**Educational Institution "Royal Metropolitan University"**
**Department "Morphological and Fundamental disciplines"**

# SYLLABUS
## of the discipline " Histology, Cytology, Embryology"
## for students of specialty 560001 "General Medicine"

| | |
|---|---|
| Form of study | full-time |
| Course | 1 |
| Semester | 1,2 |
| Zachet | 1 |
| Exam | 2 |
| Total credits according to the curriculum | 7 |
| Total hours according to the curriculum | 210 |
| Lectures | 54 |
| Practical classes | 72 |
| Independent work | 84 |

Syllabus developer:
Mamasydykov I.T.

Reviewed and approved at a meeting of the department of "Morphological and Fundamental disciplines"
Protocol No. 1 from "9" September 2024.
Head of the department PhD Jalilova A.A.

*(signature)*

**Bishkek 2024**

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**Name and complexity of the discipline.**

| Course | Semester | Number of weeks | Number of academic hours | | Number of hours for independent work | | Total hours | Number of modules |
|---|---|---|---|---|---|---|---|---|
| | | | lectures | practical lessons | SIW | SIWT | | |
| **1** | **1,2** | **18** | **54** | **72** | **42** | **42** | **210** | **4** |

**Abstract of the academic discipline**

The discipline " Histology, cytology, embryology " is one of the main sections of the medical specialty. The relevance of this course is associated with the consideration of the features of modern and timely diagnostics of diseases that have socially oriented significance.

**The purpose of discipline**

The aim of the discipline " Histology, cytology, embryology " is to teach clinical methods of examination of a patient with hematological diseases, basic laboratory and instrumental methods of research, training in recognizing various symptoms of hematological diseases, understanding their origin and the ability to group them into syndromes; assessing the significance of symptoms and syndromes in the diagnosis of various hematological diseases with an analysis of the principle of their treatment. The study of the discipline is assessed according to the modular-rating system of training, which includes **current and midterm control.** Current control of the course assimilation is carried out by students completing practical work, midterm testing and passing modules. Midterm control is carried out at the end of the semester by students passing an exam.

**Objectives of the discipline:**

- formation of scientific knowledge in the future specialist about general patterns and specific mechanisms of occurrence, development of diseases of the blood system, the ability to use the method of pathophysiological analysis to solve professional problems (biochemical modeling of the disease, schemes of diagnostic search and therapy of various diseases and pathological conditions), teach students to differentiate blood and bone marrow cells by morphological and other characteristics in norm and in pathology, teach methods of laboratory research of

blood and bone marrow, principles of diagnostics of hematological diseases:
1. To study the morphological, cytobiochemical and functional characteristics of blood cells, the characteristics of the picture of peripheral blood and bone marrow in normal conditions and in pathology.
2. To study the etiology, pathogenesis, clinical and laboratory features of anemia, leukocytosis, leukemoid reactions, leukopenia, acute and chronic leukemia, hemorrhagic diathesis.
3. Master the principles of diagnosing anemia, leukocytosis, leukemoid reactions, leukopenia, acute and chronic leukemia, hemorrhagic diathesis using the example of solving situational problems.

**The place of the discipline in the structure of the OOP (prerequisites, postrequisites)**

Competencies related to understanding the methodology of special disciplines are necessary for the subsequent application of the acquired knowledge and skills in performance of various types of work in the professional field of activity, including research, organizational and managerial, social and project-based, socio-technological, etc. The study of this discipline is aimed at development of the following professional competencies in students:

The content of the discipline "Histology, cytology, embryology" is based on such previous prerequisites as:"Normal and pathological physiology", "Pharmacology", "Pathological anatomy". Subsequently, the knowledge obtained during the study of the discipline "Hematology" will be necessary when studying the following postrequisites: "Internal diseases", "Hematopoietic system", "Endocrinology", "Children's diseases", "Oncology", "Infectious diseases".

The total workload of the subject is 120 hours.

