SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11)
Syllabus with effect from the Academic Year 2023-2024

Bachelor of Science-Home Science
(B.Sc.-H.Sc.) (Foods and Nutrition) Semester (I)

Course Code	UH01MAFND01	Title of the Course	**Fundamentals of Foods and Nutrition (Theory)**
Total Credits of the Course	4	Hours per Week	4

Course Objectives	To Enable Students to- 1. Impart knowledge pertaining to different food groups, nutritive value and importance in daily diet. 2. Understand the functions of food and the role of various nutrients, their requirements, effect of deficiency and excess. 3. Familiarize students with different methods of cooking, their advantages and disadvantages. 4. Gain knowledge of improving nutritional quality of food

Unit	**Course Content**	**Weightage* (%)**
1.	(a) Definition of food, Nutrition, functions of Foods, Basic five food groups and their contribution to balanced diet. Energy, sources, function & deficiency (b) Classification, sources, functions and deficiency and excess of Protein, Carbohydrate and Fat. (c) Classification, sources, functions and deficiency of Minerals: Calcium, Phosphorus, Sodium, Potassium, Iron, Zinc, Fluorine, Iodine, Selenium, Magnesium	25
2.	(a) Classification, sources, function of Fat-soluble vitamins: Vitamin A,D,E, K (b) Classification, sources, function of water- soluble vitamins: Thiamine, Riboflavin, Niacin, Pyridoxine, B12, folic acid and vitamin C	25
3.	(a) Introduction, Aims and Objectives of Cooking, i. Definition: Cooking, ii. History of cooking– Origin of Cookery iii. Safety at work place – Prevention, precaution, evacuation and first aids. iv. General Principles of Food Hygiene v. Personal hygiene and its necessity, Protective Clothing and its importance.	25

	(b) Pre-preparation techniques i. Washing ii. Peeling & Scraping iii. Pairing iv. Cutting v. Grating vi. Grinding vii. Mashing viii. Sieving ix. Milling x. Steeping xi. Centrifuging xii. Emulsifying xiii. Evaporation xiv. Homogenization xv. Beating xvi. Blending xvii. Cutting in xviii. Creaming xix. Folding xx. Kneading xxi. Pressing xxii. Rubbing in xxiii. Rolling in xxiv. Stirring	
4.	Methods of Cooking i. Introduction to different terminologies used in cooking techniques. ii. Modes of heat transfer: Radiation, Conduction and Convection iii. Moist heat methods: Boiling, Simmering, Poaching, Steaming, Pressure cooking iv. Dry heat methods: a) Air as medium of cooking: Grilling, broiling, roasting, Baking b) Fat as medium of cooking: Sautéing, Shallow fat frying, Deep fat frying v. Combined (Moist and dry) Methods: Braising, Stewing vi. Other cooking methods: Germination, Fermentation, Braising, Microwave cooking, Solar cooking. vii. Advantages and Disadvantages (Nutrient Losses) of Cooking and methods to prevent nutrient loss	25

Teaching-Learning Methodology	Lecture, Group Discussion, Quizzes, Expert talk, Audio visual aids

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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As Per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments (As Per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Identify various food groups and would be able to judiciously use according to the source of availability
2.	Identify various macro and micronutrients and their need in the body.

References	
Sr. No	References
1.	Educational Planning group.(1991). Food and Nutrition: Text book of home science for senior students. (3rd ed). New Delhi: Arya publishing house.
2.	Mudambi, S.R., & Rajagopal, M.V. (1982). Fundamentals of Nutrition. New Age International Ltd.
3.	Roday, S. (2012). Food Science and Nutrition. Oxford University Press.
4.	Mudambi, S. (2007). Fundamentals of Foods, Nutrition and Diet Therapy New Age Publications.

On-line resources to be used if available as reference material
On-line Resources
Relevant entries on Wikipedia and Encyclopaedia Britannica

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Bachelor of Science-Home Science
(B.Sc.-H.Sc.) (Foods and Nutrition) Semester (I)

Course Code	UH01MAFDN02	Title of the Course	**Fundamentals of Foods and Nutrition (Practical)**
Total Credits of the Course	4	Hours per Week	4

Course Objectives	To Enable Students- 1. Familiarize students with different methods of cooking, their advantages and disadvantages 2. Gain knowledge of improving nutritional quality of food. 3. Familiarise students with the controlling techniques by standardisation of recipes

Unit	**Course Content**	**Weightage*(%)**
1.	Market survey of locally available food items viz. cereals, pulses, fruits, vegetables, milk and milk products, fats and oils, nuts and oilseeds, sugar and Jaggary, meat, fish, and poultry and miscellaneous food items like biscuits, jams, jellies, ketchup etc. and their cost	5
2.	Calculate the cost of food required for providing a given amount of nutrient To calculate the amount of food required for obtaining a given amount of nutrient. Classify foods on the basis of nutrients: Carbohydrates, Protein, Fat, Minerals and Vitamins.	5
3.	Introduction, use and care of kitchen equipment used for regular as well as special cooking methods	5
4.	Weights and Measurement Controlling techniques: a. Standard and household measures for raw and cooked foods, recipe and evaluation of the product. b. Amount of ingredients to be used in standard recipe vis-à-vis, portion size	5
5.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Carbohydrates.	5
6.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Carbohydrates.	5

7.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Protein	5
8.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Protein.	5
9.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Fat.	5
10.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Fat.	5
11.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Vitamin A.	5
12.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Vitamin A.	5
13.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Thiamine.	5
14.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Thiamine.	5
15.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Riboflavin.	5
16.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Riboflavin.	5
17.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Iron and Vitamin C	5
18.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Iron and Vitamin C.	5
19.	Planning of recipes using various cooking techniques and calculation of nutritional values, portion size and its application on treating the deficiency of Calcium and Niacin.	5
20.	Preparation of recipe using various cooking techniques, assessing the nutritional quality, portion size in comparison of the various recipes prepared for Calcium and Niacin.	5

