

DEPARTMENT OF HOME SCIENCE
SEMESTER – V

B.A (Prog) with Nutrition and Health Education (NHE)
B.A (Prog) with Nutrition and Health Education (NHE) as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE
DSC-9-NHE: Sports Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical / Practice		
Sports Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

- To impart knowledge and skills to students about Sports Nutrition
- To familiarise students with concepts of components of fitness and skills required for assessment and improvement of physical fitness
- To equip students with the concept and application skills with respect to nutrition for high performance sports through the life cycle and diet of sports persons

Learning Outcomes

After completion of the course students will be able to:

- Exhibit knowledge of the components of fitness and its assessment
- Successfully plan sport-specific diets
- Function effectively as a sports nutrition counsellor with knowledge and skills to support recreational and competitive sports.

SYLLABUS OF DSC-NHE-9

THEORY
(Credits 3; Hours 45)

UNIT I: Physical Fitness and Sports Nutrition

7 Hours

This unit will introduce the student to physical fitness and sports nutrition.

- Definition and components of physical fitness
- Methods of assessing physical fitness
- Introduction to sports nutrition (Definition, importance, types of sports and introduction to terms like endurance, strength and power sports)
- Role of major nutrients in sports

UNIT II: Energy Systems and Fuel for Exercise and Sports **14 Hours**

This unit will introduce the students with the energy systems, temperature regulation and fluid balance, symptoms and implications of dehydration in sports.

- Energy systems for physical activity and sports
- Fuel utilization for different sports
- Temperature regulation, fluid balance, fluid requirements of athletes and rehydration strategies for athletes

UNIT III: Nutritional Recommendations and Guidelines for Different Sports **14 Hours**

This unit will introduce the students with Nutritional recommendations for athletes and sports.

- Nutritional recommendations and guidelines for different sports
- Nutrition for pre-competition, competition and post competition phase
- Supplements in sports-performance enhancing substances, drugs, ergogenic aids and herbs in sports
- Ethics and regulatory standards (doping and FSSAI regulation)

UNIT IV: Management of Nutrition Related Disorders in Sports **10 Hours**

This unit will deal with weight management and eating disorders in sports.

- Approaches to weight management and body composition in sports
- Sports anaemia
- Management of eating disorders in sports persons
- Relative Energy Deficiency in sports (RED-S)

PRACTICAL
(Credit 1; Hours 30)

1. Planning a day's diet for an individual high-performance athlete (any one sport).
2. Planning a pre and post competition meal for endurance, ultra endurance, strength events, team events and sports drinks during and after an event.
3. Meal planning for Strength/Power sports activities.
4. Meal planning for Endurance sports activities.
5. Survey of sports nutritional supplements and study their labels (whey protein isolates).

ESSENTIAL/RECOMMENDED READINGS

- International Life Sciences Institute-India, National Institute of Nutrition, & Sports Authority of India. (2007). *Nutrition and hydration guidelines for excellence in sports performance*.
http://ilsi-india.org/PDF/Nutrition_&_Hyd_Guidelines_for_Athletes_Final_report.pdf
- Wasuja, M. (2017). *Health education and sports nutrition*. Friend's Publication.
- Burke, L. M. & Deakin, V. (2002). *Clinical sports nutrition*. (2nd edn.). McGraw Hill Education.
- Chadha, R., & Mathur, P. (2015). *Nutrition: A lifecycle approach*. Elite Publishing House Pvt Ltd.
- Fink, H.H., Mikesky, A. E. & Burgoon, L.A. (2012). *Practical applications in sports Nutrition*. (3rd ed.). Jones and Bartlett Learning.

- Food Safety and Standards Authority of India (FSSAI), Government of India. <http://www.fssai.gov.in/home/fss-legislation/food-safety-and-standards-act.html>. (Accessed on 10 March 2023).
- National Anti-Doping Agency, Ministry of Youth Affairs and Sports, Government of India. <https://www.nadaindia.org/>. (Accessed on 10 March 2023).

SUGGESTED READINGS

- Mahan, L.K., & Escott-Stump, S. (2016). *Krause's food and nutrition therapy*. (14th edn.). Saunders-Elsevier.
- Agarwal, A., & Udipi, S. A. (2014). *Text book of human nutrition*. Jaypee Brothers Medical Publisher Ltd.
- Hickson, J. F., & Wolinsky, I. (1997). *Nutrition for exercise and sport*. (2nd edn.). CRC Press.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DISCIPLINE SPECIFIC CORE COURSE DSC-NHE-10: Nutritional Approaches to Wellness and Longevity

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutritional Approaches to Wellness and Longevity	4	3	1	0	XII Pass	NIL

Learning Objectives

- To familiarize students with the concept of wellness and various diet related approaches for longevity
- To explain the significance of approaches other than diet for wellness and longevity
- To make students aware about various addictions and their relation to longevity

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the several elements of health and wellness
- Describe approaches other than diet for wellness and longevity
- Gain knowledge about the linkage of longevity and wellness with different addictions

SYLLABUS OF DSC-NHE-10

THEORY
(Credits 3; Hours 45)

UNIT I: Relation between Disease, Health and Wellness **15 Hours**

This unit will familiarize the students with the concept of wellness, health, their determinants and interaction.

- Definitions – longevity, wellness / wellbeing, standard of living, level of living, quality of life, physical quality of life index (PQLI), Human Development Index, Happiness Index
- Dimensions of wellness and health
- Determinants of health
- Epidemiologic concept of interactions of agent, host and environment
- Concept of prevention of illness
- Modes of intervention for combating illness

UNIT II: Diet Related Approaches for Longevity and Wellness **15 Hours**

This unit will introduce the concept of various approaches related to diet for longevity and wellness in life.

- Nutritional screening
- Probiotics
- Prebiotics
- Antioxidants
- Immuno-nutrition
- Calorie restricted diets
- Chrono –nutrition
- Nutrigenomics
- Nutrigenetics

UNIT III: Adjuncts to Diet Therapy **8 Hours**

This unit will introduce the approaches other than diet for wellness and longevity.

- Physical activity – types, benefits, tracking devices
- Yoga – benefits
- Circadian rhythm
- Psycho-social and mental health
- Stress management – meditation, pranayama, mind training

UNIT IV: Addictions and Longevity **7 Hours**

This unit will acquaint the students with relation of addictions and longevity.

