

Course title: Haematology and Immunohaematology	اسم المادة: أمراض الدم ومبحث المناعة الدموية الرمز: 2033 دم ، 2043 دم
Intended term : 3, 4	الفترة الدراسية: 3،4
Course duration: 30weeks	مدة المقرر: 30 أسبوع
- Lectures : 4 hours	عدد ساعات النظري: 4 ساعات
- Practical: 6 hours	عدد ساعات العملي: 6
Total contact hours: 150 hours	عدد ساعات الاتصال: 150 ساعة
Course credit: 6 hours	الساعات المعتمدة: 6 ساعات

الرمز: 2033 دم ، 2043 دم

Course Description.

This course describes the Basic Hematological Techniques.

الاهداف العامة للمادة:

بنهاية هذا الكورس يكون الطالب ملما باساسيات علم امراض الدم السريري، السلامة المعملية، تشغيل واستعمال كل الاجهزة والمعدات المعملية واجراء اختبارات الدم الاساسية.

SPECIFIC OBJECTIVES:

Students ended this course are:

1. Able to operate and use apparatus and equipments, and awarded about lab Safety.
2. Informed about blood cells, development, function and morphology as general fundamentals blood cells.
3. Differentiate the types of anticoagulants and know how to use and collect blood specimens of different types.
4. Carryout the basic hematological techniques in terms of: haemoglobinometry, haemocytometry, hematocrit, red cell indices
5. Able to prepare, stain and examine blood films.
6. Understand the fundamentals and principle of normal hemostasis and basics of coagulation studies.
7. Understand the fundamentals of blood groups mainly ABO & Rh.
8. Able to carry out blood grouping using different serological technique.

COURSE CONTENTS:

The course contains the following Topics.

✎ Term 1:

✓ Lectures:

- Week (1): Introduction To Haematology
 - Definition, constituents, properties & function of blood.
- Week (2): Equipments & Lab Safety
 - Equipments used in haematology lab.
 - Safety in haematology lab (precautions & hazard)
- Week (3): Blood Collection And Anticoagulants
 - Anticoagulant, types, principle of action, uses, criteria's.
 - Blood collection, transports & storage.
- Week (4): Blood Film Preparation & Staining
 - Stain: types, theory, preparation & use.
 - Blood film types, method of preparation & method of staining.
- Week (5): Haemopoiesis
 - Haemopoietic tissues, stem cell & growth factors.
- Week (6): Erythropoiesis:
 - Definition, development, red cell precursor morphology, matures red cell morphology & function.
- Week (7): Haemoglobin:
 - Synthesis, type, structure, break down.
- Week (8): Basic Haematology Technique:
 - Haemoglobin estimation, principle, technique & methodology.
- Week (9): Basic Haematology Technique (haemocytometry):
 - Haemocytometry, principle, calculation, source of error.
 - RBCs, WBCs & platelet count.

- Week (10): Basic Haematological Technique:
 - PCV
 - ESR
- Week (11): Red Cell Membrane & Metabolism:
 - Red cell membrane structure & function
 - Embden meyerhof pathway
 - Hexose's monophosphate pathway
- Week (12): Leukopoiesis:
 - Definition, development, WBC precursor morphology, matures leukocyte & types.
- Week (13): WBC's function-morphology & their benign disorders
- Week (14): **Thrombopoiesis**:
 - Definition & development
 - Platelet structure & function
- Week (15): Blood Cells Morphology In Health & Disease

Practical:

- Week (1): introduction to haematology
- Week (2): Equipment in haematology lab (group discussion & spots) and lab safety.
- Week (3): blood collection and anticoagulant
- Week (4): blood collection and blood film preparation
- Week (5): blood film preparation and staining
- Week (6): blood film examination (ideal thickness) & normal morphology.
- Week (7): blood film examination
- Week (8): haemoglobin estimation
- Week (9): haemoglobin chart & table

