



Department of Physician Assistant Education

Master of Science in Medicine

2 units

MSM 6100 FUNDAMENTALS OF HEMATOLOGY AND ONCOLOGY

SPRING 2025

Office location and hours: TBD	Instructor title and name: Dr. Marin Xavier Dr. Shanely Banaag Sarah Mayer PA-C
Final Exam: Monday, 1/27/2025, 9:00am-11:00am	Phone: 8054524350
Meeting location: Balboa Campus, Classroom 154, Clinical Skills Lab 223	Email: smayer1@pointloma.edu
Week 1: 1/13/25 - 1/17/25 Monday: 1:00-5:00 pm Tuesday: 1:00-5:00 pm Wednesday: "Healer" optional office hours 12:30 -1:30 pm Thursday: 12:00- 4:00 LAB Friday: 9:00 am- 12:00 pm and 1:00-5:00 pm	Week 2: 1/20/25 - 1/24/25 Monday: MLK Day No Class Tuesday: 1:00-5:00 pm Wednesday: 1:00-5:00 pm Thursday: 1:00- 3:00 pm Friday: 10:00 am - 1:00 pm

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

COURSE DESCRIPTION

This course covers the epidemiology, etiology, risk factors, pathogenesis, pathophysiology, complications, and differential diagnoses of commonly encountered blood and lymphatic diseases and disorders through symptoms-based and systems-based approaches. Management of patients with these diseases and disorders across the life span from initial presentation through follow-up for acute, chronic, and emergent cases will be covered, as will referral when necessary, preventive medicine, and patient education.

COURSE GOALS

This goal of this course is to provide the appropriate basic science background essential to the understanding of and diagnosis of disease patterns related to the hematologic and lymphatic systems, and to provide the student with the skills and knowledge necessary for the diagnosis and management of common hematologic and malignant lymphatic disorders.

PROGRAM LEARNING OUTCOMES

The content in this course will contribute to the student's proficiency in this/these area(s):

1. Gather a history and perform a physical examination. (MK, IC, PC, PR)
2. Prioritize a differential diagnosis following a clinical encounter. (MK, PC, PB, PR, SB)
3. Recommend and interpret common diagnostic and screening tests. (MK, IC, PC, PR, PB, SB)
4. Enter and discuss orders and prescriptions. (MK, IC, PC, PR, PB, SB)
5. Document a clinical encounter in the patient record. (MK, IC, PC, PR)
6. Provide an oral presentation of a clinical encounter. (MK, IC, PC, PB, PR)
7. Form clinical questions and retrieve evidence to advance patient care. (MK, PC, PR, PB, SB)
8. Give or receive a patient handover to transition care responsibility. (MK, PC, PR, IC, PB)
9. Collaborate as a member of an inter-professional team. MK, IC, PC, PR, PB, SB
10. Recognize a patient requiring urgent or emergent care and initiate evaluation and management. (MK, IC, PC, PR, PB, SB)

Initials indicate PA core competency required to meet the PLO. PA Core Competencies:

MK = Medical Knowledge	IC = Interpersonal Skills & Communication	PC = Patient Care
PR = Professionalism	PB = Practice-based Learning	SB = Systems-based Practice

COURSE LEARNING OUTCOMES

Successful completion of this course requires demonstration of the skills and knowledge outlined here at, minimally, the ADVANCED BEGINNER level:

1. Obtain a history and perform a focused physical examination relevant to symptoms found within this organ system. (PC2; MK1; IC1; IC7; PR1; PR3; PR5)
2. Prioritize a differential diagnosis based on the history and physical findings in a patient with a hematologic complaint. (PC2, PC4, MK2, MK3, MK4, PB1, IC2, PR8)