- Substance addiction
 - Smoking /Tobacco
 - Alcoholism
 - Drug abuse
- Non substance addiction
 - Overeating
 - Screen

TUTORIALS (Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS

- Park, K. (2021). *Park's textbook of preventive and social medicine* (26th ed.). Banarsidas Bhanot Publishers.
- Uppal, A.K., & Ranganathan, P.P. (2020). *Fitness, wellness and nutrition* (1st ed.). Friends Publication.
- Caterina, R.D., Martinez, J.A., & Kohlmeier, M. (Eds.). (2020). *Principles of nutrigenetics and nutrigenomics – fundamentals for individualized nutrition*. Academic Press.
- Zou, Z., Wang, H., Uquillas, F., Wang, X., Ding, J., & Chen H. (2017). Definition of substance and non-substance addiction. *Experimental Medicine and Biology*. 1010, DOI 10.1007/978-981-10-5562-1_2
- Chadha, R., & Mathur, P. (Eds.). (2015). *Nutrition: A life cycle approach*. Orient Blackswan Private Limited.
- Swarbrick, P., & Yudof, J. (2015). *Wellness in eight dimensions*. Collaborative support programs of NJ.
- Joshi, Y.K. (Ed.). (2009). *Basics of Clinical Nutrition*. (2nd ed.). Jaypee Brothers Medical Publishers (P) Ltd.
- Harvard T.H. Chan School of Public Health. *The nutrition resource: healthy living guide 2022/2023*. <https://www.hsph.harvard.edu/nutritionsource/2023/01/04/healthy-living-guide-2022-2023/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – stress and health*. <https://www.hsph.harvard.edu/nutritionsource/stress-and-health/> (Accessed on 10 March 2023).

SUGGESTED READINGS

- Meiliana, A. & Wijaya, A. (2020). Nutrigenetics, nutrigenomics and precise nutrition. *Indonesian Biomedical Journal*, 12(3), 189–200.
- Savini, I., Gasperi, V., & Catani, V.M. (2016). *Nutrigenetics*. John Wiley & Sons Ltd. 10.1002/9780470015902.a0021028.
- Reen, J.K., Yadav, A.K., & Singh, J. (2015). Nutrigenomics: concepts, advances and applications. *Asian Journal of Dairy & Food Research*, 34(3), 205–212.
- Harvard T.H. Chan School of Public Health. *The nutrition resource: nutrition and immunity*. <https://www.hsph.harvard.edu/nutritionsource/nutrition-and-immunity/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – sleep*.

- <https://www.hsph.harvard.edu/nutritionsource/sleep/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – staying active*. <https://www.hsph.harvard.edu/nutritionsource/staying-active/> (Accessed on 10 March 2023).
 - Harvard T.H. Chan School of Public Health. (2011). *The nutrition resource – happiness and health*. <https://www.hsph.harvard.edu/news/magazine/happiness-stress-heart-disease/> (Accessed on 10 March 2023).
 - Harvard T.H. Chan School of Public Health. *The nutrition resource – healthy longevity*. <https://www.hsph.harvard.edu/nutritionsource/healthy-longevity/> (Accessed on 10 March 2023).

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**B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major
Category-III**

**DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE-10: Nutritional Approaches to Wellness and Longevity**

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutritional Approaches to Wellness and Longevity	4	3	1	0	XII Pass	NIL

Learning Objectives

- To familiarize students with the concept of wellness and various diet related approaches for longevity
- To explain the significance of approaches other than diet for wellness and longevity
- To make students aware about various addictions and their relation to longevity

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the several elements of health and wellness
- Describe approaches other than diet for wellness and longevity
- Gain knowledge about the linkage of longevity and wellness with different addictions

SYLLABUS OF DSC-NHE-10

**THEORY
(Credits 3; Hours 45)**

UNIT I: Relation between Disease, Health and Wellness

15 Hours

This unit will familiarize the students with the concept of wellness, health, their determinants and interaction.

- Definitions – longevity, wellness / wellbeing, standard of living, level of living, quality of life, physical quality of life index (PQLI), Human Development Index, Happiness Index
- Dimensions of wellness and health
- Determinants of health
- Epidemiologic concept of interactions of agent, host and environment
- Concept of prevention of illness
- Modes of intervention for combating illness

UNIT II: Diet Related Approaches for Longevity and Wellness

15 Hours

This unit will introduce the concept of various approaches related to diet for longevity and wellness in life.

- Nutritional screening
- Probiotics
- Prebiotics
- Antioxidants
- Immuno-nutrition
- Calorie restricted diets
- Chrono –nutrition
- Nutrigenomics
- Nutrigenetics

UNIT III: Adjuncts to Diet Therapy

8 Hours

This unit will introduce the approaches other than diet for wellness and longevity.

- Physical activity – types, benefits, tracking devices
- Yoga – benefits
- Circadian rhythm
- Psycho-social and mental health
- Stress management – meditation, pranayama, mind training

UNIT IV: Addictions and Longevity

7 Hours

This unit will acquaint the students with relation of addictions and longevity.

- Substance addiction
 - Smoking /Tobacco
 - Alcoholism
 - Drug abuse
- Non substance addiction
 - Overeating
 - Screen

TUTORIALS (Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS

- Park, K. (2021). *Park's textbook of preventive and social medicine* (26th ed.). Banarsidas Bhanot Publishers.
- Uppal, A.K., & Ranganathan, P.P. (2020). *Fitness, wellness and nutrition* (1st ed.).

Friends Publication.

- Caterina, R.D., Martinez, J.A., & Kohlmeier, M. (Eds.). (2020). *Principles of nutrigenetics and nutrigenomics – fundamentals for individualized nutrition*. Academic Press.
- Zou, Z., Wang, H., Uquillas, F., Wang, X., Ding, J., & Chen H. (2017). Definition of substance and non-substance addiction. *Experimental Medicine and Biology*. 1010, DOI 10.1007/978-981-10-5562-1_2
- Chadha, R., & Mathur, P. (Eds). (2015). *Nutrition: A life cycle approach*. Orient Blackswan Private Limited.
- Swarbrick, P., & Yudof, J. (2015). *Wellness in eight dimensions*. Collaborative support programs of NJ.
- Joshi, Y.K. (Ed.). (2009). *Basics of Clinical Nutrition*. (2nd ed.). Jaypee Brothers Medical Publishers (P) Ltd.
- Harvard T.H. Chan School of Public Health. *The nutrition resource: healthy living guide 2022/2023*. <https://www.hsph.harvard.edu/nutritionsource/2023/01/04/healthy-living-guide-2022-2023/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – stress and health*. <https://www.hsph.harvard.edu/nutritionsource/stress-and-health/> (Accessed on 10 March 2023).

SUGGESTED READINGS

- Meiliana, A. & Wijaya, A. (2020). Nutrigenetics, nutrigenomics and precise nutrition. *Indonesian Biomedical Journal*, 12(3), 189–200.
- Savini, I., Gasperi, V., & Catani, V.M. (2016). *Nutrigenetics*. John Wiley & Sons Ltd. 10.1002/9780470015902.a0021028.
- Reen, J.K., Yadav, A.K., & Singh, J. (2015). Nutrigenomics: concepts, advances and applications. *Asian Journal of Dairy & Food Research*, 34(3), 205–212.
- Harvard T.H. Chan School of Public Health. *The nutrition resource: nutrition and immunity*. <https://www.hsph.harvard.edu/nutritionsource/nutrition-and-immunity/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – sleep*. <https://www.hsph.harvard.edu/nutritionsource/sleep/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – staying active*. <https://www.hsph.harvard.edu/nutritionsource/staying-active/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. (2011). *The nutrition resource – happiness and health*. <https://www.hsph.harvard.edu/news/magazine/happiness-stress-heart-disease/> (Accessed on 10 March 2023).
- Harvard T.H. Chan School of Public Health. *The nutrition resource – healthy longevity*. <https://www.hsph.harvard.edu/nutritionsource/healthy-longevity/> (Accessed on 10 March 2023).

