



TRIBHUVAN UNIVERSITY
FACULTY OF HUMANITIES AND SOCIAL SCIENCES

M.A. IN HOME SCIENCE
(SPECIALIZATION IN FOOD AND NUTRITION)

COURSE OF STUDY
FOR
SEMESTER SYSTEM





Tribhuvan University
Faculty of Humanities and Social Sciences

Course of Study for Semester System
M.A. in Home Science
(Specialization in Food and Nutrition)

Prepared by:
Subject Committee of Home Science
Faculty of Humanities and Social Science
Tribhuvan University

Submitted to:
Dean Office
Faculty of Humanities and Social Sciences
Tribhuvan University



Introduction:

This course of study is designed to meet the needs of the students today, who expect more professional and focused academic discipline. This course of study is designed for four semesters of Master's Degree in Home Science. It begins with the concept of Home Science and its various related fields. The core subjects of Home Science are included in first semester whereas second, third and fourth semester is designed as specialization in two subjects like Food and Nutrition and Child Development and Gender Socialization. As this course is offered at the higher education, it is envisaged that people from diverse disciplines come together and enrich their knowledge and skill regarding the associated fields. This curriculum has been designed to produce efficient professionals particularly in Food and Nutrition and Child Development and Gender Socialization. This course is designed to impart both theoretical as well as research oriented practical knowledge.

This Master's degree program in Home Science enables the students to focus professionally in their chosen areas of interest. First semester covers the five core subjects of Home Science such as Elements of Home Science, fundamentals of Food and Nutrition, Fundamentals of Child Development, Public Health, Nutrition and Gender Socialization.

Home Science is an applied science with many practical and field experiences, which are essential part of the learning process. Therefore, each area of specialization is practical oriented.

The common vision, mission and goals have been included in this curriculum

Vision:

The vision of this course is to produce socially responsive and result oriented academic professionals in Home Science especially in Food and Nutrition and Child Development and Gender Socialization.



Mission:

The mission of this course is to furnish the students with theoretical, conceptual and practical knowledge by providing academic qualification and analytical skill in Home Science specialization in Food and Nutrition and Child Development and Gender Socialization.

Goals:

The goal of this course is to produce professionals and experts in food and nutrition and child development and gender socialization. After the completing of this course excellent educators, planner, trainers, facilitators and dietitians will be produced.

Specialization in Food and Nutrition

The course of specialization in Food and Nutrition has been designed to enhance the competency of students in the fields of Community Nutrition, Public Health Nutrition, Nutritional Biochemistry, Food Microbiology, Food Science and Dietetics. The curriculum provides both theoretical as well as practical knowledge in related field.

The goal of this specialization course is to produce skilled graduates in generating new knowledge and conducting research in the field of Food and Nutrition.

This course can seek opportunities in field like health care center, research center, educational institution, community based programs, organization, hospitals and many more. The graduates are able to work as nutritionist, dietitian, researcher, field officer, planner and health care facilitators.

Objectives of the specialization course

Overall objectives of the course are as follows

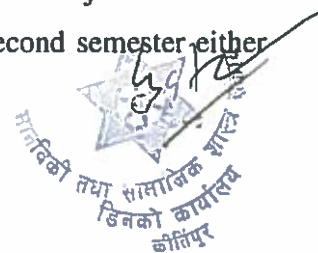
- to describe the basic concept of Home Science



- to define the principles of child development and stages of human growth and development
- to explain about nutritional health problems, nutritional transition, food security in developing countries, consumer health, food habits and cultural patterns of various ethnic groups
- to gain knowledge on public health, nutrition and gender issues
- to obtain fundamental knowledge regarding macro and micro-nutrients
- to gain knowledge about human physiology
- to assess the nutritional status of various age groups by using various approaches
- to describe nutritional biochemistry, food ecology and able to analysis nutrients of various food stuffs
- to develop skills in planning and providing suitable preventive therapeutic diet for various disease and disorder
- to define the importance of community based nutrition and role of community nutritionist
- to explain the objectives and principles of food composition table
- to use food composition table in meal planning to achieve nutrient intakes as specified by RDA
- to generate eligible professional in the field of nutrition and dietetics
- to describe importance of nutrition throughout the life cycle and also impart the knowledge
- able to become change agent in the community
- to explain methods, nature concept and scope of research
- able to conduct research work

Course Structure and Teaching Program:

In order to award M.A. Degree in Home Science, student will be required to complete 63 credits including 5 credits of thesis writing. The course of first semester is general subjects of Home Science. After students will be selecting one specialization subject from second semester either



Food and Nutrition or Child Development. After the successful completion of this course, the students must write a research based thesis under the guidance of supervisor.