3. Recommend common diagnostic and screening tests, pharmacotherapeutics, and management based on their applicability to the differential diagnosis. (PC4, PC5, PC7, PC9, MK1, MK4, PB9, SB3)
4. Document a clinical encounter in the patient record. (PC4, PC6, IC1, IC2, IC5, PR4, SB1)
5. Provide an oral presentation of a clinical encounter including justification of the proposed management plan. (PC2; PC6; IC1; IC2; PB1; PR1; PR3)
6. Form clinical questions and retrieve evidence to advance patient care. (PC5, PC7, MK3, MK4, PB1, PB3, PB6, PB7, PB8, PB9)
7. Recognize a patient requiring urgent or emergent care for a hematologic condition or the patient in whom the manifestation of systemic disease is hematologic and initiate evaluation and management. (PC1, PC2, PC3, PC4, PC5, PC6, IC6, PR1, PR5)

INSTRUCTIONAL OBJECTIVES

Upon completion of the **ANATOMY AND PHYSIOLOGY** section of the course, the student will be able to:

1. Discuss the process of hematopoiesis. Comprehension, B2.02b
2. Discuss the primary functions and role of blood in maintaining homeostasis, transportation, and defense. Comprehension, B2.02b
3. Classify the fluid component and formed elements of blood, and identify their proportions in a blood sample. Application, B2.02a
4. Differentiate plasma proteins and solutes, and describe their functions in blood. Application, B2.02a, B2.02b
5. Compare and contrast the composition of plasma and serum. Analyze, B2.02b

Upon completion of the **PATHOPHYSIOLOGY** section of this course, the student will be able to:

1. Classify plasma cell disorders. Comprehension, B2.02c
2. Compare the hematopathology and clinical context (i.e. primary site of disease) of lymphomas and leukemias. Evaluation, B2.02c
3. Identify and differentiate modalities of cancer-directed therapy (surgery, radiation, chemotherapy, immunotherapy, stem cell transplantation). Comprehension, B2.02c, B2.02d
4. Differentiate stem cell transplantation and anti-neoplastic therapy. Comprehension, B2.02c
5. Differentiate myeloproliferative syndromes. Comprehension, B2.02c
6. Distinguish pancytopenias, myelodysplastic syndromes, and leukemias. Comprehension, B2.02c
7. Contrast benign platelet disorders, coagulopathies, and bleeding disorders. Analysis, B2.02c
8. Describe malignant transformation, hemoglobinopathies, and metabolic anemias. Comprehension, B2.02c
9. List the basic groups of chemotherapeutic agents and give examples of their mechanism of action. Comprehension, B2.02c, B2.02d
10. Describe cancer staging and its utility. Comprehension, B2.02c
11. Discuss the difference between therapies with "intent to cure" versus "palliative care". Comprehension, B2.02c

Upon completion of the **PHYSICAL DIAGNOSIS** section of the course, the student will be able to:

1. Generate an appropriate and comprehensive hematologic medical history from patients presenting with signs and symptoms suggestive of hematologic disease. Application, B2.07a
2. Perform a focused physical examination on a patient with a suspected hematologic disease. Application, B2.07b
- 3 Compare and contrast common signs and symptoms of hematologic disease. Knowledge, B2.07c
3. Describe common findings on the physical examination that might suggest an underlying hematologic disorder. Knowledge, B2.07b

Upon completion of the **CLINICAL MEDICINE** section of the course, the student will: B2.03

1. Given a patient across all age groups, with any of the following signs or symptoms: interview and elicit a comprehensive, relevant medical history, B2.07a perform a complete and focused physical examination and identify the physical findings, B2.07b generate a complete list of differential diagnoses prioritizing them appropriately, B2.07c recommend an appropriate work-up, order and interpret diagnostic studies, B2.07d propose patient management including acute and chronic care plans, B2.07e provide patient education and referral. B2.07f, Evaluate

- A. Bleeding and Bruising
 1. Platelets
 - i. Thrombocytopenia (quantitative)
 - ii. Acquired platelet dysfunction (qualitative)
 2. Vascular
 3. Coagulation Proteins
- B. Splenomegaly
 1. Portal hypertension or coagulopathy
 2. Infectious
 3. Infiltrative
 - i. Non-malignant
 - ii. Malignant
 4. Inflammatory
 5. Blood smear = hemolysis
 - i. Congenital [spherocytosis](#)
- C. Anemia
 1. Elevated MCV
 - i. [B12 Deficiency](#)
 - ii. [Folate deficiency](#)
 - iii. Reticulocytosis
 - iv. Liver disease
 - v. Hypothyroidism
 - vi. Myelodysplasia
 2. Normal MCV
 - i. Bleeding
 - ii. Chronic kidney disease
 - iii. [Aplastic Anemia](#)
 - iv. [Hemolytic Anemias](#)

