I. COURSE SYLLABUS

LEARNING UNIT: 4 COURSE CODE: OS 216 COURSE TITLE: Human Disease and Treatment 6: Hematopoiesis and the Immune Response Course Coordinator: Dr. Teresita Dumagay Module Coordinator/s: 1. Dr. Roxanne Hao – Allergology/Immunology Module 2. Dr. Teresita Dumagay – Hematology Module

COURSE DESCRIPTION: This is a 2-week course (1 week for Allergology/Immunology Module and 1 week for Hematology Module) that covers the pathophysiology, symptomatology, diagnosis, prevention and principles of treatment of diseases of the Hematopoietic and Immune Systems. **PRE-REQUISITES: Learning Unit III**

INSTRUCTIONAL DESIGN for OS 216 Hematology Module:

Learning Outcomes:

- L1 Clinical Competence
- L2 Effective Communication Skills
- L3 Leadership and management
- L4 Generation and Utilization of Relevant Knowledge
- L5 Inter-professional practice
- L6 System-based Approach to Health Care Practice
- L7 Lifelong Personal & Professional Development
- L8 Adherence to Professional and Ethical Standards
- L9 Volunteerism, Nationalism and Internationalism
- L10 Advocacy for Social Equity and Social Accountability
- L11 Effective Teaching and Organizational Skills

MODULE OBJECTIVES	LO ADDRESSED	COURSE CONTENT	STRATEGIES	RESPONSIBLE UNITS	RESOURCES NEEDED	EVALUATION
Define different benign and malignant hematologic disorders and identify their causes and risk factors. Differentiate pediatric and adult hematologic disorders in terms of epidemiology and clinical presentations. Correlate the pathophysiology and manifestations of different	L1, L4 L1, L4 L1, L4	 A. Benign Hematology a. RBC Disorders Adult Pediatric b. Bleeding Disorders Congenital Acquired c. Hypercoagulable 	 Face to face Lectures Small Group Discussions Written Case Report Case Presentation 	 Department of Laboratories Department of Medicine Division of Hematology Department of Pathology 	 Reference Textbooks Clinical Practice Guidelines Teaching slides (Pathology) Internet Connection 	 Written Examination Small Group Discussion Evaluation Written Case Report Evaluation

benign and malignant		d. Bone Marrow	4. Department	4. Case
hematologic disorders.		Failure	of Pediatrics	Presentation
Discuss appropriate diagnostic		i. Congenital	 Section of 	Evaluation
work-up and management	L1, L2, L3, L4,	ii. Acquired	Hematology	
principles for benign and	L6, L7. L8,	B. Malignant Hematology	and	
malignant hematologic	L11	a. Adult	Oncology	
disorders.		b. Pediatric		
Discuss the psychosocio-		C. Approach to		
economic impact of	11 12 12 14	Hematologic		
hematologic disorders on the	LI, LZ, L3, L4,	Complaints		
patients and their families.	LS, LO, L7, LO,	D. Common Laboratoray		
	19, 110, 111	tests used in		
		Hematology		
Discuss the principles of blood		a. Blood groups		
donation and blood component	L1, L4, L6	b. Blood component		
therapy.		transfusion		
Define the indications for blood		c. Cross-matching		
component and whole blood		procedures		
transfusion.	L1, L4, L6	d. Indications for blood		
		component/ whole		
		blood transfusion		
Discuss transfusion related		a. Blood transfusion		
complications and their		reactions		
management.	L1, L2, L4, L6,	i. immune mediated		
	L7, L8, L9,	ii. non-immune		
	L10, L11	mediated		
		b. Transfusion related /		
		transmitted diseases		
Identify ethical issues on blood	11 12 12 14	h. Ethical issues in blood		
transfusion.	15 16 17 10	transfusion		
	10, 10, 17, 18, 10, 110	i. Voluntary blood		
	L9, L10, L11	donation/advocacy		

MODULE OUTLINE (MUST KNOW TOPICS)