Programs, Policies and Activities:

1. **Attendance:** Daily Class attendance is strictly required. Students have to maintain 80 percent attendance.
2. **Activities:** This course will comprise the followings teaching method:
 - Concerned Teachers have to Prepare Lesson Plan
 - Participatory teaching and learning in process
 - Lecture/Discussion/Demonstration
 - Research, documentation and dissemination(including data collection, report/thesis writing and presentation)
 - Field Trips/Field Survey
 - Seminar/Presentation
 - Internship
 - Lab based practical as well as experimental classes
 - Project work
3. **Eligibility for Admission:** Students holding a bachelor's degree in any discipline from any university recognized by Tribhuvan University shall be considered eligible to apply for M.A. in Home Science. An applicant seeking admission must take entrance examination as required by the Dean's Office, Faculty of Humanities and Social Sciences. Admission will be based strictly on merits and marks obtained in the Entrance Examination.
4. **Plagiarism:** Plagiarism refers to the appropriation of another's work and unacknowledged submission or incorporation of that work as one's offered for credit. Appropriation includes quoting or paraphrasing of author's work without giving credit



thereof. In case of plagiarism students will be penalized. Depending on the severity of the case punishment may range from failing the assignment to expulsion of the program. Students will be made aware about "Plagiarism" as an unethical and illegal academic act and faculty remember will facilitate student to respect intellectual property right. Plagiarism is compulsory before submitting the thesis.

5. **Research and Thesis:** In fourth semester, student will be required to do thesis, worth 6 credits. Research candidates will also have to go through an oral examination (Viva) and defend their positions. The oral examination will consist of 10% of the total thesis grade. In addition, students will need to write reports, prepare files and submit their project works to the related teachers throughout the whole semesters.

6. **Evaluation Scheme and Examination:** Internal examination (Two times in each semester) and final examination at the end of the semester will be conducted as per rules and regulation of Tribhuvan University.

- Regularity class performance and participation, assignment, practical, project works will be taken as evaluation criteria.
- Students must obtain pass marks in all subjects i.e. both theory and practical in order to graduate in Home Science.
- Each semester contains separate practical subject with separate code number. This subject is designed on the basis of related theoretical course.

7. **Faculty:** Highly qualified and experienced faculties will be involved to impart knowledge in subject matter with applying advanced and appropriated teaching methodology in order to develop requisite competencies in students.

Guest lecture, resource persons, experts from national and international institutions and universities will be invited as per need of the course for enhancing students' capability.



8. **Curriculum Syllabus:** This is a practical based specialization course. Each subject has both theoretical as well as practical course. Weight age has been given according to significance of the subject.



M.A. in Home Science
(Specialization in Food and Nutrition)

Syllabus of Semester System

First Semester

Course Code	Course Title	Unit Title	Credit	Teaching Hours
HS 501	Elements of Home Science	I -Home Science as Curricula II-Nutritional Health Problem in Nepal III – Nutrition transition IV – Food Habits and Consumer Health	3	48
HS 502	Fundamentals of Food and Nutrition	I – Introduction of Food and Nutrition II- Macro –Nutrients III- Micro- Nutrients IV- Recommended Dietary Allowances (RDAs) and Dietary Guidelines	3	48
HS 503	Fundamentals of Child Development	I – Introduction to Child Development II- Heredity and Environment in Development III – Foundation Child Development IV – Influencing Factors in Child Development	3	48
HS 504	Public Health Nutrition and Gender Gevelopment	I – Public Health Concerns II - Basic Concept of Sex and Gender III – Reproductive Health and Healthcare Challenges IV – International Instruments on Public Health	3	48
HS 505	Practical	I – Practical of Elements of Home Science II - Practical of Fundamentals of Food and Nutrition III - Practical of Fundamentals of Child Development IV – Practical of Public Health, Nutrition and Gender Development	3	48
			15	240



Second Semester

Course Code	Course Title	Unit Title	Credit	Teaching Hours
HSFN 551	Applied Human Physiology	I-Cell structure, function and digestive system II-Respiratory and Circulatory system III- Endocrine and Excretory System IV-Immune System, Muscular-skeletal and Reproductive system	3	48
HSFN 552	Community Nutrition	I-Community Based Nutrition Education II-Nutritional Assessment III-Food Security and Sustainability in Food System IV-Nutrition Policies and Programs	3	48
HSFN 553	Nutritional Biochemistry-I	I-Introduction II-Enzymes and Hormones III-Immunology IV-Nucleic acids	3	48
HSFN 554	Food Microbiology and Food Safety	I-Introduction of Food Microbiology II-Food Spoilage and Preservation III-Importance of Food Microbes in Health IV-Food Safety and Quality Control	3	48
HSFN 555	Practical	I – Practical of Applied Human Physiology II- Practical of Community Nutrition III – Practical of Nutritional Biochemistry IV – Practical of Food Microbiology and Food Safety	3	48
Total			15	240



**M.A. in Home Science
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Syllabus of Semester System

Third Semester

Course Code	Course Title	Unit Title	Credit	Teaching Hours
HSFN 601	Nutrition Throughout the Life Cycle	I-Nutrition during Pregnancy and Lactation II Nutrition during Childhood III Nutrition during Adolescence IV Nutrition during Adult and Old age	3	48
HSFN 602	Nutritional Biochemistry-II	I- Macronutrients and its metabolic pathway II- Inborn error of metabolism III - Metabolic Regulation and Biosynthesis IV- Minerals, Vitamin and Interrelationship	3	48
HSFN 603	Advance Human Nutrition	I- Water and Electrolytes Balance II- Nutrition and infection III- Dietary Reference Intakes (DRIs) and Food Exchange List System IV-Types of studies used in Nutrition Research	3	48
HSFN 604	Research Methodology	I-Introduction to Research II-Literature Review and Theoretical Framework III-Research Design and Methods IV-Data Processing and Analysis	3	48
HSFN 605	Practical	I-Practical of Nutrition Throughout the Life Cycle II-Practical of Nutritional Biochemistry-II III- Practical of Advance Human Nutrition IV- Practical of Research Methodology	3	48
Total			15	240