Teaching-Learning Methodology	Lecture, Group Discussion, Demonstration, Quizzes, survey, Experiential learning

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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As Per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments (As Per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand the nutritional contribution of and effect of cooking on different food groups.
2.	Prepare dishes using principles of cooking methods and assess serving size
3.	Demonstrate ways of reducing nutrient losses during different methods of cooking and methods of enhancement of nutritional quality of foods

References	
Sr. No	References
1.	Educational Planning group.(1991). Food and Nutrition: Text book of home science for senior students. (3rd ed). New Delhi: Arya publishing house.
2.	Mudambi, S.R., & Rajagopal, M.V. (1982). Fundamentals of Nutrition. New Age International Ltd.
3.	Roday, S. (2012). Food Science and Nutrition. Oxford University Press.
4.	Mudambi, S. (2007). Fundamentals of Foods, Nutrition and Diet Therapy New Age Publications.

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Bachelor of Science-Home Science
(B.Sc.-H.Sc.) (Foods and Nutrition) Semester (I)

Course Code	UH01MIFDN01	Title of the Course	**Basic Food Preparation (Theory)**
Total Credits of the Course	2	Hours per Week	2

Course Objectives	1. To aware students with the terminologies of cooking 2. To remember the various cooking techniques 3. To understand the differences in various cooking methods

Unit	**Course Content**	**Weightage* %**
1.	(a) Introduction, Aims and Objectives of Cooking, i. Definition: Cooking, ii. History of cooking– Origin of Cookery iii. Safety at work place – Prevention, precaution, evacuation and first aids. iv. General Principles of Food Hygiene v. Personal hygiene and its necessity, Protective Clothing and its importance. (b) Pre-preparation techniques i. Washing ii. Peeling & Scraping iii. Pairing iv. Cutting v. Grating vi. Grinding vii. Mashing viii. Sieving ix. Milling x. Steeping xi. Centrifuging xii. Emulsifying xiii. Evaporation xiv. Homogenization xv. Beating xvi. Blending xvii. Cutting in xviii. Creaming xix. Folding	50

	xx. Kneading xxi. Pressing xxii. Rubbing in xxiii. Rolling in xxiv. Stirring	
2.	(a) Heat Transfer & its relationship to Food Preparation i. Heat Fusion ii. Thermal Conductivity iii. Induction Cooking iv. Heat Removal-Cooling v. Freezing of Foods vi. Thawing of Foods vii. Re-heating of Food viii. Effects of Heat on Foods (b) Moist Heat Methods: (Merits and Demerits) i. Scalding ii. Poaching iii. Simmering iv. Stewing v. Braising vi. Boiling vii. Blanching viii. Steaming ix. Pressure cooking (c) Dry Heat Methods: (Merits and Demerits) i. Baking ii. Toasting iii. Grilling iv. Roasting v. Sautéing vi. Frying vii. Broiling (d) Combination Cooking Methods: (Merits and Demerits) (e) Microwave Cooking (f) Solar Cooking	50

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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Recall the terminologies of cooking
2.	Identify the various cooking techniques
3.	Sort the differences in various cooking methods

Sr. No	References
1.	Raina, U et al (2015) Fourth Edition, Basic Food Preparation- A Complete Manual, Orient Longman Publication
2.	Thangham. P,(2004)Vol-1 and 2, Modern Cookery for teaching and the trade, Orient Longman Publication

On-line resources to be used if available as reference material
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Bachelor of Science-Home Science
(B.Sc.-H.Sc.) (Foods and Nutrition) Semester (I)

Course Code	UH01MIFDN02	Title of the Course	**Basic Food Preparation (Practical)**
Total Credits of the Course	2	Hours per Week	4

Course Objectives	1. To gain practical knowledge of cooking. 2. To learn the differences in various cooking methods.

Unit	**Course Content**	**Weightage %**
1.	Practicing various Pre-preparation techniques: Washing, Peeling & Scraping, Pairing, Grinding, Mashing, Sieving, Steeping, Centrifuging, Emulsifying, Evaporation, Homogenization	10
2.	Learning various types of cutting techniques: Fine Dice, Shredding, Match stick cuts, Small dice, Medium dice, Large Dice, Slicing. Beating, Blending, Creaming, Folding, Kneading, Pressing, Rubbing in, Rolling in, And Stirring.	10
3.	Prepare one recipe using each method of the following: i. Boiling and blanching ii. Steaming iii. Pressure cooking i. Baking ii. Toasting iii. Grilling iv. Roasting v. Sautéing vi. Frying vii. Microwave Cooking viii. Solar Cooking	80

Teaching-Learning Methodology	Experiential learning, Audio visual aids, Workshops. group learning

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Do basic cooking
2.	Identify various types of pre-preparatory techniques
3.	ldentify the differences between various cooking methods

Sr. No	References
1.	Raina, U et al (2015) Fourth Edition, Basic Food Preparation- A Complete Manual, Orient Longman Publication
2.	Thangham. P,(2004)Vol-1 and 2, Modern Cookery for teaching and the trade, Orient Longman Publication

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Bachelor of Science - Home Science
(Family Resource Management) Semester (I)

Course Code	UH01MIFRM01	Title of the Course	Theory – Hotel & Tourism
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	1. To know various concepts in Hotel Management. 2. To comprehend the purpose and services in hotels. 3. To familiarize the students with the perception of tourism. 4. To acquaint the students with the hospitality industry and tourism scenario.