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DEPARTMENT OF HOME SCIENCE
SEMESTER – VI

B.A (Prog) with Nutrition and Health Education (NHE)
B.A (Prog.) with Nutrition and Health Education (NHE) as Major
Category-II

DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE 11: Nutrition During Emergencies and Disaster Management

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutrition during Emergencies and Disaster Management	4	3	1	0	XII Pass	NIL

Learning Objectives

- To acquaint the students about disasters resulting in emergency situations and associated nutritional concerns
- To familiarize the students with the knowledge of assessment and surveillance of nutritional status in emergency and disasters
- To equip the students with an understanding of the strategies for nutritional rehabilitation, relief and mitigation of emergency affected populations
- To impart knowledge regarding nutrition interventions and role of National/International agencies to tackle emergency situations

Learning Outcomes

After completion of the course, the students will be able to:

- Familiarize with different types of disasters and understand the nutritional concerns in emergency situations
- Assess various methods of nutritional status of the emergency affected populations
- Differentiate between general feeding programme and selective feeding programme
- Recognize the role of government, non-government bodies and international organisations in the management of nutrition in emergencies.
- Analyze and understand strategies for prevention and mitigation for the emergency affected populations

SYLLABUS OF DSC-11

THEORY (Credits 3; Hours 45)

UNIT I: Disasters, Emergencies and Associated Nutritional Concerns **8 Hours**

This unit will introduce different types of disasters, factors effecting management of disasters and emergencies; nutritional concerns among vulnerable groups.

- Concept and types of disasters (natural/manmade)
- Factors to be considered for management of disasters and emergencies
- Nutritional concerns during disaster and emergencies among vulnerable populations – causes of malnutrition, macro/micro nutrient deficiencies

UNIT II: Assessment and Surveillance of Nutritional Status in Emergency Affected Population **12 Hours**

This unit will lay emphasis on assessment of nutritional status and food needs, food distribution strategies, nutrition monitoring and surveillance of emergency affected populations.

- Screening and assessment of nutritional status in emergency affected populations
- Assessment of food needs in emergency situations, identifying and reaching the vulnerable groups, food distribution strategies
- Nutrition monitoring and surveillance

UNIT III: Nutrition Relief, Rehabilitation and Mitigation Strategies **15 Hours**

This unit will acquaint the students with various aspects of nutritional relief, nutritional rehabilitation and mitigation strategies.

- Targeting food aid – food rations for nutritional relief and rehabilitation (special/fortified foods, local foods in rehabilitation, packed food)
- Transportation of food during emergencies, food storage and preventing food spoilage
- Household food and nutrition security – post emergency
- Importance of nutrition in post-emergency situations
- Disaster prevention and mitigation strategies, warning systems
- Role of government and non-government organisations, nutritionists in relief, rehabilitation and mitigation

UNIT IV: Nutrition Interventions and Role of National/International Agencies to tackle Emergency Situations **10 Hours**

This unit will acquaint the students about different feeding programmes as nutrition interventions and role of various authorities in managing nutrition in emergencies.

- General Feeding Programme
- Selective Feeding Programme
 - Supplementary feeding programme (blanket SFP: micronutrient interventions; and target SFP: Infant and Young Child Feeding – breastfeeding, age appropriate and safe complimentary feeding, interventions to treat undernutrition, MAM, SAM)

- Therapeutic Feeding Programme
- Disaster Management Act 2005
- Disaster Management cell, the State Disaster Management Authority (SDMA) and the National Disaster Management Authority (NDMA) – structure and functions
- Role of FAO, WHO and UNICEF in the management of nutrition in major emergencies

TUTORIALS

(Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/RECOMMENDED READINGS:

- Vir, S. C. (2011). *Public health nutrition in developing countries – volume II*. Woodhead Publishing.
- Woodruff, B. A., & Duffield, A. (2000). *Adolescents: Assessment of Nutritional Status in Emergency affected populations*. Special supplement UN ACC/SCN sub-committee on nutrition.
- WHO. (2000). *The management of nutrition in major emergencies*. <https://www.who.int/publications/i/item/9241545208> (Accessed on 10 March 2023).
- UNICEF (2018). *Nutrition in emergencies. Saving lives today, strengthening systems for tomorrow*. <https://www.unicef.org/media/97011/file/Nutrition-in-emergencies-Saving-Lives-Today-Strengthening-Systems-for-Tomorrow.pdf> (Accessed on 10 March 2023).
- National Disaster Management Authority, Government of India. <https://ndma.gov.in/>
- WHO. *Nutrition in Emergencies. Planning, preparedness and management for development out of disaster*. https://apps.who.int/disasters/repo/13849_files/i/nutrition_in_emergencies_ppt.pdf (Accessed on 10 March 2023).
- FAO. *Nutrition in Post-Emergency and Rehabilitation Interventions*. <https://www.fao.org/3/v5611e/V5611E03.htm> (Accessed on 10 March 2023).

SUGGESTED READINGS:

- Singh, S. N. (2010). Nutrition in emergencies: Issues involved in ensuring proper nutrition in post-chemical, biological, radiological, and nuclear disaster. *Journal of Pharmacy and Bioallied Sciences*, 2(3), 248–52.
- Gupta, H. K. (2003). *Disaster Management*. Indian National Science Academy. Orient Blackswan.
- United Nations World Food Programme (WFP). (2005). *Emergency Food Security Assessment Handbook*. (1st edn.).

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DISCIPLINE SPECIFIC CORE COURSE
DSC-NHE-12: Preventive and Promotive Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Preventive and Promotive Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

- To make students aware about the prevalence of chronic diseases and correlate it with food consumption pattern
- To explain the role of nutraceuticals and functional foods in prevention of chronic diseases and promotion of good health
- To familiarize with types of dietary supplements and their health benefits

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the relation between food consumption pattern and prevalence of chronic disease
- Describe the types and health benefits of nutraceuticals and functional foods
- Gain knowledge about the types, health benefits and adverse effects of dietary supplements

SYLLABUS OF DSC-NHE-12

THEORY
(Credits 3; Hours 45)

UNIT I: Relation between Diet, Nutrition and Prevalence of Disease **7 Hours**

This unit will familiarize the students with the correlation of chronic diseases and food consumption pattern.

- Global burden of chronic diseases
- Food consumption patterns and trends
- Oxidative stress and free radicals-Basic concept, mechanism of free radical formation, biological effects of free radicals

UNIT II: Nutraceuticals and their Role in Prevention of Diseases and Promotion of Health **15 Hours**

This unit will introduce definition, classification and health benefits of nutraceuticals.

- Definition of nutraceuticals
- Classification of nutraceuticals on the basis of chemical structure and their health benefits

- Phytochemicals- isoprenoids, polyphenolics, phytosterols
- Carbohydrates and their derivatives
- Lipids- conjugated linoleic acid, omega-3 fatty acids
- Proteins and peptides
- Vitamins
- Minerals
- Microbial
- FSSAI regulations of nutraceuticals

UNIT III: Functional Foods and their Role in Prevention of Diseases and Promotion of Health
15 Hours

This unit will introduce definition, types and health benefits of various functional foods.