- v. [G6PD deficiency](#)
- vi. [Anemia of chronic disease](#)

3. Low MCV

- i. [Fe deficiency](#)
- ii. Thalassemias
- iii. [Sickle cell anemia](#)
- iv. Lead Poisoning

2. Given a patient across all age groups, with signs and symptoms suggestive of the following disorders: interview and elicit a comprehensive, relevant medical history, ^{B2.07a} perform a complete and focused physical examination and identify the physical findings, ^{B2.07b} generate a complete list of differential diagnoses prioritizing them appropriately, ^{B2.07c} recommend an appropriate work-up, order and interpret diagnostic studies, ^{B2.07d} propose patient management including acute and chronic care plans, ^{B2.07e} provide patient education and referral. ^{B2.07f, Evaluate}

- A. Platelet, bleeding, and clotting disorders
 - a. Idiopathic thrombocytopenic purpura
 - b. Thrombotic thrombocytopenic purpura
 - c. Hemolytic uremic syndrome
 - d. Clotting factor disorders
 - e. Von Willebrand disease
 - f. Hypercoagulable states
- B. Malignancies
 - a. Acute lymphoblastic leukemia
 - b. Acute myeloid leukemia
 - c. Chronic lymphocytic leukemia
 - d. Chronic myelogenous leukemia
 - e. Myelodysplasia
 - f. Lymphoma
 - g. Multiple myeloma
- C. Autoimmune hemolytic anemias
 - a. Warm antibody hemolytic anemia
 - b. Cold antibody hemolytic anemia
- D. Cytoses
 - a. Polycythemia
 - b. Thrombocytosis
- E. Hemoglobinopathies
 - a. Sickle cell disease
 - b. Thalassemias
- F. Hemochromatosis
- G. Immunologic disorders
 - a. Transfusion reaction

3. Analyze a complete blood count and interpret abnormal findings. Analysis, B2.07d
4. List commonly utilized hematologic lab tests and relate each to a common hematologic disorder predicting the results based on the disorder. Knowledge, B2.07d
5. Distinguish acute from chronic hematologic syndromes using the history, physical findings and laboratory test results. Analysis, B2.07c
6. Categorize hematologic disorders by cell type and pathophysiology. Analysis, B2.07c
7. Develop a differential diagnosis for common anemias and select appropriate management for each. Application, B2.07c
8. Select appropriate pharmacologic agents as a part of a treatment plan for simple anemias, including the preferred route of administration, proper dosages and common adverse effects. Evaluate, B2.02d
9. Discuss common hematologic and oncologic disorders presenting in children and in the elderly, their varying presentations and propose a management plan including consideration of age, co-morbidities and polypharmacy. Application, B2.02d, B2.07e, B2.08a
10. Working with the appropriate health care professional, develop an appropriate patient education plan as needed. Application, B2.07f
11. Working with the appropriate health care professional, recommend an appropriate patient referral plan as needed. Application, B2.07f
12. Working with the appropriate health care professional recommend a suitable rehabilitation plan as needed. Application, B2.08b
13. Working with the appropriate health care professional recommend a suitable prevention program as needed. Application, B2.08b
14. Working with the appropriate health care professional, recommend an appropriate palliative care plan for a patient facing end-of-life decisions. Application, B2.08e
15. Identify the patient requiring emergent intervention. Evaluation, B2.08b
16. Differentiate the evaluation and treatment approach in acute, chronic and emergent hematologic and oncologic disease. Analysis, B2.07e, B2.08b
17. Demonstrate skills in problem solving and medical decision-making through community learning group case discussions and activities. Application, B2.05
18. Demonstrate supportive counseling skills when delivering bad news to a patient. Application, B2.12c

SKILLS OBJECTIVES

Upon completion of this course, the student will demonstrate proficiency in:

1. Eliciting a history. Application, B2.07a

2. Performing a complete and focused hematologic and oncologic physical examination. ^{Application, B2.07b}
3. Performing venipuncture. ^{Application, B2.09}

Note: Superscript comments reflect levels of Bloom's Taxonomy for each objective.