Course Content		
Unit	Description	Weightage*(%)
1.	The Hotel Industry: (a) Overviewand Opportunities in the Hotel Industry (b) Classification of Hotels on the basis of: Star, Location, Size, Number of rooms, Type of Plans (c) Departments: Front Desk, Housekeeping, Food & Beverage, Engineering, Sales and marketing, Health/ sports/ recreation, Safety/ security.	50
2.	Hospitality and Tourism (a) Tourism: Definition and forms - Inbound and Outbound (b) Interdependence of Hospitality Management and Tourism (c) Future Tourism & Hospitality Scenario (Global and Indian)	50

Teaching-Assignments, Learning	Lecture, Power -point Presentations, ICT enabled Teaching, Individual / group project, Group discussion, Guest speaker, Quizzes Methodology,blackboard and chalk.

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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Appreciate the significance of hotel industry and kind of services offered.
2.	Critically analyse and understand the state of hospitality and tourism at different levels.
3.	Prepare them to work in the hotel industry.

Suggested References:	
Sr.No.	References
1.	Chakravarti, B.K., (2011). *Hotel and Hospitality Management.* New Delhi: Aph Publishing Corporation.
2.	Chakravarti, B.K., (2009). Hotel Management Theory. New Delhi: Aph Publishing Corporation.
3.	Chakravarti, B.K., (2014). Technical Guide to Hotel Operation. New Delhi: Cbs Publishers & Distributors Pvt.Ltd.
4.	Dharmarajan.S. And R. Seth, Tourism in India-Trends and Issues, HarAnand Publications Pvt. Ltd. New Delhi, First edition.
5.	Sharma. R.B., World Tourism in 21st Century, Alfa Publications, New Delhi, Firstedition.

On-line resources to be used if available as reference material

On-line Resources
https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=Cdnwi2LUCCLzrJZ76d/o1A== P-01 Tourism and Hospitality: concept, component, trends & status (M 11)

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Bachelor of Science - Home Science
(Family Resource Management) Semester (I)

Course Code	UH01MIFRM02	Title of the Course	Practical– Hotel & Tourism
Total Credits of the Course	02	Hours per Week	04

Course Objectives	1. To acquaint the students bycategories of hotels. 2. To know various chains of hotels. 3. To learn proficient skills for the hotel industry.

Course Content		
Unit	Description	Weightage* (%)
1.	Understand the relation between hotel and tourism industry.	10
2	(a) Classification of the hotels. (b) Identification of Hotel Chains in India.	10
3.	Understanding the function of various departments in hotel.	10
4.	(a) Skills required for the hotel personnel. (a) Demonstration of types of tables setting.	20
5.	Learning bed making in a guest room.	10
6.	Basic etiquettes in hotel industry	10
7.	List tourist places of different states and specify their art and culture.	20
8	Market survey of various travel agencies.	10

Teaching-Learning	Practical Implementation, Scrapbook, Demonstration, Blended Learning,

Methodology	Workshops, DIY activities.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Prepare them to work in the hospitality industry.
2.	Recognize the importance of guest service quality, server-guest relationships, and ethics of job in hospitality.
3.	Understand the role of tourism and hospitality as an industry.

Suggested References:	
Sr. No.	References
1.	Chakravarti, B.K., (2011). Hotel and Hospitality Management. New Delhi: Aph Publishing Corporation.
2.	Chakravarti, B.K., (2009). Hotel Management Theory. New Delhi: Aph Publishing Corporation.
3.	Chakravarti, B.K., (2014). Technical Guide to Hotel Operation. New Delhi: Cbs Publishers & Distributors Pvt.Ltd.
4.	Dharmarajan.S. And R. Seth, Tourism in India-Trends and Issues, HarAnand Publications Pvt. Ltd. New Delhi, First edition.
5.	Sharma. R.B., World Tourism in 21st Century, Alfa Publications, New Delhi, First edition.

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Bachelor of Science - Home Science
(B.Sc.- H.Sc.) (Human Development) Semester (I)

Course Code	UH01MIHUD01	Title of the Course	Introduction to Human Development
Total Credits of the Course	02	Hours per Week	02

Course Objectives	1. To develop an understanding about the need and importance of studying human growth and development across life span 2. To learn about the characteristics, needs and developmental tasks of different stages in the human life cycle.

Course Content		
Unit	Description	Weightage*(%)
1.	Overview of the field i. What is Human development? ii. Need & Scope of studying human development iii. Heredity and Environent iv. Meaning and definition of growth and development v. Principles of development vi. Factors affecting growth and development	50
2.	Stages of Life Span i. Prenatal ii. Infancy iii. Early Childhood iv. Late Childhood v. Adolescence vi. Adulthood vii. Old Age	50

Teaching-Assignments, Learning	Lecture method ,Active learning methodology , Group discussions Method, Power Point Presentation, Audio Visual methods, Games, Seminar, Assignment, Quiz

Evaluation Pattern			
Sr. No.	Details of the Evaluation	Weightage	
1.	Internal Written Examination (As per CBCS R.6.8.3)		15%

2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	The student will be able to develop an understanding about the discipline of Human Development.
2.	The student will acquire a detailed understanding of developmental milestones of Human development.
3.	The students will understand the characteristics, needs and significance of stages in the human life cycle.
4.	The student will acquire a detailed understanding of the broad perspectives of Human Development

