Objectives
This course will enable students.

1. To understand the integrated functions of all systems in the science of physiology.
2. To understand the structure and functions in various organs and systems in relation to the diseased conditions.
3. To understand the advance issues to the relevant topics of Human physiology.

UNIT-I

2. Musculoskeletal System: Types of muscles (Skeletal, smooth, and cardiac muscles) their properties, characteristics, structure and functions fatigue, exercise mechanism of contraction.
   Structural and function of Bone, cartilage and connective tissue. Disorders of skeletal muscle.

M. Dubois
11/8/14

Ref: 11/8/14
UNIT-II

1. **Blood**: Formation, Functions and composition of blood, erythropoiesis, leukopoiesis, Formation and functions of plasmaproteins, Factors influencing erythropoiesis, RBC induce, Blood groups, Blood clotting, Hemoglobin synthesis, Blood abnormalities.

2. **Immune system**: Natural immune system cell mediated and humoral immunity components of immune mechanism (cellular and chemical), Role of Inflammation/defense (acute and chronic). Activation of WBC and production of antibodies. Disorders - Immune deficiency, Hypersensitivity.

3. **Reproductive System**: Male and female reproductive organ, menstrual cycle spermatogenesis.

UNIT-III

1. **Circulatory System**: Structure and functions of heart and blood vessels, cardiac output and blood pressure, cardiac cycle, Heart rate and heart sound conditions affecting the heart rate, Heart failure, Hypertension, Mechanism of cardiovascular system.


UNIT-IV


2. **Excretory system**: Structure and function of kidney, nephron, Role of Kidney in maintaining pH of blood, Mechanism of urine formation, Mechanism of filtration Electrolyte and acid-base balance. Renal function tests (Urine and blood) Diuretics.
Unit-V

1. **Endocrine glands:** Structure function and classification according to chemical signals. Hormones, role of hormone, regulation of hormonal secretions and its control. Disorders of endocrine glands.

2. **Nervous system:** Structure and function of Brain, spinal cord, neuron. Reflex and its classification, nerve impulse - Afferent and efferent nerves. Hypothalamus and its role in various body functions - Obesity sleep and memory.

3. **Sense organs:** Structure and functions. General Senses and special senses. Receptors of sensory nerves and perception of stimuli.

References:

Semester Wise Syllabus for Postgraduates
Recommended by Home Science Board of Studies
Jiwaji University, Gwalior

Food and Nutrition

SEMESTER-I
PAPER-II
Advanced Nutritional Biochemistry

Objectives
1. Augment this biochemistry knowledge acquired at the undergraduate level.
2. Understand the mechanism adopted by the human body for regulation of metabolic pathways.
3. Get an insight into interrelationship between various metabolic pathways.
5. Understand the integration of cellular level metabolic events to nutrition disorders and imbalances.

UNIT-I

UNIT-II
Intermediary metabolism an overview and its regulation. Equilibrium and Non-equilibrium reaction, committed steps, allosteric modification, covalent modulation, hormonal induction and repression, cross over theorem, starve feed cycle, calorie homeostasis and futile.

UNIT-III

1. Carbohydrates: Glycolysis, gluconeogenesis, citric acid cycle, hexone monophosphte pathways and gluconeogenesis.
UNIT-IV

Major alterations in protein, carbohydrates and fat metabolism and chronic nutritional related degenerative diseases e.g. diabetes and hypertension.

**Nucleic acids:** DNA replication and transcription, DNA repair system, DNA recombination, genetic mutation, regulation of gene expression and protein biosynthesis.

UNIT-V

**Hormones:** Mechanism of action, Negative feedback, hormone receptor, intracellular messengers.

Conversion of amino acids to specialized.
Objectives

1. Develop a holistic knowledge base and understanding of public nutrition concept.
2. Understand the health economic, food situations and determinations of nutritional status.
3. Be familiar with various approaches to nutrition and health interventions, programmes and policies.