REQUIRED TEXT AND COURSE CALENDAR

Current Medical Diagnosis and Treatment 2021, 60e

Author: Maxine A. Papadakis, Stephen J. McPhee, Eds. & Michael Rabow, Assoc Ed

Publisher: McGraw-Hill

ISBN: 978-1260469868

Date	Topic/Instructor	Reading/Assignment
Monday January 13 th 1-5 PM (4 hours)	Mayer/Meadows Dr. Shanely Banaag Course Introduction Pathophysiology in Hematology Hematology and Oncology Labs	See Canvas documents
Tuesday January 14 th 1-5 PM (4 hours)	Dr. Marin Xavier (RBCs) Anemia (Autoimmune Hemolytic, aplastic, G6PD, Fe, B12, folate, Pb, Thalassemia, Sickle cell, etc.) Hemochromatosis Polycythemia Hereditary Spherocytosis Hemolysis	Ch. 15-01 through 15-21, 15-24 Assignment: Anemia Chart (due 1/19/25 11:59 pm)
Wednesday, January 15 th 12:30 - 1:30 pm	Amy Vu, PA-C Optional Office hours to go over Healer questions	
Thursday January 16 th , 12- 4 PM (4 hours)	Skills Lab - Heidi Robyn RN IV Cannulations, Venipuncture lab, Injection Lab	See Canvas Documents

<p>Friday January 17th 9 - 12 AM</p> <p>(3 hours)</p>	<p>Dr. Shanely Banaag</p> <p>Cancer directed therapies, Oncologic Emergencies, Transfusions</p>	<p>Ch. 15-38 through 15-45</p> <p>Harrison's Principles of Internal Medicine, 21e Chapter 75: Oncologic Emergencies Rasim Gucalp; Janice P. Dutcher</p>
<p>Friday January 17th 1-4PM</p> <p>(3 hours)</p>	<p>Dr. Marin Xavier</p> <p>(WBCs) Leukocytosis Leukopenia Leukemia Myelodysplastic Syndrome Thrombocytosis Thrombocytopenia</p> <p>Splenomegaly/hemolysis Spherocytosis Asplenia Pancytopenia</p>	<p>15-22 through 15-24, 15-26 through 15-31</p> <p>Assignment: Hematologic Malignancies, Bleeding Disorders, Clotting Disorders Chart - Due Jan 23</p>
<p>Tuesday January 21st 1-5 PM</p> <p>(4 hours)</p>	<p>Dr Marin Xavier (Lymphatic System and Malignancy) Infectious Lymphadenopathy Metastatic Lymphadenopathy Hodgkin's Lymphoma Non-Hodgkin's Lymphoma Hypergammaglobulinemia Multiple Myeloma Myeloproliferative neoplasms</p>	<p>Ch. 15-32 through 15-37</p>
<p>Wednesday, January 22nd 1-4 PM</p> <p>(3 hours)</p>	<p>Dr. Shanely Banaag (Platelets, Bleeding and Clotting Disorders) Thrombocytopenia ITP, TTP Microangiopathy Drug induced purpura TTP HUS DIC V. Willebrand Hypercoagulable states</p>	<p>Ch. 15-25</p> <p>Ch. 16-01 through 16-12</p>

Thursday January 23 rd 1-3 PM (2 hours)	Dr. Marin Xavier Hematology case studies and practice MCQ	Case Study Assignment/MCQ Due 1/22/25 11: 59 pm
Friday January 24 th 10 am - 1 pm (3 hours)	Dr. Marin Xavier Review	
30 hours total		
Monday January 27 th 9-11AM	Final Exam H&P due	

LEARNING MODALITIES

Modalities include lectures, on-line pre-lecture activities, reading assignments, community learning activities, and clinical skills labs. The class schedule and assignments can be found in Canvas.