Suggested References:	
Sr. No.	References
1.	Berk, L.E. (2005). *Child development* (5th ed.). New Delhi: Prentice Hall
2.	Berk, L. (2013). Child development. 9th ed. Boston: Pearson. Chapter 3
3.	Bhangaokar, R.,&Kapadia, S. (in press). Human Development Research in India: A historical overview. New Delhi: In G. Misra (Ed.), Hundred years of Psychology in India.
4.	Feldman, R., &Babu, N. (2009). Discovering the life span. New Delhi: Pearson.
5.	Kakar, S. (1978). The Inner World: A Psycho-Analytic Study of Childhood and Society in India.
6.	Kapadia, S. (2011). Psychology and human development in India. Country paper. International Society for the Study of Behavioural Development Bulletin Number 2, Serial No. 60, pp.37-42.
7.	Keenan, T., Evans, S., & Crowley, K. (2016). An introduction to child development. Sage.
8.	Lightfoot, C., Cole, M., & Cole, S. (2012). The development of children (7thed.). NewYork: Worth Publishers.
9.	Santrock, J. W. (2011). Life-span development. New York: McGraw-Hill. Chapter 2, pg 52-78, Chapter 3, pg 79-109.
10.	Santrock, J. W. (2009). A topical approach to life-span development (custom ed.).
11.	Singh, A. (2015). Foundations of Human Development. New Delhi: Tata McGraw- Hill. Chapter 2, pg 25-40, Chapter 3.
12.	Singh, A. (2015). Foundations of Human Development: A life span approach. ND: Orient Black Swan.
13.	Walsh, B. A., DeFlorio, L., Burnham, M. M., & Weiser, D. A. (2017). Introduction to human development and family studies. Psychology Press.

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Bachelor of Science - Home Science
(B.Sc.-H.Sc.) (Human Development) Semester (I)

Course Code	UH01MIHUD02	Title of the Course	Practical –Introduction to Human Development
Total Credits of the Course	02	Hours per Week	4

Course Objectives	1. To acquaint the students about growth monitoring &anthropometric measurements of a child. 2. To introduction and application of the basic tools of research in thefield of Human Development to the students.

Course Content		
Unit	Description	Weightage*(%)
1.	Preparation of an album on developmental milestones of children.	10
2.	Growth monitoring, Plotting growth monitoring chart and interpretation.	10
3.	Anthropometric measurements of a child: Ht. Wt., circumferences etc. (by the use of Salter Scale and MUAC strip).	10
4.	Observation of individuals of different stages of life with the help of checklist: Neonate/ Infancy/ Early childhood/ Late childhood/ Adolescence/ Young adulthood/ Middle age/ Late adulthood.	20
5.	Prepare a Questionnaire on different stages: Neonate/ Infancy/ Early childhood/ Late childhood/ Adolescence/ Young adulthood/ Middle age/ Late adulthood.	10
6.	The major tools of research in child study/ the field of human development: Case study, Interview, Questionnaire.	10
7.	Visit to an Anganwadi, ECCE centre/old age home/maternity ward and antenatal clinics.	10
8.	Carry out case studies of school going children	10
9.	Interviews of adolescent girls and boys to understand their life style and behaviour based on gender and socio-economic status.	10

Teaching-Assignments, Learning	Practical, Field visits, Interview method

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	The student will be able to develop an understanding about the discipline of Human Development.
2.	The student will acquire a detailed understanding of developmental milestones of Human development.
3.	The students will understand the characteristics, needs and significance of stages in the human life cycle.
4.	The student will acquire a detailed understanding of the broad perspectives of Human Development

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2.	Berk, L. (2013). *Child development*. 9th ed. Boston: Pearson. Chapter 3
3.	Bhangaokar, R.,&Kapadia, S. (in press). *Human Development Research in India: A historical overview*. In G. Misra (Ed.), Hundred years of Psychology in India. New Delhi: Springer.
4.	Feldman, R., &Babu, N. (2009*). Discovering the life span.* New Delhi: Pearson
5.	Kakar, S. (1998). *The inner world. Psychoanalytic study of childhood and society in India*. Delhi: Oxford University Press.
6.	Kapadia, S. (2011). *Psychology and human development in India*. Country paper. International Society for the Study of Behavioural Development Bulletin Number 2, Serial No. 60, pp.37-42.
7.	Keenan, T., Evans, S., & Crowley, K. (2016). *An introduction to child development*. Sage.
8.	Lightfoot, C., Cole, M., & Cole, S. (2012). *The development of children* (7thed.). NewYork: Worth Publishers.
9.	Santrock, J. W. (2011). *Life-span development*. New York: McGraw-Hill. Chapter 2, pg 52-78, Chapter 3, pg 79-109.
10.	Santrock, J. (2017). *A topical approach to life span development* (9th ed.). New NY.:Mcgraw-Hill Higher Education.
11.	Singh, A. (Ed.) 2015. *Foundations of Human Development*. New Delhi: Tata McGraw-Hill. Chapter 2, pg 25-40, Chapter 3.
12.	Singh, A. (2015). *Foundations of Human Development*: *A life span approach.* ND: Orient Black Swan.

On-line resources to be used if available as reference material
On-line Resources
https://www.sulross.edu/sites/default/files/sites/default/files/users/docs/education/counseling-hgd_7.pdf
https://www.who.int/childgrowth/publications/monitoring/en/

Bachelor of Science - Home Science
(Textiles and Clothing) Semester (I)

Course Code	UH01MITCL01	Title of the Course	Theory- Surface Ornamentation
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	1. To enable students develop knowledge on textile and apparel design its rough surface and structural ornamentation. 2. To enable students developing skills in enhancement of fabrics and garments.