- Week (10): WBC count
- Week (11): RBC count
- Week (12): platelet count
- Week (13): PVC & RVC indices
- Week (14): haemoglobin estimation & PVC (quality control).
- Week (15): WBC & RBC counts (quality control)

Term II:

- Week (1): introduction to immunohaematology:
 - Immune system
 - Complement
- Week (2): Ag & Ab:
 - Ag definition, structure.
 - Ab definition, structure, classification.
 - Ag/Ab reaction.
- Week (3): serological tech.-1 :
 - Saline
 - Enzyme
- Week (4): serological tech-2:
 - Anti human globin, definition, preparation, uses & application.
 - DCT & IDCT
- Week (5): ABO blood group system
- Week (6): Rh blood group system
- Week (7): blood grouping techs & discrepancies.
- Week (8): outlines of minor blood group system
- Week (9): normal haemostasis-1:
 - Blood vessel-structure & role.
- Week (10): normal haemostasis-2:

- Plasma coagulation, factor.
 - Coagulation mechanism.
- Week (11): normal haemostatis-3:
 - Inhibitory mechanism.
 - Fibrinolytic mechanism.
- Week (12): bleeding time and clotting time.
- Week (13): investigation of haemostatis-1:
 - Sample collection and preparation.
 - PT.
- Week (14): investigation of haemostatis-2:
 - PTT, TT.
 - Fibrinogen assay.
- Week (15): investigation of haemostasis-3:
 - Interpretation of first line test.

Practical:

- Week (1): complete haemogram
- Week (2): complete haemogram (abnormal)
- Week (3): blood cell morphology spot.
- Week (4): preparation of red cell suspension & saline tech (agglutination and haemolysis reactions).
- Week (5): AHG (DCT)
- Week (6): direct blood grouping slide method
- Week (7): direct & indirect grouping by tube method
- Week (8): Du testing (AGH)
- Week (9): blood grouping (quality control)
- Week (10): blood grouping (case)
- Week (11): bleeding time

- Week (12): clotting time
- Week (13): PT
- Week (14): PTT
- Week (15): TT & fibrinogen assay.

Instructional methods:	طرق تدريس المادة
1- Lectures	1- محاضرات
2 - Lab. practical	2- دروس عملية
3- Tutorials	3- حلقات نقاش
4- Seminars	4- سمنارات
5- Assignments and Reports	5- ملخصات وتقارير

Evaluation:

10% annual assessment.

10 % oral exam.

80% final examination held at end of the course.

- 50 % Written exam. (3 hr.)

- 50 % Practical exam. (3hr.).

Referances:

1. Barbara J. Bain and S. Mitchell Lewis.Imelda Bates.Mike A Laffan Dacie and Lewis Practical Haematology, 11th edition. Churchill Livingstone 2012.

2. Embury SH, Hebbel RP, Mohandas N, Steinberg MH.In sickle cell disease.Basic principles and clinical practice.New York: Raven Press 1994.p.217-230

3. Allan Victor Hoffbrand, Paul Moss, John Pettit.Essential Heamatology.6th edition.Blackwell publisher 2007.

4. John P. Greer, Daniel A. Arber , Bertil Glader, Wintrobe's Clinical Hematology.13th edition.Lippincott Williams & Wilkins publisher 2013.

مقرر أمراض الدم الفرقة الثالثة:

Course Title: haematology and imunohaematology	اسم المادة: علم أمراض الدم ومبحث المناعة الدموية
Intended term : 5,6	الرمز: 3053 دم ، 3063 دم
Course duration: 30weeks	الفترة الدراسية: 6,5
- Lectures : 4 hours	مدة المقرر: 30 أسبوع
- Practical: 6hours	عدد ساعات النظري: 4 ساعة
Total contact hours: 150 hours	عدد ساعات العملي: 6 ساعة
Course credit: 6 hours	عدد ساعات الاتصال: 150 ساعة
	الساعات المعتمدة: 6 ساعة

الرمز: 3053 دم ، 3063 دم

Course Description:

This course describes the routine tests and procedures used in heamatology laboratories and blood banks.

