



COURSE SPECIFICATION

(Hematology- HEM 610 HT)

Faculty of Medicine- Mansoura University

(A) Administrative information

(1) Programme offering the course.	Postgraduate Doctorate Degree of Clinical Hematology/HEMA 600
(2) Department offering the programme.	Internal Medicine Department
(3) Department responsible for teaching the course.	Hematology Unit
(4) Part of the programme.	Second part
(5) Date of approval by the Department's council	26/04/2016
(6) Date of last approval of programme specification by Faculty council	9/08/2016
(7) Course title.	Hematology
(8) Course code.	HEM 610 HT
(9) Credit hours	14 hours theoretical 9 hours clinical
(10) Total teaching hours.	14x15-210 9x30-270

(B) Professional information

(1) Course Aims:

The aim of the hematology course is to prepare physicians as senior practitioners, educators, researchers, and administrators capable of practicing clinical hematology in academic and clinical settings. The curriculum advances candidate' knowledge of the basic principles of research, including how research is conducted, evaluated, explained to patients, and applied to patient care.

The course provide the candidate with core competencies to construct the appropriate, optimal management strategies (both diagnostic and therapeutic) for patients with benign and malignant hematological conditions and hemoglobinopathies. It provide opportunities to gain knowledge, clinical experience and ethical attitude in practicing bone marrow and stem cell transplantation. Also, to shed the light on the recent molecular and genetic principles, their possible application in clinical hematology field and to relate the mechanistic science to new drug discovery.

(2) Intended Learning Outcomes (ILOs):

A- Knowledge and Understanding:

A1. To recognize the spectrum of clinical symptomatology to be able to approach commonly and rarely encountered hematological disorders with or without multisystem reflection.

A2. To identify and develop the concept of emergency management of acute hematological disorders.

A3. To make a proper updates in diagnosis of common benign and malignant hematological disorders and their acute emergencies.

A4. To demonstrate competence in the prevention, evaluation, and recent management of:

A4a: acquired and congenital disorders of red cells, white cells, platelets and stem cells;

A4b: hematopoietic & lymphopoietic malignancies, including disorders of plasma cells;

A4c: congenital and acquired disorders of hemostasis and thrombosis, including the use of antithrombotic therapy

A5. To identify effects of systemic disorders and drugs on the blood, blood forming organs, and lymphatic tissues.

A6. To recognize chemotherapeutic drugs, biologic products, and growth factors and their mechanisms of action; pharmacokinetics, clinical indications, and their limitations, including their effects, toxicity, and interactions to be able to identify multiagent chemotherapeutic protocols and combined modality therapy of blood diseases.

- A7.** To state the management of the neutropenic and the immunocompromised patient.
- A8.** To state recent updates in treatment of patients with disorders of hemostasis and the biochemistry and pharmacology of coagulation factor replacement therapy.
- A9.** To outline indications and application of imaging techniques in patients with blood disorders.
- A10.** To comprehend advances in pain management in patients with blood disorders.
- A11.** To recognize rehabilitation and psychosocial aspects of clinical management of patients with hematologic disorders.
- A12.** To illustrate the palliative care, including hospital and home care.
- A13.** To identify and manage human immunodeficiency virus-related malignancies.
- A14.** To comprehend thoroughly care and management of geriatric patients with hematologic disorders.
- A15.** To identify new guidelines in indications, and complications of autologous and allogeneic bone marrow or peripheral blood stem cell transplantation and peripheral stem cell harvests, including the recent management of post-transplant complications.
- A16.** To identify concepts of supportive care, including hematologic, infectious disease, and nutrition.
- A17.** To explain etiology, epidemiology, natural history, diagnosis, pathology, staging, and management of neoplastic diseases of the blood, blood-forming organs, and lymphatic tissues.
- A18.** To outline clinical epidemiology and medical statistics, clinical study and experimental protocol design, data collection, and analysis.
- A19.** To identify basics and application of gene therapy in management of hematological disorders.