- A. Benign Hematology
 - a. Red Blood Cell Disorders
 - i. Hemolytic Anemias
 - 1. Thalassemia
 - 2. Hemolytic Disease Due to Red Cell Enzyme Defects: Glucose-6-Phosphate Dehydrogenase Deficiency
 - 3. Immunohemolytic Anemia
 - 4. Hereditary Spherocytosis
 - ii. Anemias of Diminished Erythropoiesis
 - 1. Pure Red Cell Aplasia
 - 2. Megaloblastic Anemia
 - 3. Anemia of Folate Deficiency
 - 4. Iron Deficiency Anemia
 - 5. Anemia of Chronic Inflammation
 - 6. Anemia of Malignancy
 - iii. Physiologic Anemia of Infancy
 - b. Bleeding Disorders
 - i. Congenital Bleeding Disorders
 - 1. Hemophilia
 - 2. Von Willebrand Disease
 - 3. Congenital/hereditary platelet and blood vessel disorder
 - ii. Acquired Bleeding Disorders
 - 1. thrombocytopenic purpura
 - 2. Acquired Coagulopathies including Disseminated Intravascular Coagulation (DIC)
 - 3. Acquired platelet and blood vessel disorder
 - c. Hypercoagulable States
 - i. Hereditary thrombophilias
 - 1. prothrombin gene G20210A mutations
 - 2. protein C and S deficiencies
 - 3. factor V Leiden
 - ii. antiphospholipid antibody syndrome
 - iii. arterial thrombosis
 - iv. venous thrombosis
 - v. cancer associated thrombosis
 - d. Bone Marrow Failure
 - i. Aplastic Anemia
 - ii. Congenital and acquired pure red cell aplasia
 - iii. Myelodysplastic Syndrome
 - iv. Myelophthisic Marrow
- B. Malignant Hematology
 - a. Lymphoid Neoplasms Definitions and Classifications
 - i. Acute lymphoblastic leukemia
 - ii. Chronic lymphocytic leukemia
 - iii. Lymphoma
 - iv. Plasma cell dyscrasias / gammopathies
 - b. Myeloid Neoplasms Definitions and Classifications
 - i. Acute myeloid leukemias
 - ii. Chronic myeloid leukemia
 - iii. Chronic myeloproliferative disorders

- C. Transfusion Medicine
 - a. Blood groups
 - b. Blood component transfusion
 - c. Cross-matching procedures
 - d. Indications for blood component/ whole blood transfusion
 - e. Blood transfusion reactions
 - i. immune mediated
 - ii. non-immune mediated
 - f. Transfusion related / transmitted diseases
 - g. Ethical issues in blood transfusion
 - h. Voluntary blood donation/advocacy
- D. Approach to Hematologic Complaints
- E. Common Laboratory Tests Used in Hematology
 - a. Complete Blood Count
 - b. Peripheral Blood Smear
 - c. Prothrombin Time
 - d. Activated Partial Thromboplastin Time
 - e. Ferritin, TIBC, serum iron
 - f. Reticulocyte count
 - g. Hemoglobin electrophoresis
 - h. Marrow core biopsy tests including
 - i. Routine Hematoxylin and Eosin stain
 - ii. Reticulin stain
 - iii. Iron Stain
 - i. Immunohistochemical tests/stains (for hematologic malignancies)
 - j. Immunophenotyping (for hematologic malignancies)
 - k. Flow Cytometry (for hematologic malignancies)
 - I. Cytogenetic testing including FISH panels (for hematologic malignancies)

REFERENCES

Longo et al. eds. Harrison's Principles of Internal Medicine, 21st ed.

- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed*. Part 2 Section 9 Hematologic Alterations.
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 2 Chapter 97. Iron Deficiency and Other Hypoproliferative Anemias
- Longo et al. eds. Harrison's Principles of Internal Medicine, 21st ed. Part 4 Section 2 Chapter 99. Megaloblastic Anemias
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 2 Chapter 102. Bone Marrow Failure Syndromes
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 2 Chapter 103. Polycythemia Vera and Other Myeloproliferative Neoplasms
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed*. Part 4 Section 2 Chapter 105. Chronic Myeloid Leukemia
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 2 Chapter 107. Chronic Lymphocytic Leukemia
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 2 Chapter 111. Plasma Cell Disorders
- Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 3 Chapter 115. Disorders of Platelets and Vessel Wall
- Longo et al. eds. Harrison's Principles of Internal Medicine, 21st ed. Part 4 Section 3 Chapter 116. Coagulation Disorders

• Longo et al. eds. *Harrison's Principles of Internal Medicine, 21st ed.* Part 4 Section 3 Chapter 117. Arterial and Venous Thrombosis

Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.*

- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 124. Blood Disorders.
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 480. Physiologic Anemia of Infancy.
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 484. Definitions and Classification of Hemolytic Anemia
- Kliegman et al. eds. Nelson Textbook Of Pediatrics, 22nd ed. Chapter 489. Hemoglobinopathies
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 502. Hemostasis
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 503. Hereditary Clotting Factor Deficiencies (Bleeding Disorders)
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 504. Von Willebrand Disease.
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 511. Platelet and Blood Vessel Disorders.
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 522. The Leukemias.
- Kliegman et al. eds. *Nelson Textbook Of Pediatrics, 22nd ed.* Chapter 523. Lymphoma.

Kumar et al. eds. Robbins and Cotran Pathologic Basis of Disease. 10th ed.

