

**Virginia Western Community College**  
**MDL 126 Clinical Immunohematology, Spring 2016**

## **Instructor Information**

**Faculty Name:** Leisa Snidow ([lsnidow@viriniawestern.edu](mailto:lsnidow@viriniawestern.edu))

**Program Head:** Jeffrey S. Gillette, Ph.D. ([jgillette@viriniawestern.edu](mailto:jgillette@viriniawestern.edu))

## **COURSE OUTLINE**

**Prerequisites:** Bio 101 and Bio 141 or equivalent.

**Lecture:** M, W 3:00-4:00PM (Fralin 410); **Lab:** Tu, Th. 11:00-2:00PM (Fralin 410)

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**Semester Credits:** 4 **Lecture Hours:** 2 **Lab/Recitation Hours:** 6

## **Course Description**

Incorporates basic principles of antigen and antibody reactions included in blood grouping and typing, compatibility testing, and serological procedure.

## **Course Outcomes**

At the completion of this course, the student should be able to:

- Understand basic blood bank concepts, terms and procedures
- Understand quality assurance as related to blood bank reagents and equipment
- Perform routine blood bank tests to include: ABO/Rh, Antibody Detection, Antiglobulin Test, etc.
- Understand blood products, product storage requirements, appropriate product selection, means of transfusion and special handling requirements
- Recognize and troubleshoot unusual test results
- Understand testing and concepts from this course and apply them so as to continue in the Immunohematology II course.

## **Required Materials**

Textbook:

Modern Blood Banking & Transfusion Practices, Sixth edition, by Denise M. Harmening. F.A. Davis, 2012. ISBN:978-0-8036-2682-9

Topics:

- I. Laboratory Safety
  - A. General Safety Principles
  - B. Blood-Borne Pathogen Safety
  - C. Chemical Safety
  - D. Radiation Safety
  - E. Protection from Physical Hazards
- II. Fundamental Concepts (Part I)
  - A. Red Blood Cell and Platelet Preservation: Historical Perspectives and Current Trends (Chapter 1)
- III. Overview of the Routine Blood Bank Laboratory (Part II – Chapter 11)
  - A. Organization
  - B. Personnel Requirements
  - C. Standard Operating Procedures
  - D. Transfusion Process Oversight

Test #1

- IV. Quality and Compliance Issues (Part V - Chapter 23)
  - A. Quality Management
  - B. Equipment Preventative Maintenance/Quality Control, qualification/ validation
  - C. Supply and Reagent receipt, inspection, acceptance testing, QC
  - D. Nonconformances

Test #2

- V. Fundamental Concepts (Part I)
  - A. Basic Genetics / Blood Group Genetics (Chapter 2)
  - B. Fundamentals of Immunology (Chapter 3)
  - C. Concepts in Molecular Biology (Chapter 4)

Test #3

- VI. Blood Bank Testing Methodologies Overview (Part II- Chapter 5 and Chapter 12)
  - A. Test tube – reagents, enhancement medias
  - B. Automated methods – Gel, Solid Phase, other
  - C. Overview Advanced Methods –adsorption/ elution, inhibition, chemical treatments

Test #4

- VII. Blood Groups and Serologic Testing (Part II)
  - A. The Antiglobulin Test (Chapter 5)
  - B. The ABO Blood Group System (Chapter 6)
  - C. The Rh Blood Group System (Chapter 7)
  - D. Blood Group terminology and Other Blood Groups (Chapter 8)

Test #5

- VIII. Blood Collection (Part III – Chapters 13-14)
  - A. Donor selection and qualification – health history questions, physical exam
  - B. Collection type-
    - i. Whole blood veinipuncture
    - ii. Apheresis – blood, platelet, plasma
    - iii. Special Collections: Autologous, Homologous, and Directed
  - C. Collection Processes

IX. Blood Components (Part III – Chapters 13-14)

- A. Component Production
- B. Blood Component testing / labeling
- C. Product Requirements and QC
- D. Product Storage and Distribution

Final Exam

X. Antibody Detection and Identification (Part II -Chapter 9)

- A. Low incidence antigens
- B. High incidence antigens
- C. Antibody Identification
  - i. Requirements to rule out specificities
  - ii. Requirements to confirm antibody identification
  - iii. Probability (P-value)
- D. Positive DAT

XI. Transfusion Practices (Part II Chapter 10; Part III Chapters 15-16, Chapter 18)

- A. Pre-transfusion Testing
- B. Post-Transfusion Testing/ Transfusion Reactions/ Testing for Investigation of transfusion reactions

- There will be chapter quizzes announced in lecture class or unannounced
- Exam dates are tentative, and are subject to change
- Comprehensive questions on the final exam will be culled from past quizzes and exams from the semester.
- Course will be continued in MDL227 Clinical Immunohematology II