**Competencies of students formed as a result of mastering the discipline, planned results of mastering the academic discipline.**

Graduate in the specialty "General Medicine" with the assignment of the specialist qualification " Doctor " in accordance with the goals of the OOP and the objectives of professional activity , must possess the following professional competencies :

**Universal Competencies (UC)**

General scientific competencies (GSC)

**ONK-1** is the ability for abstract thinking, analysis, and synthesis.

Professional competencies

General professional competencies (GPC)

**OPK-1** – is able to use the acquired fundamental knowledge in his/her professional activities, analyze his/her actions in order to avoid medical errors; is ready to take

responsibility, including disciplinary, administrative, civil and criminal;
**OPK-7** - is the readiness to use basic physical, chemical, mathematical and other natural science concepts and methods to solve professional problems
**OPK-9** - is the ability to assess morphofunctional, physiological states and pathological processes in the human body.

**Professional competencies (PC)** by types of activities
Preventive activities
**PC-1** – the ability and readiness to implement a set of measures aimed at maintaining and strengthening health and including the formation of a healthy lifestyle, prevention of the occurrence and (or) spread of diseases, their early diagnosis, identification of the causes and conditions of their occurrence and development, as well as aimed at eliminating the harmful effects of environmental factors on human health.
PC-1.1. Knows the principles and features of preventing the occurrence and progression of diseases and (or) conditions
PC-1.2. Knows medical indications and medical contraindications for the use of methods for preventing diseases and (or) conditions, preventive measures taking into account the diagnosis in accordance with the current procedures for the provision of medical care, clinical recommendations (treatment protocols) on issues of providing medical care taking into account the standards of medical care
PC-1.3. Knows the basics of a healthy lifestyle, methods of its formation
PC-1.4. Knows the principles of application of specific and non-specific prevention of infectious diseases, the national calendar of preventive vaccinations and the calendar of preventive vaccinations according to epidemic indications

**PC 14** – Able to master the methods and procedures of project activities, including management of regional and departmental projects, management of project and program portfolios, and administration.
project activities of executive bodies of state power
PC-14.1 Has knowledge of methods and procedures for project activities;
PC-14.2 Manages state, regional, municipal and departmental projects;
PC-14.3 Manages portfolios of projects and programs;
PC-14.4 Uses methods and technologies of project activities to develop projects;
PC-14.5 Implements the principles of effective administration in the project activities of executive bodies of state power

**PC 15** – readiness to teach patients and their relatives basic hygienic health measures, self-monitoring skills for basic physiological indicators that help maintain and improve health, and prevent diseases.

PC-15.1. Knows the forms and methods of teaching patients and their relatives the basic hygienic measures of a health-improving nature, skills of self-monitoring of the main physiological indicators, disease prevention
PC-15.2. Knows the features, levels and principles of training when a patient goes through the stages of accepting the disease and changing behavior, models of relationships in the system "doctor - patient - relatives of the patient"
PC-15. 3. Able to teach patients and their relatives health-improving hygiene measures, self-monitoring skills for basic physiological indicators that help maintain and strengthen health, and prevent diseases
PC-15. 14. Able to determine the characteristics and stages of the patient's acceptance of the disease and the degree of their influence on the effectiveness of training in the system of health-improving measures that contribute to the preservation and strengthening of health, disease prevention
PC-15.5. Has basic techniques of teaching patients - has experience in teaching patients and their relatives basic hygienic health measures, self-monitoring skills for basic physiological indicators that help maintain and improve health, and prevent diseases
PC-15.6. Has experience in determining the characteristics and stages of patient acceptance of the disease and the degree of their influence on the effectiveness of training in the system of health-improving activities

After mastering this discipline, the student:
*will know:*
- modern scheme of hematopoiesis;
- normal peripheral blood and bone marrow parameters;
- indicators of primary and secondary hemostasis;
- basic research methods in hematology;
- patterns of tumor progression of hemoblastoses;
- diagnostic criteria for acute and chronic leukemia;
- principles of treatment of acute and chronic leukemia;
- criteria for diagnosing anemia and its differential diagnosis;
- principles of anemia treatment;
- clinical syndromes of hemorrhagic diathesis; - principles of prevention and therapy of hemorrhagic diathesis;
- diagnosis and treatment of DIC syndrome.

