**MIDDLESEX COMMUNITY COLLEGE**

**MEDICAL LABORATORY TECHNICIAN PROGRAM**

**MLT 204: IMMUNOLOGY AND SEROLOGY LECTURE AND LAB**

**COURSE SYLLABUS**

Number of credits: 4.0 3.0 Lecture 1.0 Lab

**REQUIRED TEXT**

Contemporary Clinical Immunology and Serology, Rittenhouse-Olson and DeNardin, 1st Edition, Pearson, 2013

**COURSE DESCRIPTION**

This course is intended to provide the student with a foundation in immunology and serology. Topics include the components of the immune system, basic immunoassay principles and immunologic techniques and the clinical symptoms and laboratory findings associated with diseases and disorders of the immune system in the human body.

Serological procedures will be presented and their diagnostic significance will be emphasized. Discussions include monoclonal antibodies and enzyme immunoassay detection procedures used in microbial and/or immune disorders.

**PREREQUISITES:** BIO 131, BIO 231, BIO 232, CLS 101, CLS 102



**INSTRUCTOR**

Christine Laviolette, MT (ASCP)

E-mail: laviolettec@middlesex.mass.edu

Cell phone: (978)758-9614

**MEETING TIME AND PLACE**

The class will meet **Tuesdays and Thursdays** from 2:30 pm to 4:30 pm in the Talbot Building, Room 401. The class will combine both lecture and laboratory sessions. Classes start **promptly.**  Students are expected to be on time.

**METHOD OF INSTRUCTION**

Instruction will be provided through lectures, handouts, demonstrations, lab exercises, homework assignments, lab packets, readings and case studies.

**METHOD OF EVALUATION**

**Students will be evaluated on their understanding of the course content by a course portfolio which includes assessment of their understanding by multiple measures that include:**

Written quizzes and exams 60%

 Paper and presentation 20%

 Assessments of laboratory skills 20%

 100%

**STUDENT LEARNING OUTCOMES**

Upon successful completion of this course, the student will be able to:

1. Identify the components of the immune and complement systems and articulate the functions in health and disease.
2. Demonstrate basic immunoassay principle and immunologic techniques used in the

Clinical laboratory setting.



**COURSE OBJECTIVES**

**COGNITIVE-With the use of course materials and various teaching methods, the student will be able to:**

* Describe the components of the immune system and differentiate between cell-mediated immunity and antibody-mediated immunity.
* Describe the complement system.
* Describe basic immunoassay principles and immunologic techniques used in the clinical immunology laboratory.
* Describe the clinical symptoms and laboratory findings for classic autoimmune diseases.
* List and describe antigens that are associated with human tumors.
* Discuss the congenital/genetic B cell, T cell and combined B cell and T cell immunodeficiency.
* Describe individual complement component deficiencies.
* Describe the clinical symptoms and laboratory findings in phagocyte deficiencies.
* Describe the clinical symptoms and laboratory findings in a patient with Acquired immunodeficiency syndrome.
* Describe the clinical symptoms and laboratory findings in viral infections such as infectious mononucleosis and hepatitis.
* List the types of hypersensitivity and discuss the immunologic mechanisms unique to each type of hypersensitivity.

**PSYCHOMOTOR-Given appropriate instruction and all necessary equipment, the student will perform the following tasks and demonstrate mastery of each task as determined by the instructor.**

* Assemble and prepare appropriate materials and equipment and determine the acceptability of results using these immunologic techniques.
* Perform, document and evaluate quality control as it pertains to each immunologic assay.

**AFFECTIVE- Upon receiving appropriate instructions, the student will demonstrate the following attitudes and behaviors at all times as determined by midterm and end term evaluations.**

* Comply with the attendance policy as outlined in the syllabus.
* Be punctual to class and do not abuse break times.
* Behave in a safe and professional manner.
* Adhere to safety regulations while in the laboratory session.
* Perform at the highest level of standards.
* Demonstrate interest and enthusiasm for the medical laboratory science profession.
* Communicate courteously, effectively and professionally with instructors.
* Demonstrate the ability to get along with others.
* Maintain a clean and organized work area.
* Utilize reagents and supplies judiciously.

**ATTENDANCE**

Attendance is important and will be taken at each lecture and laboratory session. Students will attend all class meetings, except in cases of reasonable extenuating circumstances. In cases of emergency, students should contact their instructor. You need to be in class to get assignments, take notes, ask questions and stay involved in the course. You are personally responsible for all information missed due to an absence. In the interest of encouraging attendance, I have developed the following policy: **Three or more absences (excused or unexcused) will cause your grade to be lowered by one half of a letter grade** (ie. B to a B-). Each subsequent absence will result in the lowering of the final grade by an additional half letter grade (ie. 4 absences=B- to a C+).

**STUDENT SUPPORT SERVICES**

**Academic Alert Program**

* Supports students by connecting them to appropriate campus services if they are experiencing any academic difficulties in class.
* If I notice that you are experiencing any difficulties in class such as excessive absence or consistent tardiness, I will send you an email through the Academic Alert Program to your Middlesex email account.
* The email will tell you about my concerns for your academic progress in class and will refer you to a counselor in a campus support service department who can help you to address the academic difficulties that you are experiencing and work with you to complete a **Strategies for Success Plan.**
* **The early alert emails will only be sent to your Middlesex email account so please check them frequently.**
* If you do not know how to access your MCC email account, contact the Help Desk at 781-280-3757 or email them at Helpdesk@middlesex.mass.edu.