**M.A. in Home Science
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Syllabus of Semester System**

Fourth Semester

Course Code	Course Title	Unit Title	Credit	Teaching Hours
HSFN 651	Nutrition and Dietetics	I- An Overview of Therapeutic Nutrition II-Methods of Nutritional Management III-Diet, Nutrients and Drug Interaction and Dietary Supplements IV-Functional Foods and Vegetarian Diets	3	48
HSFN 652	Clinical Dietetics	I-Heart diseases, Gastrointestinal Tract Disorders and Renal Disorders II- Metabolic disorders and metabolic stress III- Dietary Management in Bone Diseases, Pulmonary Disorders and Neurological Disorders IV- Special Pediatric Nutrition Care and Management	3	48
HSFN 653	Advance Nutritional Analysis	I- Nutritional Analysis and Proximate Analysis II – Food Adulteration and Food Labeling III- Exercise Physiology IV-Effect of Cooking and Processing on Nutrients	3	48
HSFN 654	Practical	I-Practical of Nutrition and Dietetics II-Practical of Clinical Dietetics III-Practical of Advance Nutritional Analysis	3	48
HSFN 655	Thesis	Student Will Write, Submit and Present Thesis Within the Time	6	96
Total			18	288


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कोटिपुर

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Central Department of Home Science
Tribhuvan University
2044

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शान्तिकोष तथैव सामाजिक शास्त्र संकाय
कोटिपुर

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Internal Evaluation

1	Attendance - Class Attendance is Compulsory	5%
2	Internal Evaluation - Class performance, tests and Internal Assessment will be taken two times in one semester, Homework Assignments will be given throughout the semester, . workshop, Quiz and Talk Program etc.	35%


शान्ति परिषद्को कार्यालय
कीर्तिपुर



Central Department of Home Science
Tribhuvan University
2044



मानविकी तसम सामाजिक शास्त्र
विनको कार्यालय
कीर्तिपुर

M.A. in Home Science
(Specialization in Food and Nutrition)

Syllabus of Semester System

First Semester

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			15	240


 प्राज्ञिक परिषदको कार्यालय
 कीर्तिपुर



 Central Department of Home Science
 Tribhuvan University
 2044



 भारतीय तथा सामाजिक शास्त्र विभाग
 दिनको कार्यालय
 कीर्तिपुर


ELEMENTS OF HOME SCIENCE

Course Code: HS 501

Credit Hours: 3
Teaching Hours: 48

Course Description:

This course provides the knowledge on Home Science as an academic discipline, exploring its history, concepts, and core domains and their importance. It aims to address nutritional health problems related to malnutrition. In addition, the course emphasizes on consumer health and factors affecting consumer behaviors.

Course Objectives:

On completion of this course, the students will be able to:

- define the concept, scope, areas of home science, and its challenges
- analyse nutritional health problem like malnutrition and its causes
- explain about consumer health and factors affecting consumer behavior

Unit I- Home Science as Curricula:

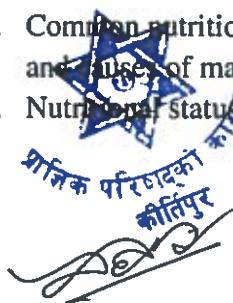
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1. History of Home Science, concept, changing concept and importance
2. Domains of Home Science and their scope (Food and Nutrition, Child Development, Home Management, Textile, and Extension Education)
3. Challenges of Home Science as an academic subject in higher education
4. Myths and facts about Home Science as an academic subject

Unit II-Nutritional Health Problem in Nepal

14

1. Definition of nutritional status-under-nutrition, desirable nutrition and over nutrition
2. Common nutritional problems-malnutrition and nutritional related conditions, forms and causes of malnutrition
3. Nutritional status of children and mothers



4. Hidden hunger-problems and causes of micronutrient deficiency (Iron, Iodine, Folate, Calcium, Vitamin A deficiency and Vitamin B₁₂ deficiency)

Unit III–Nutrition Transition

12

1. Definition of nutrition transition and factors influencing the nutrition transition
2. Dietary changes during the nutrition transition
3. Potential health problems-double and triple burden of malnutrition
4. Policies and programs reduce negative effects of the nutrition transition

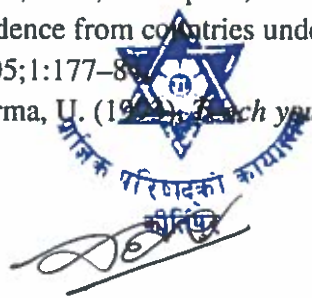
Unit IV- Food Habits and Consumer Health

12

1. Concept of consumer and consumer health, history and significance of consumer health
2. Consumer behaviors- factors affecting food consumption, food availability, income, food price, demographic factors, environmental factors, biological factors, social-cultural factors, health beliefs and practices
3. Food habits and its influencing factors-social, psychological, cultural and economic factors
4. Food habits of diverse ethnic groups, food fads and its impact on health