The student should be able to:
- perform a minimum of practical skills in examining patients with blood diseases;
- determine the blood type according to the ABO and RP systems and conduct a biological test;
- morphologically recognize normal blood and bone marrow cells;

- morphologically distinguish between blast and other tumor cells in leukemia;
- cytochemical diagnostics of acute and chronic leukemia variants;
- correctly determine the treatment tactics for leukemia;
- to conduct outpatient therapy for chronic leukemia;
- conduct timely diagnosis and emergency treatment of myelotoxic agranulocytosis and cytostatic disease;
- interpret leukemoid reactions;
- differentiate lymphadenopathy and splenomegaly;
- differentiate cytopenic conditions;
- interpret the hemostasiogram;
- know the basics of anticoagulant therapy for hemorrhagic vasculitis;
- determine indications for therapeutic plasmapheresis in hemorrhagic diathesis and DV Syndrome;
- clarify indications for donor thrombus procurement concentrate;
- provide emergency care in case of complications during preparation of donor thrombus concentration and conducting sessions of therapeutic plasma and cataplerosis;
- provide emergency care in case of blood transfusion complications;
- prescribe outpatient and inpatient treatment for patients with anemia;
- correctly interpret serological reactions in hemolytic anemia; • basic principles of mountain climatic treatment for suppressed hematopoiesis (aplastic anemia, paroxysmal nocturnal hemoglobinuria, idiopathic thrombocytopenic purpura).

**Thematic plan for 1 semester**

| No . | LESSON TOPICS | Lectures | Workshops |
|---|---|---|---|
| | | *Quantity hours* | |
| 1. | Introduction to histology. Technique of histological examination. | 2 | 2 |
| 2. | Cytoplasm. Cellular membrane. | 2 | 2 |
| 3. | Cellular and non-cellular structures. | 2 | 2 |
| 4. | Nucleus cells | - | 2 |
| 5. | Division cells. Ways of breeding. | 2 | 2 |

| | | | |
|---|---|---|---|
| 6. | Progenesis. spermatogenesis. Oogenesis. stem cells. | 2 | 2 |
| 7. | Embryogenesis Fertilization. Cleavage, blastula. | 2 | 2 |
| 8. | Gastrulation. Histogenesis. Organogenesis. | 2 | 2 |
| 9. | Education extra-embryonic organs. | - | 2 |
| 10. | Introduction to the study of tissues.<br>Epithelium tissue. | 2 | 2 |
| 11. | Glands. exocrine glands | - | 2 |
| 12. | Blood. lymph. | 2 | 2 |
| 13. | Education blood. hematopoietic tissue | - | 2 |
| 14. | Proper connective tissue. Fibrous connective tissue.<br>Connective tissue with special properties. | 2 | 2 |
| 15. | Skeletal connective tissue. cartilage tissue. | 2 | 2 |
| 16. | Bone tissue | 2 | 2 |
| 17. | Muscular tissue | 2 | 2 |
| 18. | Nervous tissue | 2 | 2 |
| | **Total** | **18 (36)** | **36** |

**Thematic plan for the 2nd semester**

| No . | LESSON TOPICS | Lectures | Workshops |
|---|---|---|---|
| | | *Quantity hours* | |
| 1. | Central nervous system: brain, spinal cord. | 2 | 2 |
| 2. | Peripheral nervous system: nerve fibers, nervous organization, ganglia. | - | 2 |
| 3. | Sense organs. Primary sense organs: organs of sight and smell. | - | 2 |

| | | | |
|---|---|---|---|
| 4. | Sense organs. Secondary senses: organs of hearing, balance and taste. | - | 2 |
| 5. | Histology cardiovascular systems. | 2 | 2 |
| 6. | Endocrine system. | 2 | 2 |
| 7. | Central organs of hematopoiesis. Bone marrow. thymus. | 2 | 2 |
| 8. | Peripheral organs of hematopoiesis and immunogenesis. Spleen. Lymphatic nodes. | | 2 |
| 9. | Digestive system. Oral cavity. Teeth. | 2 | 2 |
| 10. | Digestive system. digestive tube. | - | 2 |
| 11. | Digestive glands. Pancreas. Liver. bilious bubble. | - | 2 |
| 12. | Urethra system. | - | 2 |
| 13. | Skin and its derivatives. | 2 | 2 |
| 14. | Respiratory system. | 2 | 2 |
| 15. | Men's reproductive system. | 2 | 2 |
| 16. | Women's reproductive system | - | 2 |
| 17. | Embryogenesis person. | 2 | 2 |
| 18. | Placenta and its types. | - | 2 |
| | **Total** | **9 (18)** | **36** |