UNIT-I

2. Definition and concept of health, Determinations of Health
3. Relationship with health and nutrition
4. Role public nutritionists the health care delivery.
5. Population dynamics: Demographic transition population structures fertility behavior.
   Nutrition and quality of life.

UNIT-II

1. Food and Nutrition security
   (a) Food production. Access, Distribution, Losses and consumption.

2. Nutritional Status:
   (a) Determinants of nutritional status
   (b) (i) Nutrition Indicators - Functional indicators such as grip strength respiratory fitness
          Harvard step test, squatting test.
          (ii) Non-nutritional indicators of nutritional status (Sociocultural, biological, environment and economic)
   (c) Monitoring & Evaluation

UNIT-III

1. National Food and Nutrition Policy, Plan of Action
   (a) Sector and public relevant to nutritional - National and International organization of nutrition. Specific community nutrition programmes in India. Case studies of selected strategies and programmes.

UNIT-IV

1. Approaches and strategies for improving nutritional status
   (a) Programmable Option: Health and nutrition based interventions, supplementary feeding, fortification and genetic improvement of foods.
   (b) Merits and demerits of these options
   (c) Factors in feasibility of these programmes i.e. political support. Available resource (human infrastructural, financial)

2. Programme Planning, implementation, operation, monitoring surveillance and evolution.

3. Nutrition Education:
   (a) Definition, purpose, importance
   (b) Methods and tools
   (c) Channels of nutrition education
   (d) Evaluation of nutrition education

UNIT-V

1. Public Health administration
   (a) Central and state health organizations
   (b) Primary Health Care in India
      (i) Elements of Primary Health Care
      (ii) Principles of Primary Health Care
      (iii) Primary-Health Care of village level sub centre level and primary health centre level, community health centres.
   (c) Health Care Systems
References

3. SCN News; UNACC/SCN Subcommittee on Nutrition.
4. State of the Word's Children. UNICEF
5. Census Reports.
7. Geaton, G.H. and Bengon J.M. (Eds.) (1986); Nutrition in Preventive Medicine WHO.
19. Documents and Reports of the international Nutritional Anemia consultative group.
25. Injunt Harvard University Press Cambridge MA, USA.
30. Baumfeind J Christopher (Ed) Vitamin A. Deficiency and its control Acade Press.
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Semester Wise Syllabus for Postgraduates
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Food and Nutrition
M.Sc. - 1st SEMESTER

PAPER-IV
RESEARCH METHODS AND STATISTICS

Objectives
- To understand the significance of statistics and research methodology in Home Science research.
- To understand state the types tools, methods of research and develop the ability to construct data gathering instrument appropriate to the research design.
- To understand and apply the appropriate statistical technique for the measurement and design.

CONTENTS:

UNIT-I
- Research: Meaning, objectives and significance of research.
- Science, scientific methods, scientific approach.
- Role of statistics and research in Home Science discipline.
- Types of Research: Historical, descriptive, experimental, case study, social research, observation.

UNIT-II
- Definition and identification of a research problem:
  - Selection, justification & limitation of research problem.
  - Hypothesis - meaning nature, characteristics, types & functions of hypothesis.
  - Variables: Meaning, nature, type & selection of variables.
UNIT-III

Sampling methods
- Population and sample
- Probability & semi probability sampling - simple random, systematic random sampling, two stages and multi stage sampling, cluster sampling.
- Non-Probability sampling: purposive, quota and volunteer sampling
- Merit & Demerits sampling.

UNIT-IV

Research Design
- Meaning, features and concept & purpose of research design.

Quantitative research Method
- Definition Theory design types reliability & validity of:
  (i) Case study
  (ii) Interview
  (iii) Observation

UNIT-V

Quantitative research method
- Definition theory design types reliability & validity of
  (i) Socio metric scale
  (ii) Questionnaire
  (iii) Schedule
- Writing a research report