**FOM 1112 Cells And Tissues**

Brief Course description

This course deals with the structure (histology) and function of the cell and the application of this knowledge in medical practice and scientific research.

Course Objectives:

1. To describe the structure and function of the cell.

2. To explain microscopically the different types of cells and tissues.

3. To relate the whole body structure to its cellular organization at different levels.

4. To explain the role of cells and tissues in normal body function, disease and research.

Expected outcomes:

By the end of this course, students are expected to;

• Use a microscope to view and identify histological structures

• Appreciate the relationship between the structure and function, and basic genetics

• Appreciate how knowledge on the cell can be applied to explain disease and in research

• Appreciate the structural and functional relationships of cells, tissues, organs, systems and the organism

• Work in groups and consult others

Course outline:

• Cell structure and function: organelles and inclusions

• Functions of the cell

• Cell division: Cell cycle, mitosis and meiosis

• Cancer cells

• Biological membranes: structure and functions.

• Genes and gene expression.

• Apoptosis versus necrosis: Cell injury, cell reaction to injury

• Methods of obtaining cells for study: Cell culture

• Tissues: structure and function. Epithelia, connective tissue, specialized connective tissues (blood, lymph and vessels, bone and cartilage), muscle, teeth, nervous tissue, glandular tissue (endocrine, exocrine).

• Skin: Structure and function

• Immune system

• Introduction to enzyme properties and functions.

Course description

• Cell structure and function: Organelles and inclusions

Cell membrane, Nucleus, Cytoplasm, Endoplasmic reticulum, Golgi apparatus, Lysosomes, Peroxisome, Mitochondria, Cytoskseleton, Centrosome, Pigments;melanin, Lipofuscin. Nutritive materials: lipid protein, glycogen Hemosiderin

• Functions of the cell

Protein synthesis (In put from Physiology and Biochemistry) Synthesis of other substances

• Cell division: Cell cycle, mitosis and meiosis

Cell cycle phases, Mitotic and meiotic phases, Meiosis versus gametogenesis. Apoptosis versus necrosis: Cell injury, cell reaction to injury, Cancer cells

• Biological membranes: structure and functions.

Detailed structure and function of the cell membrane and other unit membranes

• Genes and gene expression.

The gene, The genetic code, DNA, RNA, Protein synthesis? Control of genes, Replication of genes, The chromosomes and their Replication, Cancer

• Methods of obtaining cells for study: Cell culture

Biopsy and other methods of obtaining cells

• Tissues: Structure and function. Epithelia, connective tissue,

specialized connective tissues (blood, lymph and vessels, bone and cartilage), muscle, teeth, nervous tissue, glandular tissue (endocrine, exocrine).

• Skin: Structure and function: Functions of the skin, Layers of skin, Skin appendages

• Immune system

Lines of defence, Different types of defence cells, Lymphoid tissues, Mucosa-Associated Lymphoid

Tissue (MALT)

• Enzymes:

Introduction to properties and functions.

Methods of delivery:

Tutorials, Seminars, Over view lectures, Practical

Methods of assessment:

Continuous Assessment, Progressive Assessment, Summative Assessment, Written, Viva voce, Steeplechase

Other resources

• Tutorial Rooms

• Library

• Anatomy, Physiology and Biochemistry Laboratories

• Computer Room

• Lecture Rooms

• Staff offices

Duration of the course: Five weeks (5 Credit Units), 75 Contact hours

**Teaching staff**

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| Name | Qualifications | Employer | Fulltime part time |
| Prof Sam Luboga | PhD | Makerere University | Fulltime |

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| --- | --- | --- | --- |
| Prof Gabriel Nzrubara | M.MED | Makerere University | Fulltime |
| Dr. C.Ibingira | M.MED | Makerere University | Fulltime |
| Dr. Buwembo William | M.Sc | Makerere University | Fulltime |
| Dr. Ochieng Joseph | M.Sc | Makerere University | Fulltime |
| Dr.Turyabahika Joseph | M.MED | Makerere University | Fulltime |
| Dr. H. Kiryowa | M.Sc | Makerere University | Fulltime |
| Dr. Kayondo | BDS | Makerere University | Fulltime |
| Dr.J. Kasolo | M.Sc | Makerere University | Fulltime |
| Dr. J. Okullo | M.Sc | Makerere University | Fulltime |
| Dr. R. Nakiboneka | M.Sc | Makerere University | Fulltime |
| Dr. Ebuku | M.Sc | Makerere University | Fulltime |
| Dr. D.Ntulume | M.Sc | Makerere University | Fulltime |
| Mr.H.Kasozi | M.Sc | Makerere University | Fulltime |
| Mr. A.Lugaajju | M.Sc | Makerere University | Fulltime |
| Prof F.Kironde | PhD | Makerere University | Fulltime |
| Dr.J.Haumba | PhD | Makerere University | Fulltime |