## Thematic plan of independent work for 1 semester

| No . | Topic | Watch |
|---|---|---|
| 1. | Stages cooking histological drugs. | 2 |
| 2. | Structure of cells. | 2 |
| 3. | Microvilli.<br>Eyelashes. | 2 |
| 4. | Types of connections. | 2 |
| 5. | The cytoskeleton and derivatives. | 2 |
| 6. | Structure of egg and sperm. | 2 |
| 7. | Extra-embryonic bodies mammals. | 2 |
| 8. | Embryonic development amphibians. | 2 |
| 9. | Glandular and integumentary epithelium | 2 |

| | | |
|---|---|---|
| 10. | Blood. Blood education. | 2 |
| 11. | Connective tissues with special functions (mesh, sebaceous, pigmented, mucous). | 2 |
| 12. | White blood cells | 2 |
| 13. | Red blood bodies | 2 |
| 14. | Fibrous connective tissue. | 2 |
| 15. | Chondrogenesis cartilage. | 2 |
| 16. | Osteogenesis bone tissues | 2 |
| 17. | Morphological peculiarities of cardiac muscles. | 2 |
| 18. | Smooth muscular fabric. | 2 |
| 19. | Striated muscular tissue. | 2 |
| 20. | Classification of neurons. | 2 |
| 21. | Glial cells, their functions. | 2 |
| | **Total** | **42** |

**Thematic plan of independent work for the 2nd semester**

| No . | Topic | Watch |
|---|---|---|
| 1. | Brain and spinal cord. General morphofunctional characteristics. | 2 |
| 2. | Structural components of organs: gray and white matter. | 2 |
| 3. | Primary senses: sight and smell | 2 |
| 4. | Secondary senses: organs of hearing, balance and taste. | 2 |
| 5. | Development. Structural Components hearts. | 2 |
| 6. | Morphological characteristic vessels. | 2 |
| 7. | Skin and its derivatives. | 2 |
| 8. | Development glands internal secretions. | 2 |
| 9. | Central organs of hematopoiesis .<br>Bone marrow . thymus. | 2 |
| 10. | Peripheral organs of hematopoiesis and immunogenesis. Spleen.<br>Lymphatic nodes . | 2 |
| 11. | General structure digestive tract | 2 |
| 12. | Cavity of the mouth: tongue, teeth. | 2 |
| 13. | Main departments stomach. | 2 |
| 14. | Organs associated with the digestive tract. Liver and pancreas iron. | 2 |
| 15. | Bronchial tree and light | 2 |
| 16. | Pulmonary vessels and nerves. | 2 |
| 17. | Skin recovery. | 2 |
| 18. | Kidney function: filtration, secretion, reabsorption. | 2 |
| 19. | Testicles. Intratesticular ducts. | 2 |
| 20. | Dairy glands. | 2 |
| 21. | Early stages of intrauterine development. The membrane of the fetus and the placenta. | 2 |
| | **Total** | **42** |

**Educational materials: lectures and practical classes.**

**Topic 1.** Introduction to histology. Technique of histological examination.
**Lecture: 2 hours**
What is the histology, embryology, cytology, organology? What is the microscope, different part of microscope? What is units measurement? What is the tissue? Preparation tissue for study. Comparison between LM and EL.
**Topic :** Introduction to histology. Technique of histological examination.
**Practical classes: 2 hours**
**The student must know the definition and know:** What is the histology, embryology, cytology, organology? What is the microscope, different part of microscope? What is units measurement? What is the tissue? Preparation tissue for study. Comparison between Light Microscope and Electron Microscope.
Tests for current control. Discussion. Comparative control questions.
Get in touch with a microscope.
**Books to read:**
1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 2:** Cytoplasm. Cellular membrane. Cellular and non-cellular structures.
**Lecture: 2 hours**

Structure of the animal and plant cell. Eukaryotic and prokaryotic cells. Structure and function of organelles (Golgi complex, Endoplasmic reticulum, Nucleus, cytoplasm, plasma membrane, cell wall, microtubules, ribosomes, cytosol, peroxisome). Membranous and nonmembranous organelles.