B- Intellectual skills

- B1.** To demonstrate the basic principles of research, including how such research is conducted, evaluated, explained to patients, and applied to patient care.
- B2.** To construct meaningful, supervised research experience with appropriate protected time either in blocks or concurrent with clinical rotations while maintaining the essential clinical experience.
- B3.** To correlate clinical information with laboratory, cytology, histology, and immunodiagnostic imaging techniques to diagnose medical and hematological disorders.
- B4.** To interpret the results of blood smears, bone marrow aspiration, and biopsy to diagnose medical and hematological disorders.
- B5.** To integrate etiology, epidemiology, natural history, diagnosis, pathology, staging and management of neoplastic diseases of the blood, blood forming organs and lymphatic tissues.
- B6.** To integrate etiology, epidemiology, natural history, diagnosis and treatment of hemoglobinopathies

C- Professional/practical skills

C1: To apply efficiently the use of chemotherapeutic agents and biological products through all therapeutic routes.

C2: To demonstrate competence in the performance and/or (where applicable) interpretation of the serial measurement of tumor masses.

C3: To demonstrate competence in the performance and/or (where applicable) interpretation of assessment of tumor imaging by computed tomography, magnetic resonance, PET scanning and nuclear imaging techniques;

C4: To demonstrate competence in the performance and/or (where applicable) interpretation of bone marrow aspiration and biopsy, preparation, staining, and interpretation of blood smears, bone marrow aspirates, and touch preparations, as well as interpretation of bone marrow biopsies.

C5: To apply the following:

C5a: apheresis procedures

C5b: performance and interpretation of partial thromboplastin time, prothrombin time, platelet aggregation, and bleeding time, as well as other standard coagulation assays;

C5c: blood banking and current blood bank practice;

C5d: clinical experience in bone marrow or peripheral stem cell harvest for transplantation;

C5e: formal instruction and clinical experience in allogeneic and autologous bone marrow or peripheral blood stem cell transplantation, and in the nature and management of post-transplant complications; and,

C6: To apply indications, contraindications, limitations, complications, techniques, and interpretation of results of those diagnostic and therapeutic procedures integral to the discipline.

C6a: to educate patients about the rationale, technique, and complications of procedures and in obtaining procedure-specific informed consent.

C7: To manage and take care of indwelling venous access catheters

D- Communication & Transferable skills

D1: To develop personal attitudes, and coping skills in care for critically ill patients.

D2: To participate in a multidisciplinary case management conference or discussion.

D3: To demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

D4: To work effectively in various health care delivery settings and systems relevant to their clinical specialty and to coordinate patient care within the health care system relevant to their clinical specialty.

D5: To incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.

D6. To advocate for quality patient care and optimal patient care systems.

D7. To work in inter-professional teams to enhance patient safety and improve patient care quality.

D8. To participate in identifying system errors and implementing potential systems solutions.

D9. To demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals.

D9a: To communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds;

D9b: To communicate effectively with physicians, other health professionals, and health related agencies;

D9c: To work effectively as a member or leader of a health care team or other professional group;

D9d: To act in a consultative role to other physicians and health professionals; and,

D9e: To maintain comprehensive, timely, and legible medical records, if applicable.

D10. To demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Candidates are expected to demonstrate:

D10a: compassion, integrity, and respect for others;

D10b: responsiveness to patient needs that supersedes self-interest;

D10c: respect for patient privacy and autonomy;

D10d: accountability to patients, society and the profession; and,

D10e: sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

(3) Course contents (14x15=210 theoretical+9x30=270 clinical)

Subjects	Lectures	Clinical/practical and Laboratory		Total Teaching Hours
(1) Hematopoiesis and hematopoietic growth factors	7	7	3	17 hours
(2) Erythropoiesis and general aspects of anemia	5	5	2	12 hours
(3) Hypochromic anemias <ul style="list-style-type: none"> • Nutritional and metabolic aspects of iron • Iron deficiency anemia • Sideroblastic anemia • Anemia of chronic disorders 	7	7	3	17 hours
(4) Hereditary hemochromatosis and other iron overload disorders	5	5	2	12 hours
(5) Macrocytic anemias <ul style="list-style-type: none"> • Megaloblastic anemia • Other macrocytic anemia 	5	3	2	10 hours
(6) Genetic disorders of hemoglobin. <ul style="list-style-type: none"> • Hemoglobin synthesis • Hemoglobin abnormalities • Thalassemia • Sickle cell anemia • Prenatal diagnosis genetic hemoglobin disorders 	10	10	5	25 hours
(7) Hemolytic anemias <ul style="list-style-type: none"> • Hereditary hemolytic anemia • Acquired hemolytic anemia 	10	10	5	25 hours
(8) Porphyria	7	7	-----	14 hours
(9) Bone Marrow Failure Syndromes <ul style="list-style-type: none"> • Aplastic anemia, acquired and constitutional, • Paroxysmal nocturnal hemoglobinuria • Pure red cell aplasia. 	10	5	5	20 hours