- Kumar et al. eds. *Robbins and Cotran Pathologic Basis of Disease.* 10th ed. Chapter 13. Diseases of White Blood Cells, Lymph nodes, Spleen and Thymus.
- Kumar et al. eds. *Robbins and Cotran Pathologic Basis of Disease.* 10th ed. Chapter 14. Red Blood Cell and Bleeding Disorders.

Clinical Practice Guidelines

- PGH Blood Bank Manual
- Philippine DOH Manual of Standards for Blood Service Facilities
- Philippine DOH Manual on Blood Donor Selection and Counselling
- AABB Manual

MODULE SCHEDULE

	Nov 4	Nov 5	Nov 6	Nov 7	Nov 8
8AM - 9AM 9AM - 10AM	Orientation and Introduction to Hematology Dr. Dumagay <i>Ramon Ang, 3F,</i> <i>Henry Sy Bldg</i>	Morphology lecture Dr. Damian <i>Ramon Ang, 3F, Henry</i> <i>Sy Bldg</i>	Pediatric Hematologic Malignancies Dr. Estanislao <i>Ramon Ang, 3F, Henry</i> <i>Sy Bldg</i>	Adult Hematologic Malignancies Dr. Bonifacio <i>Ramon Ang, 3F, Henry</i> <i>Sy Bldg</i>	Approach to Hematologic Complaints (with Student Group Reports) Dr. Dumagay <i>Ramon Ang, 3F, Henry</i>
10AM - 11AM	Adult RBC Disorders Dr. Mirasol	Pediatric RBC Disorders Dr. Alcasabas	Pediatric Bleeding Disorders	SGD / Group Work/ Self Study	Sy Bldg
11AM - 12NN	Ramon Ang, 3F, Henry Sy Bldg	Ramon Ang, 3F, Henry Sy Bldg	Dr. Caneba Ramon Ang, 3F, Henry Sy Bldg	Rm 301 - 311, 3F, Henry Sy Bldg	
12NN - 1PM					
1PM - 2PM	Pharmacology Exam	Hypercoagulable States Dr. Santos	Adult Bleeding Disorders	SGD / Group Work/ Self Study	Hematology Written Examination
2PM - 3PM		7F Henry Sy Bldg	Ramon Ang, 3F, Henry Sy Bldg	Rm 301 - 311, 3F, Henry Sy Bldg	2F Class 72 Theatre Calderon Hall
3PM - 4PM		Bone Marrow Failure States	Blood Bank Plenary Dr. Villanueva		
4PM-5PM		Dr. Escasa 7F Henry Sy Bldg	Ramon Ang, 3F, Henry Sy Bldg		

REVISED EVALUATION:

1. COMPUTATION OF HEMATOLOGY MODULE GRADE

a. The breakdown of the Hematology Module grade is as follows:

Written Examination	=	40%
Small Group Discussion	=	20%
Written Case Report	=	20%
Oral Case Presentation	=	15%
Peer Evaluation	=	5%
Total	=	100%

b. If a student is unable to attend the synchronous small group discussion the written case discussion will account for 40% of their grade.

c. A student will be considered to have passed the Hematology module if they have a passing grade for each of the individual evaluation components and a passing final grade

2. COMPUTATION OF FINAL GRADE FOR THE HEMATOPOIESIS AND THE IMMUNE RESPONSE COURSE OS 216

a. The computation of the pre-final grade in OS 216 is as follows:
 50% from the Hematology module grade (raw score) + 50% from the Allergy/Immunology module grade (raw score)

b. Students with pre-final passing grades in both Hematology and Allergy/Immunology modules are exempted from the Integrated Hematology-Allergy/Immunology final examination. The computation of the pre-compre grade is based on letter a.

c. Students who pass only one of the two modules or who fail both modules must take the Integrated final Hematology-Allergy/Immunology examination. The computation of the pre-compre and final grade in OSI 216 of these students will be based on letter **e**.

d. Students with passing pre-final grades in each of the modules who wish to improve their final grade may take the Integrated Hematology-Allergy/Immunology final examination. These students who opt to take the Integrated Final Examination automatically waive the computation of their pre-compre grade based on letter **a**. The computation of the pre-compre and final grade in OSI 216 of these students will be based on letter **e**. e. Computation of the pre-compre grade in the entire course for students who take the Integrated Hematology – Allergy/Immunology final examination is as follows:



f. Computation of the final grade in the entire course for students is as follows: 95% Pre-compre grade + 5% Compre grade

g. A student is required to take the removals if they have a failing final grade.

h. The final raw score grade in OS 216 is transmuted to the University approved grading system based on the Mean Passing Level decided for the course.

End of Report. Nothing Follows.