الاهداف العامة للمادة:

بنهاية هذا الكورس يكون الطالب قادراً علي اجراء الاختبارات المعملية اللازمة لتشخيص امراض الدم مثل فقر الدم بانواعه، سرطان الدم بانواعه، امراض الارقاء الدموى اضافة الى اجرا الفحوصات اللازمة لعمليات نقل الدم.

Specific objectives:

At the end of the course, students should have understood:

- All types of anemias and methods of diagnosis.
- All types of leukemia's and hematological malignancies, and their diagnosis.
- How to deal with blood bank work to select suitable donors and carryout perfect and safe blood transfusion measures depending on good understanding for blood group serology and serological techniques,
- Normal and abnormal haemostsis (including bleeding tendency) in terms of vascular purpura, thrombocytopenia and thrombocytopathy and coagulopathy as well as diagnostic approach to haemostatic failure.

Course contents:

📖 Term 1:

✓ Lectures:

- - Blood Transfusion Policies & Practices.
- Clinical Condition Associated With Immunohaematology.
- General Aspect Of Anaemia.
- Microcytic Anaemia.
- Sideroblastic Anaemia.
- Anaemia Of Chronic Disorders & Hemochromatosis.
- Haemolytic anaemia.
- Haemolytic Anaemia.
- Haemolytic Anaemia
- Haemolytic Anaemia:
- Haemolytic Anaemia
- Outlines Of Acquired Haemolytic Anemia & Pnh.
- Macrocytic Anaemia (B 12 & Folate Deficiency)
- Polycythemia
- A Plastic Anaemia

Term II:

✓ Lectures:

- Leukemia & Leukomoid Reaction.
- Acute Leukemia
- Chronic Myelocytic Leukemia.
- Chronic Lymphocytic Leukemia.
- Differential diagnosis of leukemia & cytochemical stain.
- Myelo displastic syndrome.
- Multiple myelomo.

- Malignant lymphoma
- Myelofibross & Essential Thrombocythemia
- Bleeding Tendancy
- Bleeding Tendency
- Bleeding Tendency
- Bleeding Tendency
- Acquired coagulation disorder
- second line investigation
- laboratory control of anticoagulant therapy

Instructional methods:	طرق تدريس المادة
1- Lectures	1- محاضرات
2 - Lab. practical	2- دروس عملية
3- Tutorials	3- حلقات نقاش
4- Seminars	4- سمنارات
5- Assignments and Reports	5- ملخصات وتقارير

Evaluation:

- 10% annual assessment.
 - 10 % oral exam.
- 80% final examination held at end of the course.
- 40 % Written exam. (3 hr.)
 - 40 % Practical exam. (3hr.).

References:

1. Barbara J. Bain and S. Mitchell Lewis.Imelda Bates.Mike A Laffan Dacie and Lewis Practical Haematology, 11th edition. Churchill Livingstone 2012.
2. Embury SH, Hebbel RP, Mohandas N, Steinberg MH.In sickle cell disease.Basic principles and clinical practice.New York: Raven Press 1994.p.217-230
3. Allan Victor Hoffbrand, Paul Moss, John Pettit.Essential Heamatology.6th edition.Blackwell publisher 2007.
4. John P. Greer, Daniel A. Arber , Bertil Glader, Wintrobe's Clinical Hematology.13th edition.Lippincott Williams & Wilkins publisher 2013.