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- Bhat, B. Vishnu. *Protein, energy, malnutrition*. New Delhi: Peepee Publishers and Distributors, 2008.
- Caballero, B and Popkin, B . 2002. *The Nutrition Transition Diet and Diseases in the Developing World*. First Edition Academic Press: 2002.
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- Sproesser, G, Ruby M. B, Arbit N, Akotia, C. S, dos Santos Alvarenga M, Bhangaokar R. Understanding traditional and modern eating: the TEP10 framework. *BMC Public Health*. 2019;19:1–14
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- Yang Z, Huffman S. L. Nutrition in pregnancy and early childhood and associations with obesity in developing countries. *Matern Child Nutr*. 2013;9:105–19



Signature

FUNDAMENTALS OF FOOD AND NUTRITION

Course Code: HS 502

Credit Hours: 3

Teaching Hours: 48

Course Description:

This course is designed to impart basic theoretical as well as practical knowledge on food and nutrition. The course covers the basic concept of food and nutrition, macro-nutrients, micro-nutrients, balanced diet, recommended dietary allowances (RDAs), food pyramid, and plate method. It also focuses on dietary guidelines of different organizations.

Course Objectives:

On completion of this course, students will be able to:

- describe food and nutrition, its functions
- explain macro- and micro- nutrients and their classifications, functions, deficiency syndromes and sources
- define recommended dietary allowances (RDAs), balanced diet, food pyramid and plate method
- discuss about the dietary guidelines of different organizations.

Unit I–Introduction of Food and Nutrition

10

1. Introduction of food and its types and functions
2. Nutrition and its objectives
3. Role of nutrition in health and development
4. Balanced diet, Food groups, My food pyramid and plate method

Unit II– Macro-Nutrients

14

1. Definition of macro-nutrients and their classification
2. Carbohydrates - classifications, functions, requirements, deficiency syndromes and dietary sources.



3. Fats - classifications, functions, requirements, deficiency syndromes and dietary sources.
4. Proteins - classifications, functions, requirements, deficiency syndromes and dietary sources.

Unit III- Micro-Nutrients

14

1. Definition of micro-nutrients.
2. Vitamins – classifications of vitamins
 - I. Fat soluble vitamins – A, D, E and K
 - II. Water soluble vitamins – B Groups vitamins and vitamin C
3. Functions, requirements, dietary sources and deficiency Syndromes of vitamins
4. Minerals – types of minerals, their functions, requirements, dietary sources and deficiency syndromes (Calcium, Phosphorus, Iodine, Iron, Sulphur, Magnesium, Zinc, Copper, Fluoride, Manganese, Chromium).

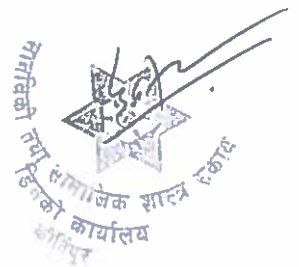
Unit IV- Recommended Dietary Allowances (RDAs) and Dietary Guidelines 10

1. Introduction of RDAs and uses of RDA, RDAs of different Nutrients (ICMR, 2022).
2. Factors affecting RDA – age, sex, body Size, physiological state and type of works
3. Dietary guidelines and its objectives
4. Dietary guidelines of different organization-World Health Organization, Food and Agriculture Organization, Indian and National dietary guidelines



References:

- Fleck Henrietta, 1991. *Introduction of Nutrition*. Second Edition, the Macmillan Company, 866 Third Avenue, New York 10022. Pg. 315.
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- Subhangini A Joshi, Tata McGraw- Hill publishing Company Ltd New Delhi. *Nutrition and Dietics* :



FUNDAMENTALS OF CHILD DEVELOPMENT

Course Code: HS 503

Credit Hours: 3

Teaching Hours: 48

Course Description:

This course is designed to provide basic knowledge and understanding of child development and foundation of human life. It also provides knowledge and the importance of heredity and environment in the development process and foundation of child development as well as preparation for the pregnancy. This course will help the students to learn child development in the parental period.

Course Objectives:

On completion of the course students will be able to:

- explain the concept of child development.
- present influence of environment and heredity in child development.
- explain the foundation of human life.
- present influencing factors in child development

Unit I - Introduction to Child Development

14

1. Definition and importance of child development-historical foundation from medieval to twenty-first century
2. Human development - different stages of human development, characteristic according to the stages
3. Life span perspective - issues on development, (nature/nurture, active/passive, stability/change, continuity/discontinuity)
4. Growth and development - definition, holistic development, child development principles, maturation and learning



Unit II-Hereditry and Environment in Development

12

1. Hereditry-concept, principles, theories, and disorder
2. Environment-the context of the child (ecological system- geography, climate, residential area, and surroundings)
3. Hereditry vs environment - influence in development genetic disorders and treatment, social/cultural practices on child rearing
4. Maturation and learning- concept of maturation and learning, effect of maturation and learning

Unit III- Foundation Child Development

10

1. Conception - beginning of life, ovulation and fertilization of reproductive cell, ovum and spermatozoon, importance of fertilization
2. Preparation to pregnancy - maturation of parents, financial, physical, psychological, health, genetic counseling, IVF (in-vitro fertilization), AI (artificial inseminations) surrogacy
3. Birth spacing - family planning, abortion and its effect, siblings counseling
4. Neo-natal development - types of child birth, medication, pre-natal environment, length of gestation period, conditions of emergency care

Unit IV- Influencing Factors in Child Development

12

1. Child rearing practice and its impact in later life (democratic, autocratic and permissive) father's role in child rearing
2. Maltreatment - types and impact of maltreatment and influence of media towards children
3. Importance of brain development - windows of opportunities and stimulating role of parents
4. Definition and principles of child rights (CRC) convention rights of the child (protection, participation, survival, and development), implication of child rights in Nepal.



