) Techniques of Food Analysis. Allied Scientific Publishers.De SK (2001) Outlines of Dairy Technology, Oxford University Press, New Delhi.Salikhe D K and Kadam SS (1995) Handbook of fruit science and technology. Production Composition, Storage and processing. Marcel Decker inc, New York.			

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Semester	IV		
Course Code	HSFN404B		
Course Title	NUTRITION FOR FITNESS AND SPORTS		
Credit	4	Maximum Marks	25+50
Course Objective: <ol style="list-style-type: none">To learn the concepts of fitness, methods of assessing fitness, exercises for physical fitness and bioenergetics of exercise.To understand the role of macro- and micro-nutrients in sports performance.To gain knowledge & application skills with respect to nutrition for high performance sports, through the life-cycle and diet & nutritional care of special groups of athletes.To enable the students to know the recent techniques of body composition and energy metabolism for the assessment of nutritional status.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">Understand concepts of fitness, its assessment and exercises for physical fitness training.Function effectively as a sports dietitian, with knowledge and skills, to support recreational and competitive athletesExhibit knowledge of the metabolism and bioenergetics of exercise and continuum in various sportsSuccessfully plan, implement and monitor sport-specific diets for athletes through all age groupsProvide diet and nutritional care in terms of nutrition education, diet plans and counselling to special groups of athletes .			
Unit	Course Content		
I	Introduction to physical fitness Definition of physical fitness Components of physical fitness Methods of assessing physical fitness Approaches to achieving physical fitness through the life cycle		
II	Fundamentals of Sports Nutrition: Integrated approach to care for athletes Assessment of Sports performance Bioenergetics and body metabolism of physical activity and sports Macro- and micro nutrients for sport performance Temperature regulation, fluid balance, fluid requirements of athletes and rehydration strategies for sports.		
III	Nutrition for high performance athletes: Recommended allowances and nutritional guidelines for different categories of high performance sports. Nutritional care during Training, weight management and day-today recovery. Nutrition for the Pre-competition, Competition and postcompetition recovery phase. Supplements in Sport :performance enhancing substances ,drugs, ergogenic aids and herbs in sports performance.		
IV	Challenges in Sports Nutrition: Nutritional care for children and adolescent athletes. Athletes with special needs- Paralympics & special Olympics, vegetarian athletes. Athletes with eating disorders, athletes with diabetes and other medical conditions , management of Red-S.		
References: <ul style="list-style-type: none">•Mahan, L. K. and Escott Stump S. (2016) Krause's Food & Nutrition Therapy. 14th ed. Saunders-Elsevier.•Burke LM and Deakin V. (2002) Clinical Sports Nutrition, 2nd edition, Publishers McGraw Hill•Dan Benardot. (2011) Advanced Sports Nutrition-2nd Edition.•Fink H H and Mikesky A E. (2017) Practical Applications in Sports Nutrition 5th Edition.			

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जननायक चन्द्रशेखर विश्वविद्यालय, बलिया

Jananayak Chandrashekar University, Ballia

A State University established under Uttar Pradesh State University Act 1973



Semester	IV		
Course Code	HSFN405		
Course Title	PRACTICAL RELATED TO THEORY PAPERS		
Credit	4	Maximum Marks	100
Course Objective: <ol style="list-style-type: none">To understand the menu planning for canteen, hospital, canteen, cafeteria, residential hostel.To understand the market survey of food service equipment.To understand the preparation and preservation of jam, jelly pickles.			
Learning Outcomes: After successful completion of the syllabus, learners will be able to: <ul style="list-style-type: none">To understand the detecting adulteration in foodstuffs-Ghee, honey, Tea and coffee, milk, haldi etc.To learn the preparation the different type of snacks.To learn the cutting of salad and salad dressing.			
Unit	Course Content		
I	<ul style="list-style-type: none">Visit to food industries, Market survey and analysis of processed and finished products.Menu planning for industrial canteen, hospital canteen, cafeteria, snackbar, residential hostel.Visit to canteen attached to hospital and dietary department cafeteria, 3 star hotel/restaurant, 5 star hotel/restaurant, industrial canteen.		
II	<ul style="list-style-type: none">Management of cafeteria-Preparation, costing and fixing of price for meal items.Market survey of Food service equipment.Layout analysis of kitchens.		
III	<ul style="list-style-type: none">Preparation and Preservation any one given recipe-Jam, Jelly, Pickles, Ketch-up, Chutneys, Avala Morava, Avala supari, Lime and orange squashes etc.Making and selling of products where preservatives are used.Detecting adulteration in food stuffs-Ghee, honey, Tea and coffee, milk, haldi etc.		
IV	<ul style="list-style-type: none">Food preparation, understanding the principle involved, nutritional quality and portion size.Snacks-pakorras, cutlets, samosas, upma, poha, sandwiches.Beverages-Hot tea/coffee, Milk shake/lassi, fruit based beverages.Cereals-Boiled rice, pulao, chapatti, parantha, puri, pastas.Pulses-Whole dehuskedVegetables-curries, dry preparations.Milk and milk products-kheer, custardSalads-salads and salad dressings.		
References: <ul style="list-style-type: none">Siddapa, GS (1986) Preservation of Fruits and Vegetables, ICAR Publication.Winton & Winton, (1991) Techniques of Food Analysis. Allied Scientific Publishers.Salikhe D K and Kadam SS (1995) Handbook of fruit science and technology. Production Composition, Storage and processing. Marcel Decker inc, New York.Khari, W.L. (I) (1977): Introduction To Modern Food and beverage Service. (1979) Advanced Modern Food and Beverage service: Prentice Hall series.			

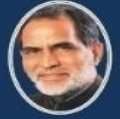
Rajana Mall Hiran Jana



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Jananayak Chandrashekhar University, Ballia

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Semester	IV		
Course Code	HSFN406		
Course Title	RESEARCH PROJECT PART – II (Report)		
Credit	8	Maximum Marks	100
Learning Outcomes: Students who complete their master's programme in Home Science are mentally equipped to pursue research in the same discipline. It is generally accepted that research is nothing but an extension and application of knowledge in a certain specialized field. Students will be allowed to get exposed to a few elements of social research and also, they are expected to complete a research project, Elementary knowledge of research methodology shall consolidate the deepen their understanding of dynamic changes in the field of Home Science. <ul style="list-style-type: none">• Research project on the current trends in the Home Science.• The project report will be prepared using Research Techniques.			
References: <ul style="list-style-type: none">• Kerlinger F.N. and Lee, H.B. (200): Foundations of Behavioral Research 4th Ed. Harecourt College Publishers.• Kumar, R. (2005): Research Methodology: A Step by by Step Guide for Beginners. Sage Publication, New Delhi.• Ramamurthy, G.C. (2011): Research Methodology, Dreamtech Press Indian Private Ltd. New Delhi.• Strauss, G.C. (201): Research Methodology, Dreamtech Press India Private Ltd. New Delhi.• Strauss, A. and Corbin, J. (1990): Basic of Qualitative Research: Grounded theory procedure and Techniques, Sage Publication, California.			

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