(10) Myelodysplastic syndromes (MDS).	7	7	-----	14 hours
(11) Antineoplastic drugs and biologic response modifiers: Use and Toxicity of clinically useful agents.	7	7	-----	14 hours
(12) Myeloproliferative neoplasm (MPN). <ul style="list-style-type: none"> • Chronic myelogenous leukemia • Polycythemia Vera • Essential Thrombocythemia • Primary myelofibrosis. • Chronic neutrophilic leukemia. • Chronic eosinophilic leukemia. • Mastocytosis. 	10	10	5	25 hours
(13) The white blood cells <ul style="list-style-type: none"> • Granulocytes, monocytes and their benign disorders • Lymphocytes and their benign disorders. 	5	5	5	15 hours
(14) The genetics of hematological malignancies	6	6	5	17 hours
(15) Acute leukemias	5	5	5	15 hours
(16) Chronic leukemias	5	5	5	15 hours
(17) Lymphoid neoplasm <ul style="list-style-type: none"> • B-cell neoplasm • T-cell neoplasm • Hodgkin's lymphoma 	12	12	3	27 hours
(18) Plasma cell dyscrasia <ul style="list-style-type: none"> • Plasma cell neoplasm • Other neoplastic disease • Non-neoplastic disorders 	10	10	2	22 hours
(19) Atypical cellular disorders <ul style="list-style-type: none"> • Langerhans cell histiocytosis • Sinus histiocytosis with massive lymphadenopathy 	7	7	-----	14 hours

• Castleman disease				
(20) Hematopoietic stem cell transplantation	5	5	-----	10 hours
(21) Transfusion, blood and blood component	10	10	5	25 hours
(22) Platelets, blood coagulation and hemostasis • Bleeding disorders caused by vascular and platelet abnormalities • Coagulation abnormalities • Thrombosis and antithrombotic therapy	10	10	5	25 hours
(23) Hematological changes in systemic diseases.	5	5	-----	10 hours
(24) Pregnancy and pediatric hematology.	5	5	-----	10 hours
(25) Hematological emergencies	10	10	-----	20 hours
(26) Management of complication of chemotherapy	10	10	-----	20 hours
(27) Nutritional support	5	5	-----	10 hours
(28) Hospice and palliative care	5	5	-----	10 hours
(29) Ethics • Medical ethics • Medical malpractice • Principles in clinical research • Research methodology	5	5	-----	10 hours
Total	210	203	67	480 teaching hours

(4) Teaching methods:

4.1. Power Point presentation.

4.2. Case discussion.

4.3. Focus group.

4.4. Laboratory work.

(5) Assessment methods.

- 5.1: Written exam for assessment of knowledge, intellectual ILOs
- 5.2: Oral exam for assessment of knowledge, intellectual ILOs, transferable skills
- 5.3: OSCE and Clinical exam for assessment of knowledge, intellectual, practical and transferable skills ILOs
- 5.4: MCQ continuous assessment for assessment of knowledge, intellectual ILOs

Assessment schedule.

Final exam at the completion of the programme according to the bylaw with total of **500 marks**.

Mcq continuous assessment at the end of each semester: 60 marks

Percentage of each Assessment to the total mark.

Written and commentary exam: 240 marks

Clinical and OSCE exam: 100 marks

Structured Oral exam: 100 marks

(6) References of the course.

- 6.1: Hand books: BETHESDA Hand book of Clinical Hematology, Hand book of Cancer Chemotherapy.
- 6.2: Text books: Essential Hematology, Manual of Clinical Hematology, Post Graduate Hematology, The Washington Manual Of Oncology, Williams' Hematology, Wintrob's Clinical Hematology, Hollan-Frei Cancer Medicine, DeVita Cancer Principles and Practice of Oncology
- 6.3: Journals: American Society of Hematology (ASH), European Hematology Association (EHA).

(7) Facilities and resources mandatory for course completion.

- Lecture Halls
- Data show.
- Equipped Laboratory.

Course coordinator: Dr Mona Taalab

Head of Hematology Unit: Prof Mohamed Nasr Mabed

Head of the Internal Medicine Department: Prof. Dr. Salah Al-Gamal

Date of First Approval: 22/12/2010

Date of Last Approval: 26/04/2016