Course Content		
Unit	Description	Weightage* (%)
1.	Surface design in Textiles/fabrics- Meaning, Importance and uses a. Printing b. Painting c. Appliqué work d. Basic stitches	50
2.	Surface design in apparels a. Accessories b. Hand and machine Embroidery c. Ruffles d. Braiding e. Ribbon and Laces f. Buttons	50

Teaching-Learning Methodology	Blackboard and smart boards, power point presentation, through teaching aids as charts, figure, discussion and analysis of actual garments.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%

2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	Understand and analyse basics of garment design.
2.	Acquire skills in appropriate selection of readymade garments.
3.	Select wisely clothes for family

Suggested References:

Sr. No.	References
1.	Chattopadhyay Kamaladevi (1975): Handicrafts of India, New Delhi, Indian Council of Cultural Relations.
2.	Gostelow Mary (1978) : Embroidery
3	Donger Kery, S.(1951): The Romance of Indian Embroidery, Bombay, Thacker Company Ltd.
4.	Pandit Savitri (1975) : Indian Embroidery Its Variginating Charm, Baroda, Faculty of Home Science.
5.	Neelima (2009).Fashion & textile design. New Delhi: Sonali Publications Ltd.
6.	Carr, H. &Pomery J.(1992).Fashion Design & Product Development. New Jersey: Blackwell Scientific Publication
7.	Tie- Dyed textiles of India, Traditions & Trade (2000); Murphy V & Gill; Abhishek Publications, Chandigarh.
8.	Modern Technology of Textiles Dyes & Pigments (1999); Panda M.; NIIIR, New Delhi.

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Bachelor of Science - Home Science
(Textiles and Clothing) Semester (I)

Course Code	UH01MITCL02	Title of the Course	Practical –Surface Ornamentation
Total Credits of the Course	02	Hours per Week	04

Course Objectives:	1. Understand, identify and acquire skills in basics of surface designing of fabric and apparels 2. Understand and analyse the garment components.

Course Content		
Unit	Description	Weightage* (%)
1.	Surface design features- a) Preparation of samples of Basic embroidery stitches Hand stitches-stem stitch, chain stitch, French knot stitch, laisy daisy stitch, satin stitch b) Preparation of samples using printing techniques- Block printing, stencil printing c) Preparation of samples using hand printing technique	50
2.	(a) Collection of textile components, its application & use- (a) Buttons, stud fastenings, eyelets, ribbon, lace, braid, buckle, chain, safety pins, rivets, toggles, zip (b) Designing and preparing a household article/ garment using any one of the above methods.	50

Note:
i) Prepare a portfolio of the motifs, embroidered & printed fabric samples.

Teaching-Learning Methodology	Demonstration, Actual sample collection and discussion Survey Assignment

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage

1.	Internal Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learnerwill be able to	
1.	Acquire skills in analysing the quality of construction and finishing of garments and its components

Suggested References:	
Sr. No.	References
1.	Sumathi. (2002). Elements of Fashion & Apparel Design. G.I. New Age InternationalLtd.
2.	Tate, S.L., &Edwards, M.S. (1982).The Complete Book of Fashion Design. NewYork: Harper and Row Publications.
3.	Chattopadhyay Kamaladevi (1975): Handicrafts of India, New Delhi, Indian Council of Cultural Relations.
4.	Gostelow Mary (1978) : Embroidery

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SARDARPATELUNIVERSITY
(UnderChoiceBasedCreditSystem)
NEPSyllabusforBachelorofScience(HomeScience)(Wi theffect from: June-2023-2024)

Bachelor of Science - Home Science(BasicScience)Semester(I)

CourseCode	UH01IDBSC01	Titleofthe Course	BasicScience-I (Theory)
TotalCredits oftheCourse	02	HoursperWeek	02

CourseObjectives:	1. Toimpartbasicinformationaboutthefundamentalsofchemistry. 2. Toprovideknowledgeregardingvarious acids,bases and salts. 3. Toexplaintheconceptsofcellstructureand reproduction inplants. 4. Toacquaintthestudentswithfundamentalsofheattransfer.

CourseContent		
Unit	Description	Weightage* (%)
1.	(a) FundamentalsofChemistry i. Scope,usefulnessandbranches ClassificationofmatterandLawsofchemicalcombination, ii. Structureofatom,Bohr'sModelofatom,ElectronicConfiguration, Atomic number, Mass number, Valence shell,andValenceelectrons. iii. ModernPeriodictable,Symbols,Radicals,ChemicalFormulas, ChemicalBondingandChemicalReactions iv. Acid,Baseandsalts/pH:Acid(Definition,Propertiesandtypes), Base (Definition, Properties and types), pH-Definition,pHScale,Explanation,UsefulnessofpH,Indicator,BufferSolution. v. Solution:TypesofSolution,MethodsforrepresentingConcentrationofsolution,Molarity,Normality,Formality,Molality,Percentage W/W,W/V,V/V,MoleConcept. (b) Temperatureanditsmeasures i. Calorimetric ii. Changeofstatewithapplications iii. Heattransfer-modesandexamples.	50

2.	BiologicalScience (a) Introduction:Definition,Salientfeatures,Importanceonthefrontiers of science and technology, major branches and briefhistoryofbiology. (b) Plantandanimalcell (c) Plantmetabolism: PhotosynthesisandRespiration (d) Transportof materials in living systems: Diffusion, Osmosis (e) PlantMorphology i. Form,Structureandfunctionofvegetativeandreproductivepartsofseed-bearingplants ii Unisexualandbisexualflowers. iii Pollination,fertilizationandreproductioninplants.	50

Teaching-LearningMethodology	Lectures, Interactive sessions, ICT enabled teaching and learningexperiences in terms of video lessons, Discussion, Project Work,Demonstrations,Practical guidance

EvaluationPattern		
Sr. No.	DetailsoftheEvaluation	Weightage
1.	InternalWrittenExamination(AsperCBCSR.6.8.3)	15%
2.	InternalContinuousAssessmentintheformofQuizzes,Seminars,Assignments,Attendance(As perCBCSR.6.8.3)	15%
3.	UniversityExamination	70%

CourseOutcomes:Havingcompletedthis course,thelearnerwillbeableto	
1.	Revivetheirknowledgeand understandthebasicconcepts inscience.
2.	Understand fundamental aspects of science and have a profound pillar for upcomingsyllabus.