**Topic 2:** Cytoplasm. Cellular membrane.
**Practical classes: 2 hours**

**The student must define and know all about;** Structure of the animal and plant cell. Eukaryotic and prokaryotic cells. Structure and function of organelles (Golgi complex, Endoplasmic reticulum, Nucleus, cytoplasm, plasma membrane, cell wall, microtubules, ribosomes, cytosol, peroxisome). Membranous and nonmembranous organelles.

Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study the tissue under microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 3:** Cellular and non-cellular structures.
**Practical classes: 2 hours**

**The student must define and know all about;** Eukaryotic and prokaryotic cells. Membranous and nonmembranous organelles.

Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study the tissue under microscope.
**Books to read:**
1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 4:** Nucleus cells
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is nucleus Structure of nucleus. What is the DNA and RNA? Chromosomes. Function of nucleus.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.

**Books to read:**
1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 5:** Cell division (cell cycle). Ways of breeding.

**Lecture: 2 hours**
What is cell division? Program of mitotic cell division and meiosis cell division). What is the apoptosis and necrosis? Progenesis. spermatogenesis. Oogenesis. stem cells.
**Topic :** Cell division (cell cycle).
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is the cell division? Program of mitotic cell division and meiosis cell division). What is the apoptosis and necrosis? Progenesis. spermatogenesis. Oogenesis. stem cells.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.

**Books to read:**
1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 6:** Progenesis. Spermatogenesis. Oogenesis, stem cells.
**Lecture: 2 hours**
Program of Progenesis . Level of development of spermatogenesis. Level of development Oogenesis. stem cells. Structure and function of sperm. Structure and function of ovaria.
**Topic :** Progenesis. Spermatogenesis. Oogenesis, stem cells.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is progenesis ? What is the spermatogenesis. What is oogenesis? Left of the development of stem cells.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**
1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 7:** Embryogenesis Fertilization. Cleavage, blastula.

**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Embryogenesis , Fertilization, Cleavage, Blastula. Leve of the development of embryonic cells. Structure and function.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 8:** Gastrulation. Histogenesis. Organogenesis.
**Lecture: 2 hours**
What is the Gastrulation. Histogenesis. Organogenesis.
**Topic :** Gastrulation. Histogenesis. Organogenesis.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Gastrulation, Histogenesis, Organogenesis. Stage of development.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 9:** Education extra-embryonic organs.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is progenesis ? What is the spermatogenesis. What is oogenesis? Left of the development of stem

cells.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 10:** Epithelial tissue.
**Lecture: 2 hours**
Epithelium tissue. General feathers. Types of epithelial tissue. Cuboidal, simple, columnar, transitional, pseudostratified epithelium tissue, structure, functions , localizations.
**Topic :** Epithelial tissue.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Epithelium tissue. General feathers. Types of epithelial tissue. Cuboidal, simple, columnar, transitional, pseudostratified epithelium tissue, structure, functions, localizations.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 11:** Glandular epithelial tissue
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is glandular e pithelium tissue. Comparison between exocrine and endocrine glands. Types of glandular epithelial tissue, structure, functions, localizations.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.

**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 12:** Blood and lymph.
**Lecture: 2 hours**
Blood and lymph cells. General feathers. Types of blood and lymph cells. Blood and lymph tissue, structure, functions, localizations. Plasma (structure, function). Plasma proteins (types, functions).
**Topic :** Blood and lymph.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Blood and lymph cells. General feathers. Types of blood and lymph cells. Blood and lymph tissue, structure, functions, localizations. Plasma (structure, function). Plasma proteins (types, functions).
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 13:** Education blood. Hematopoietic stem cells
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Blood. General feathers. Types of blood, functions. Blood cells, structure, functions, localizations. Hematopoiesis (stage of development). Myeloid progenitor and lymphoid progenitor stem cells.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 14:** Connective tissue
**Lecture: 2 hours**

**Topic : C** onnective tissue. Types, feathers, functions, localizations. Proper Connective tissue. Fibrous connective tissue. Connective tissue with special properties.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is onnective tissue? Types of CT, feathers, functions, localizations. Proper Connective tissue. Fibrous connective tissue. Connective tissue with special properties.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 15** : Skeletal Co nnective tissue. Cartilage.
**Lecture: 2 hours**
**Topic :** Skeletal C onnective tissue. Types, feathers, functions, localizations. Cartilage (feathers, types, functions, localizations).
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is skeletal with onnective tissue. Types, feathers, functions, localizations. What is the Cartilage (structure, feathers, types, functions, localizations)?
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.