Signature

References:

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- स्वास्थ्य सेवाविभाग,(२०७४), नि:शुल्कनवजातशिशु उपचार सेवाकार्यक्रमकार्यविधिनिर्देशिका २०७४ नेपाल सरकार स्वास्थ्यमन्त्रालय स्वास्थ्य सेवाविभागबाल स्वास्थ्यमहाशाखा टेकु काठमाडौं नेपाल
- स्वास्थ्यविभाग ,(२०६५) ,आमातथाशिशु सुरक्षाकार्यक्रमकार्यक्रम कार्यविधिनिर्देशिका २०६५, तेश्रो संसोधन २०७३, नेपाल सरकार र स्वास्थ्यतथा जनसंख्या मन्त्रालय स्वास्थ्य सेवाविभाग परिवार कल्याण महाशाखा टेकु काठमाडौं नेपाल ।
- स्वास्थ्य सेवाविभाग समुदायमाआधारित कुपोषण व्यवस्थापनकार्यक्रम ।महिला स्वास्थ्य स्वयं सेविकाहरुको तालिमको लागि प्रशिक्षण सहयोगीनिर्देशिका नेपाल सरकार स्वास्थ्यतथा जनसंख्यामन्त्रालय स्वास्थ्य सेवाविभाग टेकु काठमाडौं नेपाल ।



PUBLIC HEALTH NUTRITION AND GENDER DEVELOPMENT

Corse Code HS 504

Credit Hours: 3
Teaching Hours: 48

Course Description:

This course is designed to introduce the students to the theoretical knowledge of public health. The course intends to provide information about various public health issues, rural and urban health issues including reproductive health as well as changing concepts of gender, and reproductive health.

Course Objectives:

On the completion of this course, students will be able to:

- describe the principles and practices of public health, disease prevention, epidemiology, and immunization
- facilitate the gender issues
- explain the issues of reproductive health
- analyze international instruments on public health

Unit I- Public Health Concerns

12


1. Principles of public health and diseases prevention, pandemic and its impact on health
2. Epidemiology of communicable and non-communicable disease- TB, diarrhea, typhoid, jaundice, pneumonia, dysentery, hypertension, diabetes, HIV/AIDS, heart diseases and renal failure
3. Infection and immunization, role and importance of immunization in various age groups up to 5 years and pregnancy period) -BCG, polio, measles, DPT, MMR, hepatitis and TT
4. Climate change and health- antimicrobial resistance, respiratory health concerns

Unit II- Basic Concept on Sex and Gender

12

1. Concept, definition and differentiation between sex and gender, cross cultural and institutional explanation on perspective on gender
2. Meaning and origin of patriarchy, private and public patriarchy, brahmnical patriarchy, and capitalistic patriarchy
3. Theories of patriarchy, status of women in different historical periods, changing forms of patriarchy in south Asia
4. Gender socialization, theories of gender, changing forms of gender relations

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Tribhuvan University
2044



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Unit III- Reproductive Health, and Healthcare Challenges

14

1. Concept, meaning and definition of reproductive health, major components and importance of reproductive health
2. Understanding safe motherhood-objectives to reduce MMR, IMR, and USMR, and uphold reproductive rights as women's rights in Nepal
3. Sexual health, infertility and sexual health, prostate health, family planning, healthcare access and quality
4. Globalization impact on reproductive health and healthcare practices in Nepal

Unit IV- International Instruments on Public Health:

10

1. Alma-ata declaration (1978); universal declaration of human rights (1948) (Article 25); World health organization (WHO) constitution (1946); global Action plan for healthy lives and well-being for all (2018)
2. International covenant on economic, social, and cultural rights (1966) (article 12); sustainable development goals (SDGs) (2015) (Goal 3); international health regulations (2005)
3. Convention on the rights of the child (CRC) (1989); convention on the Elimination of all forms of discrimination against women (CEDAW) (1979)
4. United nations declaration on the rights of indigenous peoples (UNDRIP) (2007)

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- WHO South-East Asia Regional Office (SEARO). (2017). *Strengthening health systems for universal health coverage and sustainable development goals in South-East Asia*. New Delhi: WHO SEARO.



PRACTICAL

Course Code: HS 505

Credit Hours: 3

Teaching Hours: 48

Course Description:

This course is completely practical oriented. The practical course is designed on the basis of theory course related to the first semester. This course provides practical knowledge about food habits of different ethnic groups, food adulteration, balance diet, plate method, food Products fortified with minerals and vitamins, the functions and deficiency syndromes of macro-nutrients. It also provides knowledge about the caring of new born in different ethnic group. It focused the importance of immunization programs.