مقرر أمراض الدم الفرقة الرابعة:

Course title: Haematology and imunohaematology – advance course	اسم المادة: علم أمراض الدم ومبحث المناعة الدموية- كورس متقدم
Intended term : 7,8	الفترة الدراسية: 7 ، 8
Course duration: 30weeks	مدة المقرر: 30 أسبوع
- Lectures : 8 hour	عدد ساعات النظري: 8 ساعة
- Practical: 12 hour	عدد ساعات العملي: 12 ساعة
In-service training: 8 hours	التدريب الميداني : 8 ساعات
Total contact hours: 780	عدد ساعات الاتصال: 780 ساعة
Course credit: 20 hours (8+4+8)	الساعات المعتمدة: 20 ساعة (8+4+8)

Course description:

This course describes all heamatological investigations and procedures used in Heamatology Labradors and Blood Banks.

الأهداف العامة للمادة:

بنهاية هذا الكورس يكون الطالب قادراً علي اجراء الفحوصات المعملية المتقدمة لتشخيص وتأكيد أمراض الدم، فقر الدم بانواعه، سرطان الدم، امراض الارقاء الدموي. كما يكون قادراً علي ادارة بنوك الدم واجراء عمليات تحضير ونقل الدم وتشخيص الحالات التي تصاحب عمليات نقل الدم.

Specific objectives:

Haematology graduate student completed this 4th year course, is Haematology specialist, who well trained to.

1. Be involved in the laboratory work dealing with any haematology work starting from the routine CBC up to the various confirmatory tests for most haematological disorders.
2. participated in the laboratory management for the requirement of diagnosis haematological diseases.
3. Manage blood banking starting from selection of a suitable blood donors up to measures to transfuse that blood safely to recipients and able to diagnose any reaction of incompatible transfusion. in addition to separate and prepare the blood components and products .

4. Be awarded about HLA system & Carryout HLA tissue typing to provide histocompatibility for organ transplantation.
5. Diagnose serologically & haematological cases of blood group incompatibility as well as autoimmune haemolytic mechanism.
6. Carryout immunological and histochemical investigations for haematological malignancies.
7. Use radioisotopes diagnostically.

Course content:

The course contains clinical haematology & immunohaematology previously studied in the 2nd & 3rd year, but in a more detailed & advanced work, in addition to some topics not introduced before.

Term 1:

✓ Lectures:

- Week (1): Haematology Quality Assurance.
- Week (2): Haematology Quality And Reference Preparation.
- Week (3): Anaemia Diagnostic Strategy.
- Week (4): Differential Diagnosis And Confirmatory Test of Microcytic Anemias.
- Week (5): Policy of Investigation of Haemolytic Anaemia.
- Week (6): Assessment of Red Cell Membrane Defect.
- Week (7): Assessment of Red Cell Enzyme
- Week (8): Haemoglobin Electrophoresis And Investigation of Abnormal Haemoglobins And Thalassaemia.
- Week (9): Autoimmune And Drug Induced Haemolytic Anaemia.
- Week (10): Haemoparasites (1).
- Week (11): Haemoparasites (2).

- Week (12): Differential Diagnosis And Confirmatory Test of Macrocytic Anamias.
 - Microbiological
 - Radiometrical & deoxyuridine suppression test.
- Week (13): organization and quality assurance in blood bank.
- Week (14): transfusion therapy & aphaeresis
- Week (15): adverse effect of blood transfusion.

✓ **Practical:**

- Week (1):
 1. Haemocytometry (quality control).
 2. Haemocytometry (quality control).
- Week (2):
 1. Hb and PVC (quality control)
 2. Hb chart and table.
- Week (3):
 1. Complete Haemogram (Iron Deficiency sample).
 2. Iron profile and PBP of other Microcytic anamias.
- Week (4):

Complete Haemogram (B12 & folic deficiency sample).

Assessment of Serum vit B12 and folic acid.
- Week (5):
 1. complete haemogram sickle cell anemia sample .
 2. sickling & solubility test.
- Week (6):
 1. Hb electrophoresis
 2. Complete Haemogram thalaseimia sample .