**WEATHER-RELATED CLASS CANCELLATIONS**

Notification of cancelled classes at Middlesex Community College are broadcast over the following AM radio stations: WRKO-680; WCAP-980: WBZ-1030. Announcements are also made on television channels 4, 5 and 7. For direct information on class cancellations, call 978-656-3200

**OPEN LAB SESSIONS WILL BE HELD TWO TIMES PER WEEK. THIS ALLOTTED TIME GIVES YOU THE OPPORTUNITY TO PRACTICE ANY TECHNIQUES THAT WE ARE DEVELOPING IN THIS COURSE. THIS IS NOT MANDATORY BUT HIGHLY SUGGESTED. THE OPEN LAB TIMES ARE AS FOLLOWS:**

**WEDNESDAYS 2:00 PM- 4:00 PM**

**FRIDAYS 2:00 PM-4:00 PM**

**Credit Hour Policy**

**Middlesex Community College follows the Carnegie Unit for credit. Students are expected to spend a minimum of 45 hours of work for each credit. The most common breakdown for one credit is one hour of class instruction and two hours of homework for 15 weeks each semester. A three credit course demands nine hours each week**

**COURSE SYLLABUS**

**Tuesday 1/21 CHAPTER 1**

Course Introduction and syllabus overview

 Innate vs Acquired Immune system and components of each

 The lymphoid organs

**Thursday 1/23 CHAPTER 1**

Intro to Immunology

**Tuesday 1/28 CHAPTER 1**

Intro to Immunology

**Thursday 1/30 CHAPTER 2**

Antibody

**Tuesday 2/4 CHAPTER 2 and Chapter 3**

 Antibody

 Antigens, Antigens and Immunogenicity

**Thursday 2/6 Review Chapters 2 and 3 for Quiz #2**

 **Chapter 4**

Cellular Immunity

**Tuesday 2/11 Quiz 2 (Chapter 2 and 3)**

 **Chapter 5**

Complement

**Thursday 2/13 CHAPTER 6**

Agglutination and Precipitation

**Tuesday 2/18 LAB**

Mono

**Thursday 2/20 CHAPTER 7 (CONT’D)**

Enzyme Immunoassays

 Fluorescent Immunoassays

 Chemiluminescent Assays

**Tuesday 2/25 Review Chapter 6 &7**

 **Quiz #3**

**Thursday 2/27 Chapter 8**

Lab Math/Dilutions

**Tuesday 3/4 LAB**

Dilutions/Serial dilutions

**Thursday 3/6 CHAPTER 9**

Hypersensitivity Reactions Types 1, 2, 3, and 4

 Skin Testing

 Transfusion Reactions

 Hemolytic Disease of the newborn

 Dermatitis

**Tuesday 3/11 CHAPTER 10**

Autoimmunity

 Autoimmune Diseases and their respective diagnostic tests

 SLE, RA

**Thursday 3/13 LAB**

RA Test

 Intro to Organ Specific Autoimmunity Chapter 11 (Lecture)



 **SPRING BREAK!!!!!!!!!!!!!**

**Tuesday 3/25 CHAPTER 11**

Organ and Tissue Specific Autoimmune Diseases

 Hashimoto’s, Graves Disease, RA, Type I Diabetes, Pernicious Anemia, MS, SLE, Addison’s Disease

 Assignment of Disease Topic Paper/Presentation

**Thursday 3/27 Review of Chapters 8, 9, 10, 11**

**Tuesday 4/1 Quiz #4 (no this is not an April Fools Joke!)**

**Thursday 4/3 CHAPTER 12**

Tumor Antigens

 BRCA1, CA 125, CA27-29, PSA, HCG, etc

**Tuesday 4/8 CHAPTER 15**

Immunodefficiency Disorders

 IgA Defficiency

 T-Cell Immunodefficiencies

 Digeorge Syndrome

 Combined immunodefficiencies

 Complement Defficiencies

**Thursday 4/10 CHAPTER 16 AND 17**

Hepatitis, HIV and AIDS

 Diagnosis, monitoring, vaccines, screening tests

**Tuesday 4/15 CHAPTER 18**

Herpes and other Serologically diagnosed Viruses

 HSV, CMV, WNV, Mono, EBV, Rubella, mumps, VZV

**Thursday 4/17 CHAPTER 19**

Bacterial Serology

 Strep, H. Pylori, Mycoplasma, syphilis

**Tuesday 4/22 LAB**

RPR, Strep Test

**Thursday 4/24 Review Chapters 12, 15, 16, 17, 18, 19**

**Tuesday 4/29 Quiz #5**

**Thursday 5/1 PRESENTATIONS**

**Tuesday 5/6 PRESENTATIONS/REVIEW FOR FINAL**

**Thursday 5/8 LAB REVIEW FOR FINAL**

\*\*\*\*\*\*\*\*SYLLABUS IS SUBJECT TO CHANGE\*\*\*\*\*\*\*\*\*\*

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This workforce solution is 100% funded by a grant awarded by the U.S. Department of Labor, Employment and Training Administration, TAACCCT grant agreement # TC-22505-11-60-A-25.The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership. Massachusetts Community Colleges are equal opportunity employers. Adaptive equipment available upon request for persons with disabilities.