Course Objectives:

On the completion of this course, students will be able to:

- assess food habits of different ethnic groups
- list out the food items belong to macro -and micro-nutrients
- define the characteristics of food pyramids and plate method
- list out food products in a community supermarket that are fortified with
- minerals and vitamins
- provide knowledge about the caring of new born in different ethnic groups
- define about infections and immunization

Unit I - Practical of Elements of Home Science (HS 501)

12

1. Write a report on situation of Home Science subject in higher education and find out the myths and facts about Home Science subject
2. Presentation on situation analysis of emerging burden of malnutrition and Hidden hunger
3. Presentation on policy and strategy to reduce effects of the nutrition transition.
4. Identify at least three different food habits or food fads/ myths and present their impact on health



Unit II - Practical of Fundamentals of Food and Nutrition (HS 502)

12

1. Make a chart of nutrients classification based on function and composition.
2. List out the dietary sources of macro nutrients and contain nutrients in 100 gm.
3. List out the dietary sources of micro nutrients and contain nutrients in 100 gm.
4. Develop a RDA chart for different age group.
5. Collect different food pyramid and define their specific significance
6. Prepare the file and submit the file to the concern teacher
7. External examiner is not required, internal evaluation will be done by concerned teachers

Unit III- Practical of Fundamentals of Child Development (HS 503)

12

1. Students will monitor the growth of a child using growth chart
2. Field visit-report writing about the caring practices of newborn in different ethnic groups.
3. Prepare a report about impact of media on parenting
4. Compulsory to attend each practical class and submit the practical file.
5. External examiner is not required, internal evaluation will be done by concerned teacher

Unit IV- Practical of Public Health Nutrition and Gender Development (HS 504)

12

1. Students are required to prepare immunization schedule chart.
2. Students need to assess the women's status in different ethnic groups regarding decision making under the guidance of teacher.
3. Field visit - Rehabilitation center (Need to prepare, present and submit the report).
4. Compulsory to attend each practical class and submit the practical file.
5. External examiner is not required, internal evaluation will be done by concerned teacher.



M.A. in Home Science
(Specialization in Food and Nutrition)

Second Semester

Course Code	Course Title	Unit Title	Credit	Teaching Hours
HSFN 551	Applied Human Physiology	I-Cell structure, function and digestive system II-Respiratory and Circulatory system III- Endocrine and Excretory System IV-Immune System, Muscular-skeletal and Reproductive system	3	48
HSFN 552	Community Nutrition	I-Community Based Nutrition Education II-Nutritional Assessment III-Food Security and Sustainability in Food System IV-Nutrition Policies and Programs	3	48
HSFN 553	Nutritional Biochemistry-I	I-Introduction II-Enzymes and Hormones III-Immunology IV-Nucleic acids	3	48
HSFN 554	Food Microbiology and Food Safety	I-Introduction of Food Microbiology II-Food Spoilage and Preservation III-Importance of Food Microbes in Health IV-Food Safety and Quality Control	3	48
HSFN 555	Practical	I – Practical of Applied Human Physiology II- Practical of Community Nutrition III – Practical of Nutritional Biochemistry IV – Practical of Food Microbiology and Food Safety	3	48
Total			15	240



APPLIED HUMAN PHYSIOLOGY

Course Code: HSFN 551

Credit Hours: 3

Teaching Hours: 48

Course Description:

This course provides fundamental knowledge on human anatomy. It also enhances student's ability to understand and demonstrate different systems of the body and their interactions and to be able to understand pathophysiology of commonly occurring diseases.

Course Objectives:

On completion of this course, the students will be able to:

- describe the current state of knowledge about the functional organization of the human body
- describe physiological changes at different stages of life cycle organs of the body
- acquire basic theoretical and practical knowledge on the functioning of different system.
- investigate in laboratory
- correlate clinically, physiologically with various disorders and their pathogenesis

UNIT I- Cell structure, function and Digestive System

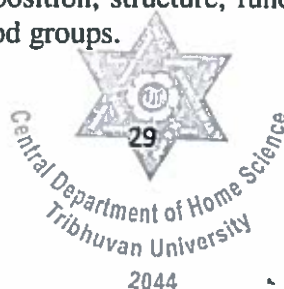
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1. General cell structure, structure and functions of the organelles, cell membrane, structure and function of tissue, organs and systems.
2. Structure of gastrointestinal tract and accessory organs, digestive and absorptive function of gastrointestinal tract.
3. Role of liver, pancreas and gall bladder and their dysfunction, hormones of gastrointestinal tract.
4. Mechanism of absorption of carbohydrates, proteins and fats.

UNIT II- Respiratory and Circulatory system

12

1. Structure and function of lungs, physiology of respiration, exchange of gases and transport through blood.
2. Structure and function of heart, blood vessels
3. Blood – characteristics, composition, structure, function and life span of components of blood, blood clotting and blood groups.



