

SEMESTER II

HUMAN PHYSIOLOGY AND MICROBIOLOGY

Course Code: HS2BO2U

CORE THEORY- 2

Teaching hours: 2 hrs/week (Hrs./Sem.36)

Credit: 2

Objectives:

- To understand the integrated functions of the various systems of the human body.
- To understand the economic importance of microorganisms.
- To understand the principles of various methods used in the prevention and control of micro- organisms.

- To study the food standards and role of various agencies in maintaining quality control

Course Outline

HUMAN PHYSIOLOGY

Module 1: (2 hours)

Definition of physiology, Structure and functions of a cell, cell division, tissues, organs

Module 2: Digestive System (2 hours)

Structure of digestive tract, Digestion and absorption of carbohydrates, fats and proteins.

Module 3: Respiratory System (3 hours)

Organs of respiratory system, Mechanism of respiration, gaseous exchange in lungs and tissues, pulmonary volumes and capacities.

Module 4: Blood (4 hours)

Composition and Functions of Blood, Plasma Proteins, Haemoglobin, haematopoiesis, coagulation of blood, Blood groups, Erythroblastosis foetalis.

Module 5: Cardiovascular System. (4 hours)

Structure of Heart, Special conducting tissues of the heart, properties of cardiac muscles, Cardiac cycle, Systemic and Pulmonary circulation, heart rate, heart sounds, blood pressure.

Module 6: Excretory System (3 hours)

Structure and function of Kidney, Nephron, Mechanism of Urine formation, Micturition.

Core Readings:

- Jain, A.K., (2003), Textbook of Physiology, Volume I, Avichal Publishing Company, New Delhi.
- Vidya Rattan., (2004), Handbook of Human Physiology, 7th edition, Jaypee Brothers Medical Publishers (p) Ltd, New Delhi.
- Ross and Wilson, (2006), Anatomy and Physiology in Health and Illness, 10th edition, Elsevier limited, London.

Advanced References:

Guyton: Medical Physiology

C.C. Chatterjee: Human Physiology, Vol I and II.

MICROBIOLOGY

Module 7: Basic concepts of Microbiology (3 hours)

Classification of microorganisms, important microorganisms- Structure and economic importance of microorganism-bacteria, moulds (Rhizopus nigricans, Yeast, virus (any animal virus))

Module 8: Sterilization and Disinfection

(2 hours)

Definition and methods.

Module 9: Culture media and Culture Techniques

(2 hours)

Factors affecting the growth of micro organisms, Culture media and culture techniques, isolation and identification, Gram staining.

Module 10: Infection

(4 hours)

Sources of microorganisms, Transmission of infection, bacterial infections in man- typhoid, Pneumonia. Viral infections – Hepatitis, Aids.

Module 11: Resistance and Immunity

(2 hours)

Natural defences of the body—primary and secondary defence mechanisms. Immunity- types, immunization followed for various diseases.

Module 12: Food Microbiology (3 hours) Contamination of food, Factors affecting food spoilage, food poisoning-bacterial and viral-Salmonella food poisoning, Staphylococcal food poisoning, Botulism and viral gastroenteritis.**Module 13: Food Safety and regulations**

(2 hours)

Importance of food safety and factors affecting food safety. Food Standards (PFA, FPO, BIS, Agmark, Consumer Protection Act), HACCP-Food Quality Assurance System. Food adulteration- definition, common adulterants-Metanil yellow, Rhodamine, chalk powder etc

Core Readings:

- Joshua A.K., (1994), Microbiology, Popular book Depot Publishers.
- Anathanarayan, R and Panicker C.K.J, Text book of Microbiology, 8th edition 2009 Universities Press (India) Pvt. Ltd., New Delhi.
- James M. Jay (1986) Modern Food Microbiology, 3rd edition, Van Nostrand, New York.
- Frazier W.C and Westhoff D.C (2008), Food Microbiology, 1st edition, CBS Pub.

HUMAN PHYSIOLOGY AND MICROBIOLOGY-PRACTICAL

Course Code: HS2BO2U (P)

CORE PRACTICAL-2

Teaching hours: 2hrs/week (Hrs./Sem.36)**Credit: 1****I**

1. Determination of Rh group

2. Determination of Blood group
3. Measurement of blood pressure
4. Estimation of Haemoglobin

II

1. Preparation of wine and curd(economic importance of microorganisms)
2. Identification of microorganisms by gram staining.
3. Detection of metanil yellow in Turmeric
4. Detection of Rhodamine B in red chilly (whole or powdered)
5. Detection of sugar in honey
6. Detection of vanaspathi in ghee/oil.

(A record of the entire practical should be maintained)