- Definition of functional foods
- Types of functional foods and their health benefits
 - Cereal and cereal products
 - Milk and milk products
 - Egg
 - Oils
 - Meat and meat products
 - Herbs and spices
 - Fruits and vegetables
 - Beverages (tea, wine)
 - Fermented foods

UNIT IV: Dietary Supplements **8 Hours**

This unit will introduce definition, types, benefits and safety issues of dietary supplements.

- Definition of dietary supplements
- Types of dietary supplements- vitamins, minerals, protein and amino acids, essential fatty acids, natural products
- Benefits and safety issues

PRACTICAL
(Credit 1; 30 Hours)

1. Survey of available nutraceuticals/dietary supplement in the market.
2. Survey regarding the awareness of availability and health benefits of dietary supplements among college going students and high fat, salt or sugar foods (HFSS).
3. Design a label for nutraceutical food/dietary supplement
4. Development of teaching aids for creating awareness of preventive and promotive nutrition

ESSENTIAL/RECOMMENDED READINGS

- Bagchi, D., Preuss, H. G., & Swaroop, A. (Eds.). (2015). *Nutraceuticals and functional foods in human health and disease prevention*. CRC Press.

- Wildman, R. E. and Bruno, R.S. (2021). *Handbook of nutraceuticals and functional foods*. (3rd edn.). CRC press.
- Food safety and Standards Authority of India, Government of India https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Nutra_29_09_2021.pdf (Accessed on 10 March 2023).
- World Health Organization. (2003). *Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation* (Vol. 916).

SUGGESTED READINGS

- Egbuna, C., & Dable-Tupas, G. (2020). Functional foods and nutraceuticals. *Springer Nature, 1*, 1-632.
- Mahan, L. K., & Raymond, J. L. (2016). *Krause's Food & the nutrition care process, Iranian Edition E-Book*. Elsevier Health Sciences.
- Rani, V., & Yadav, U. C. (Eds.). (2018). *Functional food and human health*. Springer.
- Noomhorm, A., Ahmad, I., & Anal, A. K. (Eds.). (2014). *Functional foods and dietary supplements: processing effects and health benefits*. John Wiley & Sons.

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**B.A (Prog.) with Nutrition and Health Education (NHE) as Non-Major
Category-III**

**DISCIPLINE SPECIFIC CORE COURSE
DSC-12-NHE: Preventive and Promotive Nutrition**

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Preventive and Promotive Nutrition	4	3	0	1	XII Pass	NIL

Learning Objectives

- To make students aware about the prevalence of chronic diseases and correlate it with food consumption pattern
- To explain the role of nutraceuticals and functional foods in prevention of chronic diseases and promotion of good health
- To familiarize with types of dietary supplements and their health benefits

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the relation between food consumption pattern and prevalence of chronic disease
- Describe the types and health benefits of nutraceuticals and functional foods
- Gain knowledge about the types, health benefits and adverse effects of dietary supplements

SYLLABUS OF DSC-NHE-12

**THEORY
(Credits 3; Hours 45)**

UNIT I: Relation between Diet, Nutrition and Prevalence of Disease 7 Hours

This unit will familiarize the students with the correlation of chronic diseases and food consumption pattern.

- Global burden of chronic diseases
- Food consumption patterns and trends
- Oxidative stress and free radicals-Basic concept, mechanism of free radical formation, biological effects of free radicals

UNIT II: Nutraceuticals and their Role in Prevention of Diseases and Promotion of Health 15 Hours

This unit will introduce definition, classification and health benefits of nutraceuticals.

- Definition of nutraceuticals

- Classification of nutraceuticals on the basis of chemical structure and their health benefits
 - Phytochemicals- isoprenoids, polyphenolics, phytosterols
 - Carbohydrates and their derivatives
 - Lipids- conjugated linoleic acid, omega-3 fatty acids
 - Proteins and peptides
 - Vitamins
 - Minerals
 - Microbial
- FSSAI regulations of nutraceuticals

UNIT III: Functional Foods and their Role in Prevention of Diseases and Promotion of Health
15 Hours

This unit will introduce definition, types and health benefits of various functional foods.

- Definition of functional foods
- Types of functional foods and their health benefits
 - Cereal and cereal products
 - Milk and milk products
 - Egg
 - Oils
 - Meat and meat products
 - Herbs and spices
 - Fruits and vegetables
 - Beverages (tea, wine)
 - Fermented foods

UNIT IV: Dietary Supplements **8 Hours**

This unit will introduce definition, types, benefits and safety issues of dietary supplements.

- Definition of dietary supplements
- Types of dietary supplements- vitamins, minerals, protein and amino acids, essential fatty acids, natural products
- Benefits and safety issues

PRACTICAL
(Credit 1; 30 Hours)

5. Survey of available nutraceuticals/dietary supplement in the market.
6. Survey regarding the awareness of availability and health benefits of dietary supplements among college going students and high fat, salt or sugar foods (HFSS).
7. Design a label for nutraceutical food/dietary supplement
8. Development of teaching aids for creating awareness of preventive and promotive nutrition

ESSENTIAL/RECOMMENDED READINGS

- Bagchi, D., Preuss, H. G., & Swaroop, A. (Eds.). (2015). *Nutraceuticals and functional foods in human health and disease prevention*. CRC Press.
- Wildman, R. E. and Bruno, R.S. (2021). *Handbook of nutraceuticals and functional foods*. (3rd edn.). CRC press.
- Food safety and Standards Authority of India, Government of India https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Nutra_29_09_2021.pdf (Accessed on 10 March 2023).
- World Health Organization. (2003). *Diet, nutrition, and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation* (Vol. 916).

SUGGESTED READINGS

- Egbuna, C., & Dable-Tupas, G. (2020). Functional foods and nutraceuticals. *Springer Nature, 1*, 1-632.
- Mahan, L. K., & Raymond, J. L. (2016). *Krause's Food & the nutrition care process, Iranian Edition E-Book*. Elsevier Health Sciences.
- Rani, V., & Yadav, U. C. (Eds.). (2018). *Functional food and human health*. Springer.
- Noomhorm, A., Ahmad, I., & Anal, A. K. (Eds.). (2014). *Functional foods and dietary supplements: processing effects and health benefits*. John Wiley & Sons.

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE
B.A (Prog) with Nutrition and Health Education (NHE)
Pool of Discipline Specific Elective Course (DSE) for Odd Semester
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE 1: Basic Physiology of Digestive System

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course and Code	Title	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
			Lecture	Tutorial	Practical/ Practice		
	Basic Physiology of Digestive System	4	3	1	0	XII Pass	NIL

Learning Objectives

- To impart knowledge about the basic structure of human digestive system.
- To explain the functioning of the human digestive system.
- To provide overview of the various disorders in relation with human digestive system.

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the fundamentals of the human digestive system.
- Develop insight of functioning of the digestive system in the human body.
- Understand overview of the various diseases of human digestive system.

SYLLABUS OF DSE-NHE-1

THEORY
(Credits 3; Hours 45)

UNIT I: Fundamentals of Human Digestive System

10 Hours

The unit explains the concept of the gross positioning and basic functioning of digestive system. It also imparts understanding about the contribution of different organ systems in relation to the digestive system.