4. Erythropoiesis and factors controlling erythropoiesis, mechanism of blood coagulation, structure and functions of heart, cardiac cycle, cardiac output, blood pressure and its regulation

UNIT III- Endocrine and Excretory System

12

1. Structure and function of endocrine glands, mechanism of hormonal action, control of hormonal secretion.
2. Function and different syndromes resulting from hypo and hyper secretion of endocrine gland- pituitary, adrenal, thyroid, ovary, testes, pancreas, parathyroid.
3. Structure and functions of kidney- structure of nephron, endocrine function of kidney
4. Physiology of urine formation, structure and function of skin and regulation of temperature of the body.

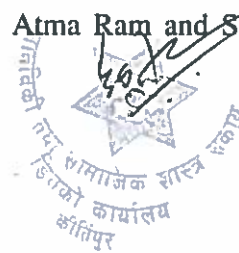
UNIT IV- Immune System, Musculo-skeletal and Reproductive System

12

1. Cell mediated and humeral immunity. antibody formation
2. Structure and function of bone, cartilage and connective tissue, types of muscles, structure and function.
3. General anatomy of female and male reproductive system, menstrual cycle, spermatogenesis, oogenesis, process of reproduction, pregnancy and parturition.
4. Mammary glands-structure and lactation, physiological changes in menopause .

References

- Martini, F.H. and Nath, J. L. 2009. Fundamentals of Anatomy & Physiology. Pearson Benjamin Cummings. USA.
- Bipin Kumar. 2001. Human Physiology. Campus Book International, New Delhi.
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- J.E. Park and K. Park (2009). *Park's Textbook of Preventive and Social Medicine*, 20th edition. M/s Banarsi Das Bhanot, Jabalpur.
- Ross and Willson. *Foundation of Anatomy and Physiology*, Medical Division of Longman Group Ltd.
- Yash Pal Bedi. *A Handbook of Social and Preventive Medicine*, Atma Ram and Sons. Current edition



COMMUNITY NUTRITION

Course Code: HSFN 552

Credit Hours: 3

Teaching Hours: 48

Course Description

This course provides overview of community based nutrition education program. It also emphasizes the important issues related to planning, executing, evaluating nutrition education programs. Student will gain in-depth knowledge on nutrition assessment tools. They will get an opportunity to discuss the strength and weakness of different tools and able to apply these tools to interpret nutritional assessment data. This course encapsulates the concept Food Security and Causative Factors of Food Insecurity in Nepal.

Course Objectives

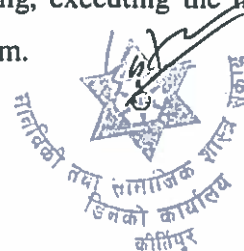
On completion of this course, the students will able to:

- explain nutrition education models and describe about the community based nutrition education programs
- able to use different nutritional assessment tools to assess nutritional status of individuals and groups
- describe the food security and causative factors of food insecurity.

Unit I-Community Based Nutrition Education

12

1. Nutrition education-Definition and its objectives, models of nutrition education: Old models of nutrition education (Information delivery and KAD) , the new model of nutrition education
2. Program planning models- Models and theories used in nutrition programming
3. Community based nutrition education – Principles of planning, executing the nutrition education program and problems of nutrition education program.
4. The role of Community nutritionist in information delivery



References

- Frankle and Owen (1993) "*Nutrition in the community*" The art of delivering services, Mosby-Year Book
- Gopalan, C. et al (1989) "*Nutrition value of Indian foods*" ICMR.
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- Jelliffe, D.B. and jelliffe E.F.P. (1989) "*Community nutritional assessment with special reference to less technically developed countries*" Oxford University Press,.
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NUTRITIONAL BIOCHEMISTRY I

Course Code: HSFN 553

Credit Hours: 3

Teaching Hours: 48

Course Description:

This course is designed to create the basic knowledge of enzymes, roles of hormones and mechanism of their action and influence on human physiology. It also focuses on principles and issues related to nutrition and immunology. It also gives knowledge on nucleic acid including DNA and RNA.

Course Objectives:

On completion of this course, the students will be able to:

- Explain chemical structure, concept of physic and chemical phenomenon, biophysics terminologies
- Detect the enzymatic activity and roles of hormones
- Describe basic principle of immunology
- Explain about nucleic acid and biochemical functions of DNA and RNA
- Acquire skills on preparation of solution

Unit I- Introduction

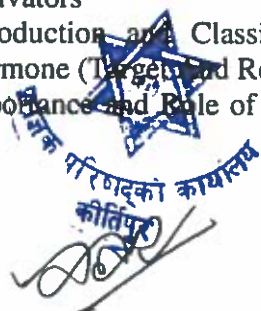
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1. Introduction to Nutritional Biochemistry
2. Chemical structure, classification and function of biomolecules
3. Concept of physic, chemical phenomenon: Acidity, Alkalinity, pH (Hydrogen Ion Concentration)
4. Biophysics terminology: colloids, osmosis, diffusion, electrolytes, permeability of membrane, viscosity, surface tension, buffer and its physiological importance