**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 16** : Bone tissue
**Lecture: 2 hours**
**Topic :** Skeletal C onnective tissue. Types, feathers, functions, localizations. Cartilage (feathers, types, functions, localizations).
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is skeletal with onnective tissue. Types, feathers, functions, localizations. What is the Cartilage (structure, feathers, types, functions, localizations)?
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

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5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 17** : Muscle tissue
**Lecture: 2 hours**
**Topic :** Muscle tissue.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Muscle t issue. Structure, Types, feathers, functions, localizations. What is actin and myosin, myofibrils, sarcoplasmic reticulum (structure, feathers, types, functions, localizations)?
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD

2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 18** : Nervous tissue
**Lecture: 2 hours**
**Topic :** Nervous tissue, structure, feathers, functions, types, localizations.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Nervous tissue, structure, feathers, functions, types, localizations. What are the neurons (types, structure, feathers, functions)?
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**2 semester**

**Topic 1.** Central nervous system. Brain and spinal cord.
**Lecture: 2 hours**
CNS. Brain, 4 lobes. Brain – structure, functions. What is nervous tissue, structure, functions. Spinal cord, ganglion, efferent and afferent signals.
**Subject :** Central nervous system. Brain and spinal cord.
**Practical classes: 2 hours**
**The student must know the definition and know** What is CNS? Classification of the CNS. What is Brain, lobes? Brain – structure, functions. What is nervous tissue, structure, functions? What is Spinal cord, ganglion,
Tests for current control. Discussion. Comparative control questions.
Get in touch with a microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD

2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 2:** Peripheral nervous system (PNS). Nerve fibers, nervous organization.
PNS. Classification of the PNS. peripheral nerve, structure, feathers, localizations, functions. ganglia structure, functions. Nerve fibers structure, functions. Nerve organization.
**Practical classes: 2 hours**

**The student must define and know all about;** What is PNS? Classification of the PNS. What is peripheral nerve, structure, function, feathers, localizations. What is ganglia structure, functions? What are Nerve fibers. Nerve organization.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study the tissue under microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 3:** Sense organs. Primary sense organs. Organs of sight and smell.
**Practical classes: 2 hours**

**The student must define and know all about;** Sense organs. Primary sense organs. They are structure, feathers, localizations, functions.

Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study the tissue under microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 4:** Sense organs. Secondary sense: organs of hearing, balance and taste.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Sense organs. Secondary sense organs. They are structure, feathers, localizations, functions.

Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.

**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 5:** Histology cardiovascular systems.
**Lecture: 2 hours**
The Heart. Blood vessels. Arteries and Veins. They are structure, feathers, localizations, functions. Comparison between artery and veins.
**Topic :** Histology cardiovascular systems.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** The Heart. Blood vessels. Arteries and Veins. They are structure,.feathers, localizations, functions. Comparison between artery and veins.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.

**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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**Topic 6:** Endocrine system

**Lecture: 2 hours**
Endocrine system. General feathers. Classification and types of exocrine and endocrine system. Structure, functions, of endocrine and exocrine glands. Structure, functions, of endocrine and exocrine glands. Comparison between endocrine and exocrine glands.

**Topic :** Endocrine system
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Gland tissue. General feathers. Classification and types of exocrine and endocrine system. Comparison between endocrine and exocrine glands. Structure, functions, of endocrine and exocrine glands. Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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**Topic 7:** Central organs of hemopoiesis. Bone marrow. Thymus.

**Lecture: 2 hours**
**Topic:** Central organs of hemopoiesis. Bone marrow. Thymus.

**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What are Central organs of hemopoiesis. Bone marrow. Thymus.
**Topic :** Central organs of hemopoiesis. Bone marrow. Thymus.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Gastrulation, Histogenesis, Organogenesis. Stage of development.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers

3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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**Topic 8:** Peripheral organs of hemopoiesis, and immunogenesis. Spleen. Lymphatic nodes.