- Overview of the gross structural positioning of digestive system in human body
- Contributions of different systems of human body in relation to the digestive system
- Functions of digestive system: ingestion, propulsion, digestion, absorption, and elimination
- Digestion and absorption of carbohydrates, fats, and proteins

UNIT II: Physiology of Gastrointestinal Tract (GIT) of Human Digestive System 18 Hours

This unit presents an understanding of the gross structure and functions of alimentary canal of digestive system and their correlation with specific disease conditions.

- Gross structure and functions of Gastro Intestinal Tract (GIT): mouth, pharynx, oesophagus, stomach, small intestine, large intestine, rectum and anal canal
- An overview of the diseases in correlation with alimentary canal/GIT: gastro oesophageal reflux disease (GERD), peptic ulcers, diarrhoea, constipation, irritable bowel syndrome etc.

UNIT III: Physiology of Accessory Organs of Human Digestive System 17 Hours

The unit presents an understanding of structure and functions of accessory organs of the digestive system and their correlation with specific disease conditions.

- Gross structure and functions of accessory organs of digestive system: teeth, tongue, salivary glands, liver, gallbladder, pancreas
- An overview of the diseases in correlation with accessory organs of digestive system: hepatitis, Non-alcoholic Fatty Liver Disease (NAFLD), liver cirrhosis, cholelithiasis, pancreatitis, diabetes etc.

TUTORIALS (Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/ RECOMMENDED READINGS

- Jain, A. K. (2019). *Human Physiology for BDS*. (6th edn.). Avichal Publishing Company.
- Singh, H. D. (2010). *Handbook of basic human physiology for paramedical students*. S. Chand Publishing.
- *Manav evan igyan evum yog*, M.Y-104. Uttrakhand Mukta Vishwa Vidyalaya
<https://uou.ac.in/sites/default/files/slm/MY-104.pdf> (Accessed on 10 March 2023).

SUGGESTED READINGS

- Ross., & Wilson. (2018). *Anatomy and Physiology in Health and Illness* (13th edn.). Elsevier.
- Chaudhari, S. K. (2016). *Concise Medical Physiology* (7th edn.). New Central Book Agency (P) Ltd.
- *Manav sharir -rachna aur kriya- vigyan*, paper- 4 of PGDIPP, SIGFA Solutions
<http://assets.vmou.ac.in/PGDIPP04.pdf> (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

B.A (Prog.) with Nutrition and Health Education (NHE)

Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE-3: Recent Advances in Food and Nutrition

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Recent advances in food and nutrition	4	3	1	0	XII Pass	Nil

Learning Objectives

- To introduce students with the advances in food trends to fulfill developing health requirements.
- To equip them with knowledge of various recent advances in technologies in nutrition and food science.

Learning Outcomes

After completion of the course, the students will be able to:

- Develop understanding of modern approach to types of diet, and advancement in high altitude and space foods.
- Understand the multidisciplinary approaches in enrichment of nutrition.
- Understand and explore technologies involved in preparation and preservation of processed and convenience foods.
- Understand and explore different advanced methods of processing, preservation and packaging materials.

SYLLABUS OF DSE-NHE-3

THEORY
(Credits 3; Hours 45)

UNIT I: Recent Advances in Food for Health

12 Hours

This unit will introduce diets and specified foods in order to attain desired health status by individuals

- Dietary approaches: Intermittent fasting, veganism, mediterranean diet, detox diet, gluten free diet, paleo diet, ketogenic diet, atkins diet, circadian rhythms diet.
- Recent advances with respect to functional foods, organic foods, nutraceuticals, dietary supplements, nutrigenomics, nutrigenetics, prebiotics, probiotics, synbiotics, postbiotics, high altitude and space foods.

UNIT II: Advanced Technologies to Enrich Nutrition

10 Hours

This unit will explain the multidisciplinary approach in enrichment of nutrition.

- Food fortification
- Food biotechnology: role, application and concerns for the following:
 - Genetically modified foods
 - Biofortification
- WHO guidelines for fortified foods
- FSSAI regulations/standards for fortified foods

UNIT III: Technological Advancement in Food Processing

15 Hours

This unit will introduce different technologies involved in preparation and preservation of processed and convenience foods.

- Concept, application, advantages and disadvantages of the following techniques /technologies:
 - Extrusion technology
 - Microencapsulation
 - Nanotechnology
 - Ohmic heating
 - High-power ultrasound (HPU)
 - Electrohydrodynamic drying
 - Pulsed electric field (PEF)
 - Manothermosonication
 - High-pressure processing (HPP)
 - Food printing

UNIT IV: Advances in Food Packaging

8 Hours

This unit will introduce the advancement in different methods of food packaging.

- Sustainable food packaging: edible packaging, bioplastics
- Controlled atmosphere packaging (CAP) and Modified atmosphere packaging (MAP)
- Active, smart and intelligent packaging

TUTORIALS (Credits 1; Hours 15)

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/ RECOMMENDED READINGS

- Srilakshmi, B. (2022). *Food Science* (7th edition). New Age International (P) Ltd.
- Fellows, P. J. (2022). *Food processing technology: Principles and Practice* (5th edn.). Woodhead publishing.
- Anjana, A., & Shobha, A. U. (2021). *Textbook of human nutrition* (3rd edn.). Jaypee Brothers medical publishers.
- Rahman, M. S. (Ed.). (2007). *Handbook of Food Preservation*. (2nd edn.). CRC press.

SUGGESTED READINGS

- Suvendu, B. (Ed.). (2015). *Conventional and advanced food processing technologies*. Wiley Publishing.
- Bhesh, B., Fernanda, C. G., Min, Z., Sangeeta, P. (Eds.). (2019). *Fundamentals of 3D food printing and applications*. Academic press.
- Kit L.Y., & Dong S.L. (2012). *Emerging food packaging technologies: Principles and practice*. Woodhead publishing ltd.
- Sharvari, R., Sudiksha, H., Salil, M. & Ramesh, B. (2021). *Advancements in space food processing technologies*. *International Journal of Recent Scientific Research*, 12(06): 42033–42037.
- Food Safety and Standards Authority of India. (2018). *Food Safety and Standards (Fortification of Foods) Regulations*. https://www.fssai.gov.in/upload/uploadfiles/files/Compendium_Food_Fortification_Regulations_30_09_2021.pdf (Accessed on 10 March 2023).
- World Health Organization. (2006). *Guidelines on food fortification with micronutrients*. <https://www.who.int/publications/i/item/9241594012> (Accessed on 10 March 2023).

