



Department of Physician Assistant Education

Master of Science in Medicine

2 units

**MSM 6100 FUNDAMENTALS OF HEMATOLOGY AND ONCOLOGY**

**SPRING 2026**

Office location and hours: TBD	<b>Instructor title and name:</b> <b>Dr. Marin Xavier</b> <b>Rachel La Costa, PA-C</b> <b>Dr. Sandra Friewald</b> <b>Irene Nicole Lucero, NP</b> <b>Stefanie Sacknoff, PA-C</b>
Final Exam: Monday, 1/26/2026, 8:00am-12:00pm	Phone: 8054524350
Meeting location: Balboa Campus, Classroom 154, Clinical Skills Lab 223	Email: smayer1@pointloma.edu
<b>Week 1: 1/12/26 - 1/16/26</b> Monday: 1:00-5:00 pm Tuesday: 1:00-5:00 pm Wednesday: 1:00-5:00pm Thursday: 1:00-5:00pm Friday: 9:00am-12:00pm LAB 1:00-5:00 pm	<b>Week 2: 1/20/26 - 1/23/26</b> Monday: MLK Day No Class Tuesday: 1:00-5:00 pm Wednesday: 1:00-5:00 pm Thursday: 11:00am-12:00pm, 1:00-4:00pm Friday: 8:00am-12:00pm

**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**

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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**

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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**

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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

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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, <sup>B2.07a</sup> perform a complete and focused physical examination and identify the physical findings, <sup>B2.07b</sup> generate a complete list of differential diagnoses prioritizing them appropriately, <sup>B2.07c</sup> recommend an appropriate work-up, order and interpret diagnostic studies, <sup>B2.07d</sup> propose patient management including acute and chronic care plans, <sup>B2.07e</sup> provide patient education and referral. <sup>B2.07f, Evaluate</sup>

- 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. <sup>Analysis, B2.07d</sup>

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**

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Students will receive instruction in venipuncture during this course, with the opportunity to practice the IV technical skill in labs across the didactic year. Assessment will take place at the End of Didactic evaluation Application, B2.09

*Note: Superscripts identify the Bloom's Taxonomy level or ARC standard 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 12 <sup>th</sup> 1-5 PM  (4 hours)	<b>Rachel La Costa</b>  Course Introduction Pathophysiology in Hematology Hematology and Oncology Labs	See Canvas documents
Tuesday January 13 <sup>th</sup> 1-5 PM  (4 hours)	<b>Rachel La Costa</b>  (RBCs) Anemia (Autoimmune Hemolytic, aplastic, G6PD, Fe, B12, folate, Pb, Thalassemia, Sickle cell, etc. ) Hemochromatosis Hemoglobinopathies Polycythemia	Ch. 15-01 through 15-21, 15-24
Wednesday, January 14 <sup>th</sup> 1-5PM (4 hours)	<b>Irene Nicole Lucero</b>  Platelets, Bleeding, Clotting	Ch. 15-25  Ch. 16-01 through 16-12
Thursday January 15 <sup>th</sup> , 1-5 PM  (4 hours)	<b>Dr. Marin Xavier</b>  WBCs, Leukocytosis, Leukopenia/emia, Myelodysplastic Syndrome, Thrombocytosis/penia Splenomegaly/hemolysis Spherocytosis, asplenia, pancytopenia	15-22 through 15-24, 15-26 through 15-31
Friday January 16 <sup>th</sup> 9AM-12PM  (3 hours)	<b>Dr. Marin Xavier and Heidi Robyn</b>  Skills Lab: IV Cannulation and Venipuncture Injections	See Canvas Documents
Friday January 16 <sup>th</sup> 1-5PM  (4 hours)	<b>Dr. Marin Xavier</b> (Lymphatic System and Malignancy) Infectious Lymphadenopathy Metastatic Lymphadenopathy Hodgkin's Lymphoma Non-Hodgkin's Lymphoma Hypergammaglobulinemia	Ch. 15-32 through 15-37

	Multiple Myeloma Myeloproliferative neoplasms	
Tuesday January 20 <sup>th</sup> 1-4PM  (1 hours)	<b>Professor Sarah Mayer, PA-C</b>  Jeopardy Pt. 1	
Wednesday, January 21 <sup>st</sup> 1-5 PM  (4 hours)	<b>Irene Lucero</b>  Cancer directed therapies, Oncologic Emergencies, Transfusions	Ch. 15-38 through 15-45  Harrison's Principles of Internal Medicine, 21e Chapter 75: Oncologic Emergencies Rasim Gucalp; Janice P. Dutcher
Thursday January 22 <sup>nd</sup> 11AM-12PM  1-4PM (4 hours)	<b>Dr. Sandra Friewald</b>  Jeopardy Pt. 2  Journal Rehab Club	
Friday January 23 <sup>rd</sup> 9-11am  (2 hours)	<b>Stefanie Sacknoff</b>  Sickle Cell	
<b>31.5 hours total</b>		
Monday January 26 <sup>th</sup> 8-12PM	Final Exam	

## 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**

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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**

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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**

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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

<b>ACTIVITY</b>	<b>% OF GRADE</b>
Quizzes/Assignments/Lecturio/Healer	15%
Learning Community	5%
Case Study H&P	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 = 93.00-100	C = 73.00-76.99
A- = 90.00-92.99	C- = 70.00-72.99
B+ = 87.00-89.99	D+ = 67.00-69.99
B = 83.00-86.99	D = 63.00-66.99
B- = 80.00-82.99	D- = 60.00-62.99
C+ = 77.00-79.99	F = 0-59.99

## **REMEDIATION**

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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.

Remediation activities may also be required for assessments in which a student scores >70%, should the instructor or other faculty deem it necessary to address a knowledge or skill gap identified within a given course. Such remediation activities will be considered a course requirement and must be satisfactorily completed, at the discretion of the course director, for course completion and final grade assignment.

## **PLNU COPYRIGHT POLICY**

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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**

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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.

### **ARTIFICIAL INTELLIGENCE (AI) POLICY**

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro 1.5, Grammarly, Perplexity, etc.) in this course. Any work that utilizes AI-based tools must be clearly identified as such, including the specific tool(s) used. Please use the following sources to guide your citations when using AI.

[MLA Style Center: Citing Generative AI](#)

[APA Style: How To Cite ChatGPT](#)

[Chicago Manual of Style: Citing Content Developed or Generated by AI](#)

### **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**

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PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2533). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. Professors are able to view a student's approved accommodations through Accommodate.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations

at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any accommodations.

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

**ARC-PA standards (6th 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**