- Week (7):
 1. Haemoglobin Electrophoresis.
 2. HB A2 estimation (column chromatography).
- Week (8):
 1. HbF estimation.
 2. Hb F demonstration (Kliehauer test).
- Week (9):
 1. Complete haemogram (membrane defect).
 2. Osmotic Fragility Test “24 hours incubation”.
- Week (10):
 1. Acidified Glycerol Lysis-Time test.
 2. Acidified Ham's test.
- Week (11):
 1. Methaemoglobin Reduction Test.
 2. Autohaemolysis test.
- Week (12):
 1. Test Of Unstable Haemoglobin
 2. Shilling Test
- Week (13):
 1. B12 Assays
 2. Folic Acid Assays
- Week (14):
 1. Blood Grouping (Quality Control)
 2. Ab Identification
- Week (15):
 1. Ab Titration
 2. Ab Elution

- Week (16):
 - 1. clinical problem in blood bank.

Term II:

✓ Lectures:

- Week (1): Acute Leukemia's
- Week (2): Chronic Leukemia's
- Week (3): Myeloproliferative disorder
- Week (4): Mononucleosis Syndrome & Systemic Lupus Erythematosis.
- Week (5): Myelodysplastic Syndrome
- Week (6): Multiple Myeloma
- Week (7): Hypersplenism & Hyposplensim
- Week (8): Thrombosis
- Week (9): Laboratory Control Of Anticoagulant
- Week (10): Hunan Leukocyte Antigen
- Week (11): Bone Marrow Transplantation
- Week (12): Cytogenetics
- Week (13): Radioisotope
- Week (14): Automation I
- Week (15): Automation II

Practical (2):

- Week (1): complete haemogram and spot of AML.
- Week (2): complete haemogram and spot of ALL.
- Week (3): complete haemogram and spot of CML.
- Week (4): complete haemogram and spot of CLL.
- Week (5): cytochemical stains I
- Week (6): cytochemical stains II

- Week (7): **peripheral** blood picture and spot of myelodys plastic & multiple myeloma.
- Week (8): peripheral blood picture and spot myelofibrosis and lymphoma.
- Week (9): LE cell, preparation, staining & report
- Week (10): platelet function test
- Week (11): investigation of prolonged PT
- Week (12): investigation of PTT
- Week (13): Euglobin Lysis Tim
- Week (14): VWF antigen (ELISA).

Tutorial:

1. Basic haematological technique I
2. Basic haematological technique II
3. Microcytic anaemias
4. **Hemolytic** anaemia
5. Macrocytic anemia
6. Other normocytic anemia
7. A plastic anemia
8. Polycythemia
9. AB serological technique & Ag AB reaction
10. ABO system
11. Rh system
12. Minor blood group system
13. Pre-transfusion compatibility test
14. HDN (haemolytic disease of the new borne)
15. Blood donation
16. Normal haemostatis

- 17.Coagulation disorder
 18.Platelet disorder
 19. Investigation of haemostatis.

Instructional methods:	طرق تدريس المادة
1- Lectures	1- محاضرات
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Evaluation:

- 10% annual assessment.
 10 % oral exam.
 80% final examination held at end of the course.
 - 40 % Written exam. (3 hr.)
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3. Allan Victor Hoffbrand, Paul Moss, John Pettit.Essential Heamatology.6th edition.Blackwell publisher 2007.
4. John P. Greer, Daniel A. Arber , Bertil Glader, Wintrobe's Clinical Hematology.13th edition.Lippincott Williams & Wilkins publisher 2013.
5. E. A. Stiene-Martin, Cheryl A. Lotspeich-Steininger,John A. Koepke. Clinical Hematology: Principles, Procedures, Correlations. 2nd edition.Philadelphia: Lippincott-Raven, c1998.
6. J.Ochei.A.Kolhatkar.Medical Laboratrary Science: Theory and Practice. ISBN-13: 9780074632239.Tata McGraw Hill Education 2008.