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B.A (Prog.) with Nutrition and Health Education (NHE)
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE-5: Health and Nutrition for Women and Children

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Health and Nutrition for Women and Children	4	3	0	1	XII Pass	NIL

Learning Objectives

- To sensitize students towards the current scenario with respect to health and nutrition indicators for women and children
- To impart holistic knowledge about health and nutrition issues concerning women
- To educate students about various aspects of child health and nutrition including IYCF, immunization as well as problems of malnutrition
- To create awareness regarding Government of India's ongoing programmes for nutrition and health of women and children

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the various dimensions of women's health and nutrition
- Explain every aspect of children's health and nutrition including breast feeding, complementary feeding, immunization and nutrition related problems
- Gain sufficient knowledge to be able to contribute to the efforts made by the government towards promoting health and nutrition of women and children

SYLLABUS OF DSE-NHE-5

THEORY
(Credits 3; Hours 45)

UNIT I: Health and Nutrition for Non-pregnant, Non-lactating Women **12 Hours**

This unit will familiarize the student with the current scenario and knowledge regarding nutrition and care for non-pregnant, non-lactating women.

- Nutrition situation of women in India
- Vital statistics related to health
- Importance of optimal nutrition for healthy life
- Nutritional concerns

UNIT II: Pregnancy and Lactation

12 Hours

This unit will address issues related to various aspects of health and nutrition of pregnant and lactating mothers.

- Health and nutritional considerations
- Factors affecting pregnancy outcomes and lactation performance
- Immunization/ vaccination during pregnancy
- Nutritional problems and their management

UNIT III: Infancy and Childhood

12 Hours

This unit will introduce all aspects of nutrition as well as other dimensions of child health.

- IYCF guidelines, first 1000 days
- Importance of appropriate nutrition during childhood
- Immunization: Universal Immunization programme, Intensified Mission Indradhanush 4.0
- Growth monitoring
- Malnutrition – Wasting, stunting and micronutrient deficiencies among children
– Childhood obesity
- Diarrhoea

UNIT IV: Women and Child Nutrition Programmes:

9 Hours

This unit will give a complete overview of the government's flagship programme 'Poshan Abhiyan' and other programmes to improve nutritional outcomes for women and children

- Poshan Abhiyan
- Aanganwadi services
- Pradhanmantri Surakshit Matritva Abhiyan
- Anemia mukt bharat
- Janani-Shishu Suraksha Karyakram
- Rashtriya Bal Swasthya Karyakram

PRACTICAL (Credit 1; 30 Hours)

1. Development of questionnaire/ presentation on health and nutritional problems in NPWL women

2. Planning and preparing an educational aid on the following suggested topics:
 - adequate care and nutrition during pregnancy/ lactation
 - dietary management of anemia during pregnancy
 - breastfeeding
 - complementary feeding
 - importance and schedule of immunization
3. Plotting and interpreting growth charts
4. Demonstrate age-specific complimentary food preparation
5. Preparation of information card about Poshan Abhiyan activities

ESSENTIAL/ RECOMMENDED READINGS

- Bamji, M. S., Rao, N. P., Reddy, V. (2017). *Textbook of Human Nutrition*. (4th edn.). Oxford and IBH Publishing Co. Pvt Ltd.
- Ministry of health and family welfare, Government of India. (2018). *Journey of the first 1000 days*.
https://nhm.gov.in/images/pdf/programmes/RBSK/Resource_Documents/Journey_of_The_First_1000_Days.pdf (Accessed on 10 March 2023).
- Ministry of health and family welfare, Government of India. *Infant and Young Child Feeding* (2016)
https://www.nhm.gov.in/MAA/One_Day_Sensitization_Module/One_Day_Sensitization_Module_English_lowres.pdf (Accessed on 10 March 2023).
- Ministry of health and family welfare, Government of India. *National Family Health Survey 5 (NFHS-5)* (2021) https://main.mohfw.gov.in/sites/default/files/NFHS-5_Phase-II_0.pdf (Accessed 10 March 2023).
- Ministry of health and family welfare, Government of India. *Intensified Mission Indradhanush* (2018)
https://nhm.gov.in/New_Updates_2018/NHM_Components/Immunization/Guidelines_for_immunization/Mission_Indradhanush_Guidelines.pdf (Accessed 10 March 2023).
- *Poshan Abhiyan: Prime Minister's Over-reaching Scheme for Holistic Nourishment*
<https://www.india.gov.in/spotlight/poshan-abhiyaan-pms-overarching-scheme-holistic-nourishment.22.October.2018> (Accessed on 10 March 2023).

SUGGESTED READINGS

- Chadha, R., Mathur, P. (2015). *Nutrition: A life cycle approach*. Orient Blackswan.
- Agarwal, A., & Udipi, S. A. (2022). *Textbook of Human Nutrition* (2nd edn.). Jaypee Brothers (P) Ltd.
- *Poshan Abhiyan: Prime Minister's Over-reaching Scheme for Holistic Nourishment*. PIB press release [doc202112111.pdf \(pib.gov.in\)](https://pib.gov.in/doc202112111.pdf) (Accessed on 10 March 2023).

- UNICEF. *Women's Nutrition*. <https://www.unicef.org/india/what-we-do/womens-nutrition> (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.

DEPARTMENT OF HOME SCIENCE

B.A (Prog) with Nutrition and Health Education (NHE)

Pool of Discipline Specific Elective Course (DSE) for Even Semester Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE-NHE 2: Nutritional and Lifestyle Counselling

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title and Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Nutritional and lifestyle counselling	4	3	0	1	XII Pass	NIL

Learning Objectives

- To introduce students to the concept of nutrition counselling, nutrition care process and responsibilities of a nutrition counsellor
- To acquaint the students with the WHO's 5A brief interventions for behaviour change counselling
- To familiarize the students with nutrition and lifestyle counselling for prevention and management of lifestyle related disorders/diseases

Learning Outcomes

After completion of the course, the students will be able to:

- Prepare and maintain a nutrition and lifestyle counselling case record
- Incorporate the WHO's 5A brief interventions for behaviour change counselling
- Gain knowledge for becoming an effective counsellor to lead a healthy lifestyle
-

SYLLABUS OF DSE-NHE-2

THEORY

(Credits 3; Hours 45)

UNIT I: Introduction to Counselling

8 Hours

This unit will introduce the concept of counselling, its stages and will acquaint the students to prepare a counselling case record.

- Basics of counselling; difference between education and counselling

- Counselling skills
- Stages of counselling
- Counsellors' role at different levels
- Counselling case record

UNIT II: Nutrition Counselling

17 Hours

This unit will help the students to understand the concept of nutrition counselling and its importance in nutrition care process, responsibilities of a nutrition counsellor and theories that influence them.

