



Department of -Medical laboratory Technology - Evening

College of ----- Erbil Technical Health College

University of ----- Erbil Polytechnic

Subject:Clinical Haematology & Blood Banking.

Course Book – (Year 4)

Lecturer's name (Assist. Prof. Sarbaz I. Mohammed, PhD)

Academic Year: 2019/2020

11. Course objective:

- **The goal of the clinical hematology is to facilitate mastery of the principles and practice of hematology needed by medical laboratory technician and medical laboratory science students to achieve board certification or licensure upon graduation. Clinical hematology has been classroom and laboratory (field tested) medical laboratory technician and medical laboratory science**

12. Student's obligation

Classroom polices:

1- Attendance: You are strongly encouraged to attend class on a regular basis, as participation is important to your understanding of the material. This is your opportunity to ask questions. **You are responsible for obtaining any information you miss due to absence**

2- Lateness: Lateness to class is disruptive

3-Talking: During class please refrain from side conversations. These can be disruptive to your fellow students and your professor

13. Forms of teaching

Course Book, white board and PowerPoint

14. Assessment scheme

Breakdown of overall assessment and examination

Component	Date	Percent
Exam1	--/--/2015	40 %
Exam 2	--/--/2015	40 %
Respecting Classroom Policy		20%
Total		100%

15. Student learning outcome:

After completion of this course, you will be able to:

- Define common terms used in clinical hematology & blood banking.
- Identify all the possible methods for preparation of blood analysis
- Different structure blood
- Identify basic classification of anemia
- Steps of blood banking

16. Course Reading List and References:

1. Turgeon M. L. (2018). Clinical Hematology Theory and Procedures. 6th edition. Philadelphia: Wolters Kluwer
2. Provan D., Trevor B., Inderjeet D., Johannes de vos. (2015) Oxford Handbook of Clinical Haematology. 4th edition. USA by Oxford University press.
3. Denise Harmening (2012). Modern Blood Banking & Transfusion Practices. 6th edition. F. A. Davis Company Philadelphia, PA.

17. The Topics:

Lecturer's name

1- Haematology & history of hematology	Week 1
2- Haemopoiesis	Week 2
3- Erythropoiesis	Week 3
4- Haemoglobins	Week 4
5- Anaemia etiology	Week 5
6- Iron-Deficiency Anemia	Week 6
7- Thalassemia	Week 7
8- Hemoglobinopathies	Week 8
9- Macrocytic Anemias	Week 9
10- The Dysplastic and Sideroblastic Anemias	Week 10
11- Leukocytosis	Week 11
12- Introduction to Acute Leukemia	Week 12
13- Examination 1	Week 13
14- Acute Lymphoblastic Leukemia	Week 14
15- Acute myeloblastic Leukemia	Week 15
16- Chronic Lymphocytic Leukemia (CLL)	Week 16
17- Chronic myeloblastic Leukemia (CML)	Week 17
18- Non-Hodgkin Lymphomas.	Week 18
19- Hodgkin Lymphoma	Week 19
20- Platelets	Week 20
21- Thrombocytopenia	Week 21
22- Platelet Dysfunction and	Week 22
23- von Willebrand Disease	Week 23
24- Hemophilia and Other Intrinsic Pathway Defects	Week 24
25- Examination 2	Week 25
26- Extrinsic and Common Pathway Coagulopathies.	Week 26
27- Coagulation Test	Week 27
28- Blood Banking	Week 28
29- General Guidelines	Week 29