ATTENDANCE AND PARTICIPATION POLICY

Regular and punctual attendance at all classes is considered essential to optimum academic achievement. However, we recognize that as adults you have other life responsibilities and challenges that may interfere. Ultimately you are responsible for your education and your ability to demonstrate mastery of the course and program objectives.

1. You MUST attend:
 - PE and clinical skills labs appropriately dressed and with all necessary equipment
 - examinations on the date and time for which they are schedule
 - community learning group

2. We expect
 - active participation in all class activities.
 - completion of all class preparatory assignments prior to commencement of class.
 - respect for the class, peers and faculty.
 - on-time arrival for all classes, laboratories, learning groups or any scheduled activities.

Routine tardiness demonstrates a lack of professionalism and will not be tolerated

INCOMPLETES AND LATE ASSIGNMENTS

All assignments are to be submitted/turned in by the beginning of the class session when they are due—including assignments posted in Canvas. No partial credit will be given for late assignments. Incompletes will only be assigned under extremely unusual circumstances. Late assignments receiving no credit must

still be submitted. Students failing an examination or practicum must complete the designated remediation (See REMEDIATION below) within the assigned time.

FINAL EXAMINATION POLICY

Successful completion of this class requires taking the final examinations (written and practical) **on their respective scheduled days**. No requests for early examinations or alternative days will be approved.

ASSESSMENT AND GRADING

Student course grades are calculated using all assessment tools utilized during the course. These include quizzes, written examinations, written assignments, practicums, and evaluation of skills.

Learning community groups will be utilized to provide case-based instruction. A clinical case will be presented to each group by the group mentor. Students are expected to utilize knowledge acquired from prior readings and lectures, as well as self/group directed learning to work up the case, develop a working diagnosis, a differential diagnosis and a therapeutic regimen which will include a follow-up plan and patient education. Effective interpersonal communication, clinical reasoning and problem solving abilities, professional behavior and teamwork are paramount to success and development as clinicians. Cases will be issued no more frequently than every other week. There will be 2 cases in this module. Students will receive a collective grade for this exercise.

Learning community group performance expectations include; demonstrating effective interpersonal communication, clinical reasoning and problem solving abilities, professional behavior and teamwork skills. Application, B2.05, B4.03b, B4.03c, B4.03e

ACTIVITY	% OF GRADE
Quizzes/Assignments/Lecturio	10%
Learning Community	10%
Case Study H&P/Healer	20%
Skills OSCE	20%
Written Examinations	40%

Grading will be in keeping with Point Loma Nazarene University policy for graduate programs and grading will be as follows:

A=93-100	C= 73-76
A-=92-90	C-=70-72
B+=87-89	D+=67-69
B=83-86	D=63-66
B-=80-82	D-=60-62
C+=77-79	F=0-59

REMEDIATION

Remediation is the process by which both the student and the program are assured that performance indicating a deficiency in knowledge or skills is subsequently demonstrated to be satisfactory. This may include a re-test over missed material, a skills demonstration or a review of missed material with completion of corrected answers. It is important to note that this is content remediation, not grade remediation and no grade will be changed based on these activities.

Within 48 hours of the posting of a grade of <70%, the student **MUST** contact the course director to discuss the student's performance and create a remediation plan. Unless otherwise directed by the course director, remediation activities must be completed within 5 days.

PLNU COPYRIGHT POLICY

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

PLNU ACADEMIC HONESTY POLICY

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See the [Academic Honesty Policy](#) in the Graduate and Professional Studies Catalog for definitions of kinds of academic dishonesty and for further policy information.

Use of Artificial Intelligence (AI) tools (e.g. ChatGPT, iA Writer, Marmot, Botowski) is not permitted, and use of these tools will be treated as plagiarism.

PLNU Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU ACADEMIC ACCOMMODATIONS POLICY

While all students are expected to meet the minimum standards for completion of this course as established by the Technical Standards and the instructor, students with disabilities may require

academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

This syllabus is subject to change. Students are encouraged to check course messages and emails in order to remain current.

ARC-PA standards (5th edition) addressed in this course: B2.02(a)(b)(c)(d), B2.03, B2.05, B2.07, B2.08, B2.09, B2.12(c), B4.03b, B4.03c, B4.03e