SuggestedReferences:	
Sr. No.	References
1.	G.D.Tuli.,&B.S.Bahl.(1983).*IntermediateInorganicChemistry*.S.NewDelhi:RamNagar,Chand&CompanyLTD.

2.	P.L.Soni.,&KatyalM.(2007).*TextbookofInorganicChemistry*.Sultan:Chand&Sons.
3.	DuttaA.C.(1980).*AclassbookofBotany*.JohnBrown,Calcutta-13:Oxforduniversitypress.FaradayHouse.
4.	SharmaV.K.(1990).*BiologyclassXI*.Daryaganj:Publishers23.
5.	MaheshwariP.Manoharlal(1996).*BiologyPart1-7*.NewDelhi-110002: NCERT
6.	KennethW.(1975).*BasicPhysics*.UniversityofCalifornia,IrvinsNewDelhi : Oxford andIBHPublishingCo.

On-lineresourcestobeusedifavailableasreferencematerial
On-lineResources
http://www.edudel.nic.in/

SARDARPATELUNIVERSITY
(UnderChoiceBasedCreditSystem)
NEPSyllabusforBachelorofScience(HomeScience)(Wi theffect from: June-2023-2024)

Bachelor of Science - Home Science(BasicScience)Semester(I)

CourseCode	**UH01IDBSC02**	**Title of theCourse**	**Basic Science-I(Practical)**
TotalCredits oftheCourse	02	HoursperWeek	04

CourseObjectives:	1. TomakethemunderstandVolumetricandinorganicQualitativeanalysis. 2. Todemonstratepartsofmicroscopeandprepareslides. 3. Torecognizethevariouspartsoffloweringplants.

CourseContent		
Unit	Description	Weightage* (%)
1.	Volumetric analysis of strong acid [HCl] and weak acids [oxalicacid/Aceticacid] against strongbase[NaOH],andstrongbaseagainstweakacid.	10
2.	Qualitative analysis of water-soluble Inorganic CompoundscontainingonePositive and oneNegativeRadicals. 2 (a) Positive radicals- Ag^{+1}, Pb^{+2}, Cu^{+2}, Bi^{+3}, Al^{+3}&Negativeradicals-SO_4^{-},NO_3^{-1},Cl^{-} 2(b)Positiveradicals- Fe^{+3}, Fe^{+2}, Mn^{+2},Zn^{+2}, Ni^{+2}, CO^{+2}, &Negativeradicals-SO_4^{-},NO_3^{-1},Cl^{-} 2(c)Positive radicals-Ca^{+2},Ba^{+2}, Mg^{+2},NH_4^{+},K^{+}, &Negativeradicals -CrO_4^{-2},$Cr_2O_7^{-2}$,Cl^{-},Br^{-},I^{-},OH^{-}	10 10 10
3.	Tostudytheparts ofCompound Microscopeandits Uses.	10
4.	Topreparetemporaryslidesofonion peelsforstudyingthecell Structure.	10
5.	Topreparetemporaryslides ofRhoeo peelforstudyingthestomataandchloroplast.	05
6.	Tostudyatypical floweringplantbody.	05
7.	TostudyUnisexualandBisexualflowersthrough dissectionmethod(Dhatura,Hibiscus, Sunflower, Cucurbits)	10
8.	Plantphysiology:(PhotosynthesisandRespiration)	15

9.	To studyofOsmosis and Diffusion.	05

Teaching-LearningMethodology	Practical, ICTenabledteachingandlearningexperiencesintermsofvideolessonsDiscussion, BywayofDemonstrations.

EvaluationPattern

Sr. No.	DetailsoftheEvaluation	Weightage
1.	InternalWritten/PracticalExamination(AsperCBCSR.6.8.3)	15%
2.	InternalContinuousAssessmentintheformofPractical,Viva-voce,Attendance (As per CBCSR.6.8.3)	15%
3.	UniversityExamination	70%

CourseOutcomes:Havingcompletedthis course,thelearnerwillbeableto

1.	Applyscientificmethodologyand demonstrate theabilityto drawconclusions based onobservationand analysis.
2.	Recognizeandapplyconcepts andtheoriesofbasicbiological sciences.
3.	Demonstrateconnectionswithothersubjectareas.

SuggestedReferences:

Sr. No.	References
1.	Mendham, J., R, Denney., J Barnes., K, Thomas.Vogel's*textbook of QuantitativeChemicalAnalysis*. (6thed.).
2.	*AnAdvancedcourseinPracticalChemistry*,Ghoshal,Mahapatra,Nad.
3	Dutta A.C., John Brown, (1980) *A class book of Botany*, Calcutta: oxford universitypress.FaradayHouse.
4	SharmaV.K.(1990)*BiologyclassXI*,NewDelhi:23, DaryaganjPublishers.