- Concept and objectives
- Nutrition care process
- Importance of nutrition counselling in the nutrition care process
- Responsibilities and role of nutrition counsellor
- Theories influencing nutrition counsellor

UNIT III: Nutrition and Lifestyle Counselling

20 Hours

This unit will familiarize the students to the concept of lifestyle counselling, its significance; WHO's 5As brief interventions for behaviour change counselling; nutrition and lifestyle counselling for lifestyle related disorders/diseases

- Lifestyle counselling – concept and significance
- Understanding behaviour change
- Counselling for behaviour change through WHO's 5As (Ask, Advise, Assess, Assist, Arrange) brief interventions – healthy diet, increase in physical activity, quit tobacco and harmful use of alcohol
- Nutrition and lifestyle counselling for lifestyle related disorders/diseases
 - Types; risk factors (modifiable and non-modifiable risk factors)
 - Signs and symptoms of lifestyle diseases/disorders
 - Prevention and management of lifestyle diseases/disorders
 - Healthy and unhealthy diet
 - Diet and linkage with other risk factors
 - Diet and lifestyle diseases/disorders
 - Role of counsellor to promote healthy dietary practices, physical activity, reduce risk from indoor air pollution, in helping individuals experiencing stress and related disorders

PRACTICAL (Credit 1; Hours 30)

1. Prepare a counselling case record for a healthy lifestyle and for any lifestyle related disease/disorder
2. Design information flyer/leaflet for risk factors of lifestyle related diseases/disorders OR do's and don'ts to maintain a healthy lifestyle

3. Create a power-point presentation showcasing signs/symptoms, prevention and management of lifestyle related diseases/disorders
4. Conduct 24-hour dietary recall for college going student of one working day, one non-working day and counsel accordingly for leading a healthy lifestyle
5. Conduct a case study using WHO's 5As (Ask, Advise, Assess, Assist, Arrange) brief interventions on any two – healthy diet, increase in physical activity, quit tobacco and harmful use of alcohol

ESSENTIAL/ RECOMMENDED READINGS

- Snetselaar, L. (2009). *Nutrition Counseling Skills for the Nutrition Care Process* (4th edn.). Jones and Bartlett Publishers.
- National programme for prevention and control of cancer, diabetes, cardiovascular diseases and stroke (NPCDCS) handbook for counsellors - Reducing risk factors for noncommunicable diseases. Directorate General of Health Services Ministry of Health and Family Welfare, Government of India. Developed by National Institute of Mental Health and Neuro Sciences (NIMHANS) in collaboration with World Health Organization India (2017) https://main.mohfw.gov.in/sites/default/files/Handbook%20for%20Counsellors%20-%20Reducing%20Risk%20Factors%20for%20NCDs_1.pdf (Accessed on 10 March 2023).
- *Counselling and educating the patient.* <https://gyansanchay.csjmu.ac.in/wp-content/uploads/2022/08/COUNSELLING-AND-EDUCATING-THE-PATIENT.pdf>
WHO (2018). *HEARTS Technical package for cardiovascular disease management in primary health care - Healthy-lifestyle counselling* <https://apps.who.int/iris/bitstream/handle/10665/260422/WHO-NMH-NVI-18.1-eng.pdf> (Accessed on 10 March 2023).
https://samples.jblearning.com/0763729604/snetselaar_4e_ch1.pdf
- Raymond, J.L, Morrow, K. (2020). *Krause and Mahan's Food and the Nutrition Care Process.* (15th edn.). Elsevier Publications.

SUGGESTED READINGS:

- Mudambi, S.R., Rajagopal, M.V. (2007). *Fundamentals of Foods, Nutrition and Diet Therapy.* New Age International Publishers, Delhi.
- Oikarinen, A., Engblom, J., Paukkonen, L., Kääriäinen, M., Kaakinen, P., & Kähkönen, O. (2023). Effects of a lifestyle counselling intervention on adherence to lifestyle changes 7 years after stroke - A quasi-experimental study. *Scandinavian Journal of Caring Sciences*, 37(1), 163–172.
- Lonnberg, L. (2022). Digital Comprehensive Summaries of Uppsala Dissertations from the Faculty of Medicine 1849. *Acta Universitatis Upsaliensis Uppsala.* <https://uu.diva-portal.org/smash/get/diva2:1657438/FULLTEXT01.pdf>.

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B.A (Prog.) with Nutrition and Health Education (NHE)
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE

DSE-NHE 4: Indigenous Indian Foods

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Indigenous Indian Foods	4	3	1	0	XII Pass	NIL

Learning Objectives

- To impart knowledge about history of indigenous Indian foods
- To provide overview of the traditional foods evolved from indigenous foods
- To equip students with knowledge of traditional Indian functional foods
- To familiarize students with utilization of indigenous and traditional food as medicines

Learning Outcomes

After completion of the course, the students will be able to:

- Understand the history of indigenous Indian foods.
- Explain concept of traditional food evolving from indigenous foods.
- Learn about the health benefits of traditional foods as functional food.
- Understand the concept of utilization of indigenous and traditional food as medicines.

SYLLABUS FOR DSE-NHE-4

THEORY
(Credits 3; Hours 45)

UNIT I: Indian Food Culture, Indigenous Foods and Traditional Foods **8 Hours**

The unit presents students with an introduction about Indian cookery, indigenous Indian foods, traditional Indian foods and history of evolution of food culture in India.

- History of Indian cookery.
- Overview of evolution of Indian food culture from ancient era to present time.
- Introduction to concept of indigenous Indian foods and traditional Indian foods.

UNIT II Indigenous foods of India

7 Hours

The unit will focus on different indigenous foods of indigenous Indian communities and also help the students to learn through case studies of select indigenous communities.

- Ancestral legacies (pre-ancient history, Indus valley and Harrapan spreads)
- Indigenous foods of indigenous communities
- Case study of select indigenous communities

UNIT III Traditional Functional Foods of India

15 Hours

The unit acquaints the students with an understanding about traditional Indian functional foods.

- Evolution of traditional functional foods
- Traditional Indian functional foods based on:
 - Whole grains
 - Legumes and legume adjuncts (*wadi, papad* etc.)
 - Milk and its products (*dahi, ghee* etc.)
 - Spices, salt, and condiments
 - Oils and oilseeds
 - Fruits and vegetables
 - Betel leaf
 - Herbs
 - Traditional Indian food as provider of abundant fibre
 - Traditional Indian food as provider of abundant polyphenols

UNIT IV Traditional Food as Medicine

15 Hours

The unit will focus on various aspects of ayurveda and traditional foods which can be utilized as medicine.

- Introduction to vedic nutrition (ayurvedic nutrition) concept incorporating indigenous and traditional foods as medicine.
- Ayurvedic triad (*sushruta, charaka, aryabhatta*)
- Tridosha (*vata, pitta, kapha*)
- Rasas (sweet, salty, sour, bitter, pungent, astringent)
- Hot and cold foods
- Kacha and pucca food
- Gunas of food (*rajsik, tamsik, satvik*)
- Incompatible foods (*virudh ahaar*): *pathya, apathya, viprit*
- Ayurvedic rules of food consumption

TUTORIALS **(Credits 1; Hours 15)**

Tutorial classes will involve:

1. Q&A sessions/ Group Discussions/ Problem Solving exercises with the Students
2. Presentation of project/ research activity by students
3. Any other scholastic work related to application of conceptual understanding of the subject
4. Evaluation and feedback by the teacher

ESSENTIAL/ RECOMMENDED READINGS

- Achaya, K. T. (1994). *Indian Food: A Historical Companion*. Oxford University Press
- Srinivasan, K. (2010). Traditional Indian functional foods. In *Functional foods of the east* (pp. 51–84). <https://doi.org/10.1201/b10264-4>.
- Wickramasinghe, P. (2007). *The Food of India*. Om Books Service.
- Rastogi, S. (Ed.). (2014). *Ayurvedic science of Food and Nutrition*. Springer Nature.
- Sen, C. T. (2016). *Feast and Fasts: A History of Food in India*. Reaktion Books Ltd.
- FAO and Alliance of Bioversity International and CIAT. (2021). *Indigenous Peoples' food systems: Insights on sustainability and resilience in the front line of climate change*. <https://www.fao.org/3/cb5131en/cb5131en.pdf>
- Ghosh-Jerath, S., Kapoor, R., Barman, S., Singh, G., Singh, A., Downs, S., & Fanzo, J. (2021). Traditional Food Environment and Factors Affecting Indigenous Food Consumption in Munda Tribal Community of Jharkhand, India. *Frontiers in nutrition*, 7, Article 600470. <https://doi.org/10.3389/fnut.2020.600470>

