



South Central College

MDLT 1835 Immunology

Course Outcome Summary

Course Information

Description	This course is a basic overview of the immune system. Laboratory instruction is designed to instruct the students in basic immunology testing methods for the correlation of immunologic disorders. (Prerequisite: MDLT 1810 & MDLT 2818 with a grade of C or higher.)
Total Credits	2
Total Hours	48

Types of Instruction

Instruction Type	Credits/Hours
Laboratory	1/32
Lecture (online)	1/16

Pre/Corequisites

MDLT 1810 & MDLT 2818 with a grade of C or higher.

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Explain the function of the immune system.

Learning Objectives

Describe the first line of defense, natural immunity, and adaptive immunity.

Discuss the effect of age, the role of nutrition, and the relationship between the brain and the immune system.

Define the terms immunology, antigen, antibody, specificity, and avidity.

Name and describe the characteristics of each of the five immunoglobulin classes.

Explain antibody structure.

Describe the characteristics of a primary and secondary response.

Describe the functions of granulocytes, monocytes-macrophages, and lymphocytes-plasma cells as component of

the immune system.

Explain the process of phagocytosis.

Name and describe the function of primary and secondary lymphoid tissue.

Explain the functions of B and T lymphocytes in immunity.

Describe the body's defense mechanisms against infectious diseases and immunologic disorders.

Describe the mechanisms, consequences, and biologic functions of the complement system.

Name and describe the various types of nonspecific mediators of the immune system (e.g. cytokines, interleukins, tumor necrosis factor, chemokines, etc.)

2. Apply laboratory safety policies.

Learning Objectives

Describe the practice of Universal Blood and Body Fluids Precautions.

Discuss the occupational transmission of Hepatitis B virus (HBV) and human immunodeficiency virus (HIV).

Explain the proper handling of hazardous materials.

3. Summarize the types of basic immunologic testing methods/techniques used in diagnosing immunologic diseases/disorders.

Learning Objectives

Explain the purpose of monoclonal antibodies.

Describe the principles of agglutination.

Name and compare the characteristics of various agglutination methods.

Describe and compare various labeling components in immunoassay (e.g. chemiluminescence, enzyme immunoassay (EIA), immunofluorescent techniques, etc.).

Explain the electrophoresis technique.

Name the number of protein fractions that serum proteins can be divided into by electrophoresis.

Describe the characteristics of immunoelectrophoresis (IEP) and immunofixation electrophoresis (IFE).

Name the three types of labels that can be used in immunoassays.

Explain the principles of several automated immunoassay procedures including nephelometry, flow-cell cytometry, and other current trends in immunoassay automation.

Describe and explain several molecular techniques used in immunoassay procedures, including polymerase chain reaction (PCR), PCR modifications, and amplification techniques.

Discuss the principles and applications of the following immunologic techniques: DNA sequencing, hybridization techniques, microarrays, radial immunodiffusion (RID), radioallergosorbent tests (RAST), radioimmunosorbent test (RIST), CH50, complement fixation, neutralization, and cryoglobulin procedures.

4. Perform basic immunologic testing methods/techniques for various immunologic diseases/disorders.

Learning Objectives

State the principle of the tests performed in the student laboratory.

Given the necessary materials, perform within 99% accuracy the tests provided in the student laboratory.

Given the appropriate data, interpret and report within 100% accuracy, patient test results.

Given appropriate data, report within 100% accuracy, the quality control measurements for tests provided in the student laboratory.

5. Describe the important characteristics of the immune system's response to infectious diseases.

Learning Objectives

Describe the important characteristics in the development of infectious disease.

Explain how the body develops immunity to various infectious organisms (e.g. streptococcal, syphilis, tick-borne, toxoplasmosis, cytomegalovirus (CMV), infectious mononucleosis (IM), viral hepatitis, rubella, AIDS).

Summarize laboratory methods/techniques used to detect immunologic responses to infectious organisms.

Analyze representative case studies.

6. Explain the importance of regulation of the immune system by soluble mediators (e.g. complement, cytokines, interleukins, interferons, tumor necrosis factor, hematopoietic stimulators, and acute-phase reactants).

Learning Objectives

Name and compare the three complement activation pathways.

Describe the mechanisms and consequences of complement activation.

Explain the biologic effects of the complement system.

Name and describe alterations in complement levels.

Name and compare various other types of nonspecific mediators of the immune system: cytokines, interleukins, tumor necrosis factor, hematopoiesis growth factors, and chemokines.

Explain acute-phase proteins.

7. Describe the important characteristics of the immune system's response to immunologically related disorders.

Learning Objectives

Describe the evaluation of lymphocytic or plasma cell defects.

Name and compare disorders with immunologic origin.

Compare the general characteristics of monoclonal and polyclonal gammopathies.

Define the terms commonly associated with immunoproliferative disorders.

Name and compare the etiology, epidemiology, signs and symptoms, immunologic manifestations, and diagnostic evaluation of the common immunoproliferative disorders.

List diagnostic evaluation methods available for the diagnosis and monitoring of the immunoproliferative disorders.

8. Describe etiology, epidemiology, signs and symptoms, diagnostic evaluation of common infectious diseases.

Learning Objectives

Describe the etiology, epidemiology, signs and symptoms, diagnostic evaluation of the following infectious diseases: streptococcal infections, syphilis, infectious mononucleosis (IM), lyme disease, erlichiosis, babesiosis, toxoplasmosis, cytomegalovirus, rubella, hepatitis, and AIDS.

Describe the complications of streptococcal infections.

Explain the diagnostic evaluation methods available for the following infectious diseases: streptococcal infections, syphilis, infectious mononucleosis (IM), lyme disease, erlichiosis, babesiosis, toxoplasmosis, cytomegalovirus, rubella, hepatitis, and AIDS.

Explain the treatment and prevention of lyme disease, erlichiosis, babesiosis, and toxoplasmosis.

9. Demonstrate standard quality assurance practices to ensure quality patient outcomes.

Learning Objectives

Define quality assurance/quality control measurements.

Discuss quality assurance/quality control measurements.

Apply quality assurance/quality control measurements.

10. Describe the nature of autoimmune disorders.

Learning Objectives

Define terms commonly associated with autoimmunity.

List the factors that influence the development of autoimmunity.

Discuss the major immunopathogenic mechanisms of autoimmunity.

11. Describe etiology, epidemiology, signs and symptoms, diagnostic evaluation of systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

Learning Objectives

Define terms commonly associated with systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

Describe the etiology, epidemiology, signs and symptoms, of systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

Explain the diagnostic evaluation of systemic lupus erythematosus (SLE) and rheumatoid arthritis (RA).

12. Summarize the important characteristics of solid organ and bone marrow transplantation.

Learning Objectives

Name and describe the histocompatibility antigens.

Explain the clinical applications of histocompatibility antigens and human leukocyte antigens (HLA).

List frequently used words in transplantation.

Name various types of transplants.

Name and discuss various types of cancer treated with progenitor cell transplants.

Define graft-versus-host disease.

Describe the types of graft rejection.

Name some methods of immunosuppression.

13. Describe the important characteristics of benign and malignant tumors.

Learning Objectives

Compare the characteristics of benign and malignant tumors.

Describe the aspects of cancer-related genes.

Name and describe the characteristics of the major body defenses against cancer.

Name and explain the characteristics of tumor markers.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

Additional information and forms can be found at: www.southcentral.edu/disability

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