SARDAR PATEL UNIVERSITY
Vallabh Vidyanagar Gujarat
(Reaccredited with 'A' Grade by NAAC (CGPA 3.11)
Syllabus with effect from the Academic Year 2023-2024

Course Code	UH01AEENG01	Title of the Course	Functional English
Total Credits	02	Hours Per Week	02

Course Content		
	Description	Weightage
1	**A Speaking:** 1. Self Introduction 2. Describe a person, place or situation 3. Greeting, Asking and giving information, requesting, asking for permission 4. Everyday conversations. **B Listening** 1. Simple Conversations based on familiar situations 2. Specific information 3. Announcements 4. Identify key words and phrases in short dialogues 5. Comprehend simple spoken information in familiar contexts. **C Reading:** 1. Read and understand basic vocabulary and sentences. 2. Identify familiar words and phrases in short texts. 3. Comprehend simple information from signs, labels, and menus. 4. Read and understand simple passages	50%
2	**A Writing** 1. Write answers to questions from Passages 2. Write leave application, apology and request letters 3. Write a Paragraph on the given Topic **B Grammar & Vocabulary** 1. Articles 2. Make correct use of Concord or Subject-Verb Agreement 3. Form words properly using prefixes/ suffixes i Prefixes / Suffixes ii Prepositions of Place, Time and Direction 4. Questions Tags	50%

Teaching-Learning Methodology	Using Audio-Video material Interactive method Group work and pair work Role Paly

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As Per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments (As Per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Give personal Information and follow simple instructions
2	Understand basic spoken conversations and longer discourse.
3	Use language functions for basic conversation, descriptions, talk about family, introduce themselves, for shopping, enquiry etc.
4	Read and understand simple texts.
5	Write formal letters to seek permission, leave and apology and write simple paragraphs.

Suggested References:	
Sr. No.	References
1.	Practical English Grammar, A. J. Thomas & A.V. Martinet
2.	Living English Structure, Standard Allen, Longman
3.	A Comprehensive English Language Course, Chandak Chattarji, Orient Longman
4.	Developing Communication Skills, K. Mohan and M. Banerji, McMillan, Chennai
5.	Grant Taylor. **English Conversation Practice**. (Tata McGraw Hill, New Delhi)
6.	R P Bhatnagar and R T Bell (1999) **Communication in English,** (Orient Longman, Hyderabad)
7.	**Books / Audio-Visual Course Recommended** **1) Learn English Teens –** (20 episodes, British Council) **2) Spoken English**— D Sasikumar and PV Dhamija. (With Audio Cassette) (Tata Mcgraw Hill Publication Ltd, New Delhi) (Units 1-13) **3) Keep Up Your English, BBC** by Standard Allan

Bachelor of Science - Home Science
(Foods & Nutrition) Semester (I)

Course Code SEC	UH01SECFN01	Title of the Course	Theory–Child Health, Safety and Nutrition
Total Credits of the Course	02	Hours per Week	02

Course Objectives	1. To understand the concepts of Growth , Development and Health. 2. To provide information about various parameters used to assess growth, health & nutrition status. 3. To provide information about Child Safety that influence physical growth & health. 4. To gain an insight the health & nutritional needs of child.

Course Content		
Unit	Description	Weightage*(%)
1.	(a)Growth and Development of Child i. Definition and Dimension of health and factors influencing health. ii. Assessment of child's health status. iii. Health and Care iv. Programmes for promoting child's health (ICDS) v. Immunization. vi. Infant Feeding Practices and Concerns vii. Issues of Feeding Toddlers and Young Children viii. Care and management of malnourished child ix. Health and Safety Education x. Injuries and Acute Illness	50
2.	(a) Nutrition and Young Children i. Meal Planning ii. Food Safety iii. Nutrition EducationCare and Nutrition of Children iv. Maternal health care. v. Lactation: - Importance of breastfeed, complimentary food. vi. Nutritional deficiency diseases. vii. Nutritional Guidelines viii. Basic Concepts of Nutrition	50

Teaching-Assignments, Learning	Lecture method ,Active learning methodology , Group discussions Method, Power Point Presentation,Audio Visual methods, Games, Seminar, Assignment, Quiz

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Students will gain knowledge of dimension of health and nutritional needs.
2.	Students will understand about physical growth and health and various factors influence it.

Suggested References:	
Sr. No.	References
1.	Berk, L.E. (2005). *Child development* (5th ed.). New Delhi: Prentice Hall
2.	Berk, L. (2013). Child development. 9th ed. Boston: Pearson. Chapter 3
3.	Bhangaokar, R.,&Kapadia, S. (in press). Human Development Research in India: A historical overview. New Delhi: In G. Misra (Ed.), Hundred years of Psychology in India.
4.	Feldman, R., &Babu, N. (2009). Discovering the life span. New Delhi: Pearson.
5.	Kakar, S. (1978). The Inner World: A Psycho-Analytic Study of Childhood and Society in India.
6.	Kapadia, S. (2011). Psychology and human development in India. Country paper. International Society for the Study of Behavioural Development Bulletin Number 2, Serial No. 60, pp.37-42.
7.	Keenan, T., Evans, S., & Crowley, K. (2016). An introduction to child development. Sage.
8.	Lightfoot, C., Cole, M., & Cole, S. (2012). The development of children (7thed.). NewYork: Worth Publishers.
9.	Santrock, J. W. (2011). Life-span development. New York: McGraw-Hill. Chapter 2, pg 52-78, Chapter 3, pg 79-109.
10.	Santrock, J. W. (2009). A topical approach to life-span development (custom ed.).
11.	Singh, A. (2015). Foundations of Human Development. New Delhi: Tata McGraw- Hill. Chapter 2, pg 25-40, Chapter 3.
12.	Singh, A. (2015). Foundations of Human Development: A life span approach. ND: Orient Black Swan.
13.	Walsh, B. A., DeFlorio, L., Burnham, M. M., & Weiser, D. A. (2017). Introduction to human development and family studies. Psychology Press.