SUGGESTED READINGS

- Gosh-Jerath, S., Kapoor, R., & Sabharwal, M. (2022). Indigenous Foods of India: A Comprehensive Narrative Review of Nutritive Values, Antinutrient Content and Mineral Bioavailability of Traditional Foods Consumed by Indigenous Communities of India. *Frontiers in sustainable food systems*, 6, <https://www.frontiersin.org/articles/10.3389/fsufs.2022.696228/full>
- BHM 401T, *Introduction to Indian Cooking*, Uttarakhand Open University India (2005). <https://www.uou.ac.in/sites/default/files/slm/BHM-401T.pdf>
- Rai, R., & Nath, V. (2003). *The role of ethnic and indigenous people of india and their culture in the conservation of biodiversity*. ICFRE India. <https://www.fao.org/3/xii/0186-a1.htm>
- Negi, V. S., Pathak, R., Thakur, S., Joshi, R. K., Bhatt, I. D., & Rawal, R. S. (2021). Scoping the Need of Mainstreaming Indigenous Knowledge for Sustainable Use of Bioresources in the Indian Himalayan Region. *Environmental Management*. <https://doi.org/10.1007/s00267-021-01510-w>
- FAO. The role of ethnic and indigenous people of India and their culture in the conservation of biodiversity. <https://www.fao.org/3/xii/0186-a1.htm>.

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B.A (Prog.) with Nutrition and Health Education (NHE)
Category-V

DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE-NHE 6: Research Methods in Home Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PREREQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical/ Practice		
Research Methods in Home Science	4	3	0	1	XII Pass	NIL

Learning Objectives

- To provide students understandings about the basic concepts, approaches and methods in conducting Home Science research.
- To enable learners to appreciate and critique the nuances of designing a research study well.
- To sensitize students towards ethical concerns while conducting Home Science research.

Learning Outcomes

- Demonstrate knowledge of the scientific method, purpose and approaches to research in Home Science
- Compare and contrast quantitative and qualitative research approaches
- Explain different types of research design and their applicability in Home Science research
- Understand the key elements of a research process
- Explain ethical principles, issues and procedures

SYLLABUS OF DSE-NHE-6

THEORY
(Credits 3; Hours 45)

UNIT I: Research Purpose and Design **10 Hours**

This unit will deal with meaning and importance of research in various areas of Home Science. Exposure to different types of research designs and measurement in Home Science research would also be given.

- Meaning, purpose and significance of research
- Research as a scientific method

- Types of research
- Quantitative, Qualitative and mixed method approaches
- Research Designs –Experimental and Non-Experimental; Descriptive and Observational; Participatory research
- Internal and external validity of research design
- Variables, concepts and measurement in research
- Levels of measurement
- Units of analysis

UNIT II: Sampling and Research Tools and Techniques

15 Hours

This unit will introduce the student to the concept of sampling and methods used to draw sample from population using examples from Home Science discipline. Students would also learn about types of data, its collection and reliability and validity concerns.

- Role of sampling in research
- Sampling techniques and their applicability, Sample size and sampling error
- Types of data: Primary and Secondary
- Tools of data collection; types, construction and administration- Interview, Questionnaire, Observation, Focus group discussion and other methods
- Validity and reliability of data collection tools

UNIT III: The Research Process

15 Hours

This unit will elaborate upon the various steps involved in conducting and reporting researches in Home Science.

- Defining the problem, research questions, objectives, hypotheses
- Review of related literature and originality in writing
- Systematic research: concept and methodology
- Planning the research
- Identifying variables and constructing hypothesis
- Selecting appropriate research methodology and tools
- Data analysis: coding and tabulation
- Writing a research report: styles and formats
- Citation formats: in medical sciences, social sciences

UNIT IV: Values, Social Responsibility and Ethics in Research

5 Hours

This unit will apprise the students about ethical concerns while conducting and reporting research.

- Ethical principles guiding research: from inception to completion and publication of

research

- Plagiarism and Academic integrity in research: plagiarism tools and software
- Ethical issues relating to research participants and the researcher
 - Rights, dignity, privacy and safety of participants
 - Informed consent, confidentiality, anonymity of respondents, voluntary participation, harm avoidance

PRACTICAL

(Credits 1; Hours 30)

1. Data visualization
2. Levels of Measurement
3. Types of research designs
 - a. Experimental and non-experimental; Descriptive and observational
 - b. Qualitative, Quantitative and mixed method
4. Sampling techniques and sample size calculation
 - a. Probability sampling method
 - b. Non-Probability sampling methods
5. Tools of data collection- Interview schedule, questionnaire and FGD
 - Designing/ Construction
 - Preparation of tools for ethical review
 - Pilot testing/validity and reliability of the tool
6. Data collection and analysis process: conducting interviews, administering questionnaire
7. Coding and tabulation of data for analysis
8. Citation formats and Plagiarism
9. Reviewing a research paper from a specific area of specialization in Home Science

ESSENTIAL READINGS

- Kerlinger F. N. and Lee, H.B. (2017). *Foundations of Behavioral Research* 4th Ed. Harcourt College Publishers.
- Kothari, C. R. (2019). *Research Methodology: Methods and Techniques*. New Age International Pvt Ltd, New Delhi.
- Kothari, C. R. (2022). *Shodh Padhati* 1st Ed. New Age International Pvt Ltd, New Delhi.
- Kumar, R. (2019) *Research Methodology: A Step-by-Step Guide for Beginners*. 5th Ed. Sage Publications, New Delhi.

SUGGESTED READINGS

- Bernard, H. R. (2000). *Social research methods: Qualitative and quantitative*

approaches. Thousand Oaks, CA.: Sage.

- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage Publications.
- Davis, A. M., Treadwell, D. (2019). *Introducing Communication Research: Paths of Inquiry*. United Kingdom: SAGE Publications.
- Flynn, J.Z., Foster, I.M. (2009). *Research Methods for the Fashion industry*. Fairchild books, Bloomsbury publishing.
- Indian National Science Academy (INSA) (2019). *Ethics in Science Education, Research and Governance*. ISBN:978-81-939482-1-7.
<http://www.insaindia.res.in/pdf/EthicsBook.pdf>
- Jacobsen, K. H. (2020). *Introduction to health research methods: A practical guide*. Jones & Bartlett Publishers.
- UGC (2021) *Academic Integrity and Research Quality*. New Delhi: UGC, Retrieved from https://www.ugc.ac.in/e-book/Academic%20and%20Research%20Book_WEB.pdf (Accessed on 10 March 2023).

Note: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.