<p>30- Donor Selection</p> <p>31- Collection Of Blood From Donors</p> <p>32- Testing Of Donated Blood</p> <p>33- Storage, Transportation And Expiration Of Blood And Its Components</p> <p>34- Examination 3</p>	<p>Week 30</p> <p>Week 31</p> <p>Week 32</p> <p>Week 33</p> <p>Week 34</p>
<p>18. Practical Topics (If there is any)</p>	
<p>In this section The lecturer shall write titles of all practical topics he/she is going to give during the term. This also includes a brief description of the objectives of each topic, date and time of the lecture</p>	<p>Lecturer's name ex: (3-4 hrs)</p> <p>ex: 14/10/2019</p>
<p>19. Examinations:</p> <p>Q1/ Choose correct answer (30 marks)</p> <p>1- The blood is fluid of life about ----- of human body weight (a- 7-8% b- 6-7% c- 8-9% d- 6-9%)</p> <p>2- Plasma is liquid portion of the blood, mainly consists of ----- ----- (a-Organic , inorganic substances and H₂O b- Lipid, protein and H₂O₂ c- protein, sugar and blood cell d- Organic , inorganic substances and protein)</p> <p>3- HSCs are capable of cell division to give rise to more stem cells is called----- (a- Differentiation b- Self-renewal c- Pluripotent d- stem cells)</p> <p>4- Stromal cells are the major source of growth factors except for ----- (a- erythropoietin b- thrombopoietin c- Interleukin-3 d- cytokines)</p> <p>5- Collectively, the progenitors, precursors, and adult red cells make up an organ termed the ----- (a- erythron b- spleen c- blood cells d- all of them)</p> <p>6- Although the erythropoietin response is primarily a function of the severity of ----- (a- hypoxia, b- erythroid marrow mass c- inflammatory cytokines d- all of them)</p> <p>7- Which red cells is not a biconcave disc? (a. Anisocyte b. Microcyte c. Hypochromic red cells d. Spherocyte)</p> <p>8- Red blood cells which are larger than 8.1 microns are called-----</p>	

(a. Anisocytes b. Macrocytes c. Microcytes d. Normocytes)

- 9- An iron protein complex which combines with oxygen and carbon dioxide is----- (a. Deoxyhemoglobin b. Hemoglobin c. Hemosiderin d. Oxyhemoglobin)
- 10- The Bohr Effect is a physiological phenomenon, stating that hemoglobin's oxygen binding affinity is inversely related both to --- & ----- (a- Alkalinity & CO₂ b- Acidity & O₂ c- acidity & CO₂ d- Alkalinity & O₂)
- 11- Most antibodies are ----- globulins (a- α b- β c- γ d- δ)
- 12- Water act as----- for blood cells (a- Enzyme b- polar solvent c- polar solute d- cofactor)
- 13- In allergic conditions, we commonly find an increase of----- (a. Basophil b. Eosinophils c. Neutrophils d. Lymphocytes)
- 14- In which stage of erythrocytic maturation does Hgb formation begin? (a. Orthochromic normoblast b. Pronormoblast c. Basophilic normoblast d. Polychromatic normoblast)
- 15- life span of pronormoblast is ----- day (a- 1.3 b- 1.5 c- 2 d- 0.8)

Q2/ True or False

(20 marks)

- 1- The lower level of haemoglobin during pregnancy is due to by reduction of plasma volume
- 2- Poikilocytosis significant variation in size of red cells
- 3- Extravascular destruction of red cells by macrophages
- 4- Howell-Jolly bodies are small, spherically shaped DNA remnants
- 5- Heinz bodies are composed of denatured proteins, primarily hemoglobin
- 6- Hemoglobin H is composed of γ_4 tetramers
- 7- Natural killer cells is a type of granulocyte group
- 8- In Orthochromic normoblast, the nucleus appears as a dense blue-black sphere, is known as a pyknotic nucleus
- 9- Changes in the oxygen delivery to tissue are sensed by peritubular interstitial, fibroblast-like cells in the liver.
- 10- The rate of new RBC production varies according to the rate of RBC destruction and Tissue oxygen requirements.

Q3/

- 1- Explain morphological classification of anemia (15 marks)
- 2- Explain Biosynthesis of heme (20 marks)
- 3- Mention various hematopoietic organs during antenatal life (15marks)

20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

21. Peer review

پیداچوونہوہی ھاوہل

This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.

(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).

ئہم کورسبووک دہبیت لہ لایہن ھاوہلئیکی ئەکادیمیہوہ سہیر بکریت و ناوہرۆکی بابہتہکانی کورسہکە پەسەند بکات و جەند ووشەیک بنووسیت لەسەر شیاوی ناوہرۆکی کورسہکە و واژووی لەسەر بکات.
ھاوہل ئەو کەسەیکە زانیاری ھەبیت لەسەر کورسہکە و دہبیت پلہی زانستی لہ ماموستا کەمتر نەبیت.

Theory Lecturer's

Assist. Prof. Dr. Sarbaz I. Mohammed

Haematology