On-line resources to be used if available as reference material
On-line Resources
Relevant entries on Wikipedia and Encyclopaedia Britannica

Multidisciplinary Course on Introduction to Indian Knowledge Systems

Course Code	UA01IKSFN01	Title of the Course	**Introduction to Indian Knowledge Systems**
Total Credits of the Course	2	Total Hours	30

Course Objectives:	The course will enable the student teachers to • Examin the concept of Bhartiya concept of spirituality and its various paths. • Examine the Bhartiya philosophy of life derived from Shashtras (ancient scriptures) and its implications for the Bhartiya lifestyle. • Analyse the concept of Indian Knowledge Systems (IKS) and emphasize its importance in preserving and disseminating indigenous knowledge. • Highlight the contributions of IKS to the world, particularly in the fields of mathematics and astronomy. • Explore the Bhartiya wisdom related to life sciences. • Study the science of architecture in ancient India with reference to significant sites. • Provide an overview of Ayurveda, including its concepts, branches, important books, and pioneers in the field. • Explore Bhartiya literature and the Bhartiya theory of aesthetics and rasa in various art forms.

Course Content		
Unit	**Description**	**Weightage* (%)**
1	**Spritual Bharat and Introduction to IKS** • Bhartiya Concept of Spirituality : Gyaan Marg, Bhakti Marg, Karm marg, Yog Marg • Bhartiya Spiritual Thinking Leading to Unity • Bhartiya Philosophy of Life Derived from Shashtras and its Implications for Bhartiy Life Style • Introduction to IKS and Its Importance • Introduction of Various Indian Knowledge Systems	50 %
2	**Contribution of IKS to the World** • Bhartiya Contribution in Mathematics and Astronomy • Bhartiya Wisdom related to Life Science: Physics, Chemistry, Botany • Bhartiy Science of Architecture with reference to Lothal, Mohan Jo Daro, Dholavira, Temple Architecture	50 %

	• Ayurveda : Concept, Branches, Books and Pioneers • Bhartiya Literature and Bhartiy Theory of Aesthetics and Rasa	

Teaching-Learning Methodology	Lecture-cum-discussion, Group Discussion, Presentations, Seminars, tutorials, Research Exercises

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination Internal Continuous Assessment in the form of Practical, Vivavoce, Quizzes, Seminars, Assignments, Attendance	30%
2.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Understand the diverse paths of spirituality in Bhartiya culture, including Gyaan Marg, Bhakti Marg, Karm Marg, and Yog Marg, and recognize their significance in individual and collective spiritual growth.
2.	Evaluate the Bhartiya philosophy of life derived from Shashtras and analyze its implications for contemporary Bhartiya lifestyles, fostering a deeper understanding of the connection between spirituality and everyday life.
3.	Explain the concept of Indian Knowledge Systems (IKS) and recognize its importance in preserving and promoting indigenous knowledge, fostering a sense of cultural identity and pride.
4.	Demonstrate knowledge of various Indian knowledge systems, such as Ayurveda, Vedic sciences, Yoga, Vedanta, and Jyotish, and appreciate their contributions to human knowledge and well-being.
5.	Recognize and appreciate the significant contributions of IKS to the world, particularly in the fields of mathematics and astronomy, and understand their impact on modern scientific advancements.
6	Analyze the Bhartiya wisdom related to life sciences, including physics, chemistry, and botany, as described in ancient texts, and understand their relevance and potential applications in contemporary scientific research.
7	Identify and analyze the unique architectural features and principles of ancient Indian sites like Lothal, Mohenjo-daro, Dholavira, and temple architecture, understanding their cultural, historical, and spiritual significance.

Suggested References:

- જયેન્દ્ર દવે . (૧૯૮૬). ભારતીય ચિંતકોનું શિક્ષણ ચિંતન. અમદાવાદ: યુનીવર્સીટી ગ્રંથ નિર્માણ બોર્ડ
- જુગલ કિશોર શર્મા. (૨૦૦૦). પુણ્યભૂમિ ભારત. કર્ણાવતી: સાધના પુસ્તક પ્રકાશન
- સ્વામી વિદિતાત્માનાન્દજી (૧૯૯૪). ભારતને ઓળખીએ. અમદાવાદ: રીલાયેબલ પબ્લીકેશન
- Radhakrishnan, S. (1992). The Hindu View of Life. HarperCollins Publishers.
- Singh, A. P., & Yagnik, S. (Eds.). (2019). Indian Knowledge Systems: Understanding the Human Uniqueness. Springer.
- Frawley, D., & Ranade, S. (2001). Ayurveda, Nature's Medicine. Lotus Press.
- Lad, V., & Frawley, D. (1986). The Yoga of Herbs: An Ayurvedic Guide to Herbal Medicine. Lotus Press.
- Dasgupta, S. (1947). A History of Indian Philosophy. Cambridge University Press.
- Pollock, S. (2006). The Language of the Gods in the World of Men: Sanskrit, Culture, and Power in Premodern India. University of California Press.
- Sarma, K. V. (2008). Indian Astronomy: A Source-Based Approach. National Council of Education Research and Training.
- Narlikar, J. V., & Padmanabhan, T. (Eds.). (2016). Development of Physics in India. Springer.
- Mahdihassan, S. (1982). Ancient Indian Botany: Its Bearing on Art and Literature. Deccan College Post-Graduate and Research Institute.

Online References :

- Indian Knowledge Systems Vol 1 https://iks.iitgn.ac.in/wp-content/uploads/2016/01/Indian-Knowledge-Systems-Kapil-Kapoor.pdf
- http://www.indianscience.org/index.html
- Traditional Knowledge Systems of India https://www.sanskritimagazine.com/india/traditional-knowledge-systems-of-india/
- https://orientviews.wordpress.com/2013/08/21/how-colonial-india-destroyed-traditional-knowledge-systems/
- https://www.thebetterindia.com/63119/ancient-india-science-technology/
- https://orientviews.wordpress.com/2013/08/21/how-colonial-india-destroyed-traditional-knowledge-systems/

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