Unit II-Enzyme and Hormones

12

1. Introduction, Properties and Classification of Enzymes, Mechanism of Enzymatic Action (Lock and Key Model and Induced Fit Model)
2. Coenzymes and Cofactors, Physical Factors Influencing Enzyme Activity (Inhibitors and Activators)
3. Introduction and Classification of Hormones, Chemical and Biological Action of Hormone (Target and Receptor Cell Concept)
4. Importance and Role of Pituitary, Hypothalamus, Thyroid, Parathyroid, Pancreatic, Sex



and Adrenal Hormone. Hormonal Imbalance

Unit III- Immunology

12

1. Basic Principle of Immunology
2. Biology of Immune System and its Role in Health and Disease
3. Antigen, Antibody
4. Types of Immunoglobulin

Unit IV-Nucleic acids

12

1. Structures of nucleotides, ribose and deoxyribose sugars, concept of nucleosides
2. Structure and Classification of Nucleic Acid, biochemical function of DNA and RNA
3. Genetic Code
4. Replication, Transcription and Translation

References:

- Deajyoti Das, 1980, *Biochemistry*, Academic Pub. India.
- Harold A. Harper, 1973, *Physiological Chemistry*; Lange Medical Pub.
- Hawk P. Oser B.K. and Summenson W.H., 1965, *Practical Physiological chemistry*, Tata Mc. Grew Hill;
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FOOD MICROBIOLOGY AND FOOD SAFETY

Course Code: HSFN 554

Credit Hours: 3

Teaching Hrs: 48

Course Description

This course deals with the fundamental knowledge on general characteristics of common food microbes and the factors affecting their presence in food as well as their capacity to survive and grow. It provides informative base for understanding recent development in controlling microbiological quality of food. It also helps to enrich student's ability to understand the food borne hazard as well as increase student's competence about the role of pathogenic and non pathogenic microorganisms in human welfare and food processing. The course will acquaint the students with knowledge on identification and cultivation of microbes from laboratory experiment.

Course Objectives:

On completion of this course, the students will be able to:

- Acquire basic knowledge on microbiology
- Gain knowledge on the nature of micro-organism involved in food spoilage as well as preservation
- Explain the importance of food microbes in health and role of microbes in causing public health hazard due to food contamination
- Explain food safety and quality control during food processing, GMP, ISO

Unit I-Introduction of Food Microbiology

12

1. Introduction of food microbiology and history of food microorganism in food with reference to the role of Louis Pasteur, Robert Koch and Appert, General characteristics of important food microbes (Bacteria , Fungi, Viruses)
2. Sterilization and Disinfection: Definition, Physical (Heat, Radiation and Filtration) and Chemical Agents (Alcohol, Detergents And Halogens)
3. Cultivation of Microorganisms, Media and its types
4. Factors affecting the growth of microorganisms- Intrinsic and extrinsic factors



Unit: II -Food Spoilages and Preservation

12

1. Food Spoilage: Definition of food spoilage, Types- microbial spoilage (bacteria, fungi: yeasts, molds), Enzymatic food spoilage, Spoilage by chemical reaction, Spoilage by pests, Factors affecting the food spoilage (Intrinsic and extrinsic factors of food spoilage)
2. Spoilages of Different Kinds of Food: Cereals Products, Vegetables and Fruits, Milk and Milk Products, Meat and Meat Products and Poultry Products.
3. Food contamination: Definition of food contamination, sources of food contamination, cross-contamination and its preventive measures
4. Food Preservation: Definition, Principles of Food Preservation and Common Techniques Applied for Preservation of food; Bacteriostatic and Bactericidal Method.

Unit III- Importance of Food Microbes in Health

12

1. Importance Of Microbes In Biotechnology
 - Genetically Engineered Organism
 - Probiotics and Single Cell Proteins
2. Microbial Role in Food Fermentation Process
3. Traditional Nepali Fermented Food and its Health Benefits
4. Food Borne Illness: Types, causative agent, sign and symptoms and preventive measures.

Unit IV- Food Safety and Quality Control

12

1. Control of microbiological quality of food at sources
2. Assessing microbiological quality of food: Indicator organisms, Microbiological standards (Qualitative Microbial Risk Assessment (QMRA)
3. Principles of Hazard Analysis and Critical Control Points (HACCP)
4. Code of Good Manufacturing Practices (GMP), Quality Control System and International Organization For Standardization (ISO): ISO 9000 Series, ISO22000 Series

References:

- Adams, M. R and Moss, M. O, 1995, *Food Microbiology*, New Age International publishers, New Delhi.
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- Jay, J.M., 1986, *Modern Food Microbiology*, 3rd Ed, VNR, New York.
- Robinson, R.K. 1983, *Dairy Microbiology, Applied Science*, London.
- Jay, J.M., Loessli, D.A., Martin J., (2005) *Modern food Microbiology*, 7th Ed. Springer.



Unit III- Practical of Nutritional Biochemistry (HSFN 553)

12

1. Use of Laboratory Equipments: Colorimetry, pH Meter
2. Preparation of Solution: Standard, Normal and Decinormal
3. Preparation of Buffer
4. Estimation of Hemoglobin in Blood
5. Detection and Estimation of Glucose, Protein and Cholesterol in Blood
6. Urine: Pregnancy Test, pH Test

Unit IV- Practical of Food Microbiology and Food Safety (HSFN 554)

12

1. Identification of microorganisms in different foods
2. Methods of Microbial cultivation
3. Demonstration of microbial spoilage of food
4. Record File Preparation