**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What are Central organs of hemopoiesis. Bone marrow. Thymus. Function, structure, types of peripheral nerve tissue.
**Topic :** Peripheral organs of hemopoiesis, and immunogenesis. Spleen. Lymphatic nodes.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Peripheral organs of hemopoiesis, and immunogenesis. Spleen. Lymphatic nodes. Function, structure, types of peripheral nerve tissue.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions.
**Books to read:**

6. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
7. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
8. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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**Topic 9:** Digestive system. Oral Cavity. Teeth.
**Lecture: 2 hours**
Digestive system. Oral Cavity. Teeth. Feathers. Types of tissue, structure, functions, localizations.
**Topic :** Digestive system. Oral Cavity. Teeth.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Digestive system. Oral Cavity. Teeth. Feathers. Types of tissue, structure, functions, localizations.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
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**Topic 10:** Digestive glands. Pancreas. Liver. Bilious bubble.
Digestive glands. Pancreas. Liver. Bilious bubble. Teeth. Feathers. Types of tissue, structure, functions, localizations.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Digestive glands. Pancreas. Liver. Bilious bubble. Teeth. Feathers. Types of tissue, structure, functions, localizations.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

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**Topic 11:** Digestive system, digestive tube.
Digestive system. Esophagus, stomach, duodenum, intestines, rectum. Feathers. Types of tissue, structure, functions, localizations.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is Digestive system, digestive tube. Esophagus, stomach, duodenum, intestines, rectum. Feathers. Types of tissue, structure, functions, localizations.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

11. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
12. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers

13. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
14. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
15. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 12:** Respiratory system
**Lecture: 2 hours**
Respiratory system. Lung. Trochee, bronchi, bronchiole. Feathers. Types of tissue, structure, functions, localizations.
**Topic :** Respiratory system
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** Respiratory system. Lung. Trochee, bronchi, bronchiole. Feathers. Types of tissue, structure, functions, localizations.
Tests for current control: Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

16. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
17. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
18. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
19. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
20. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 13:** Skin and her derivatives
**Lecture: 2 hours**
Skin and her derivatives
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is skin tissue? Structure of skin. Function and feather of the skin tissue.
**Topic :** Skin and her derivatives
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is skin tissue? Structure of skin. Function and feather of the skin tissue , functions.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
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**Topic 14:** Urethra system
Urethra system . Structure and function of Urethra.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is the Urethra system . Structure and function of Urethra.
Tests for current control..Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

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**Topic 15:** Men's reproductive system.
**Lecture: 2 hours**
Men's reproductive system. Feathers. Structure, Function, types of testis, penis, system of ducts, and sex glands.
**Topic :** Men's reproductive system.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** Men's reproductive system. Feathers. Structure, Function, types of testis, penis, system of ducts, and sex glands.

Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

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2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
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**Topic 16:** Female's reproductive system.
Female's reproductive system. Feathers. Structure, Function, types of testis, penis, system of ducts, and sex glands. Placenta and menstruation cycle.
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** Female's reproductive system. Feathers. Structure, Function, types of testis, penis, system of ducts, and sex glands. What is placenta, menstruation cycle.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 17** : Embryogenesis person.
**Lecture: 2 hours**
**Topic :** Embryogenesis person. blastula. Ectoderm. Endoderm. Types, feathers, functions, localizations
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** Embryogenesis person. blastula. Ectoderm. Endoderm. Types, feathers, functions, localizations
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers

3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
5. Textbook of human embryology / Inderbir Singh GP Pal / - Ninth edition. - Delhi, 2012.

**Topic 18** : Placenta and her types
**Practical classes: 2 hours**

**The student should know and be able to retell everything about this disease:** What is placenta. Structure, function and localization of tissue.
Tests for current control. Oral survey of students. Written survey of students. Discussion. Comparative control questions. Study structure of tissue using microscope.
**Books to read:**

1. BRS Cell biology and cytology. By author Leslie P. Gartner, PhD James L. Hiatt, PhD Judy M. Strum, PhD
2. Cells and Tissues: An Introduction to Histology and Cell Biology by author Andrew W. Rogers
3. Medical Histology / Like Hussein Siddiqi / - Fourth edition. - Book Center Caravan, 2008.
4. Atlas of histology / VP Eroshchenko / - Tenth edition. - Lippincott Williams & Wilkins, 2005.
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