AFFECTIVE OBJECTIVES

1. Demonstrate initiative by reviewing objectives, theory and procedures prior to and regularly throughout the rotation.

2. Demonstrate professionalism by:
   a. Report to clinical time on all scheduled days at assigned times
   b. Notify clinical preceptor as soon as possible of anticipated tardy.
   c. Notify clinical preceptor and MLT faculty of absence at least 30 minutes prior to scheduled arrival time.
   d. Using cell phones and MP3 only during designated break times.

3. Demonstrate enthusiasm and interest in the profession of clinical laboratory science.

4. Demonstrate an understanding of the concepts underlying clinical laboratory tests.

5. Use time in the clinical laboratory effectively to maximize productivity and learning.

6. Offer to help with the work load of the clinical laboratory when appropriate.

7. Use instructional guidance and constructive criticism to correct deficiencies and improve performance.

8. Work cooperatively with clinical preceptors, other laboratory personnel and other health care professionals.

9. Demonstrate the ability to concentrate and avoid distractions while performing laboratory work.

10. Perform laboratory work independently and without distractions.

11. Follow written and verbal instructions.

12. Perform laboratory work with accuracy, efficiency and precision.

13. Communicate in a clear and concise manner and record data accurately and legibly.

14. Recognize, report and resolve problems that may arise and take appropriate corrective action.

15. Demonstrate diligence in working through and resolving problems.

16. Assure that the laboratory work area is clean and well stocked.

17. After appropriate time and training, perform laboratory work with organization, accuracy, efficiency, precision and confidence.

18. Complete work on time and meet deadlines for assignments.

19. Maintain the confidentiality of patient information.

20. Follow all safety guidelines of the MLT program and clinical site.

21. Conform to the clinical dress code.

22. Conform to the ASCLS Code of Ethics.
SPECIMEN HANDLING AND PROCESSING

1. Following departmental protocol, demonstrate safe work practices by:
   a. Wearing personal protective equipment (PPE) as required.
   b. Handling and disposing of contaminated materials according to standard precautions.
   c. Handling chemicals according to safety procedures.
2. Explain the importance of proper collection and transport of specimens.
3. List criteria for evaluating specimen quality and corrective actions to resolve problems.
4. Evaluate specimen suitability for analysis using established criteria in the procedure manual.
5. Prepare specimen for analysis by processing according to departmental protocols.

QUALITY ASSURANCE AND QUALITY CONTROL

1. Perform kit quality control according to the manufacturer’s instructions. THIS SHOULD BE PERFORMED AT THE SAME TIME AS PATIENT TESTING.
2. Perform or discuss corrective action needed to be taken if quality control values are not within established limits.
3. Report or record quality control results according to the standard operating procedures of the laboratory with 95% accuracy.
4. List substances that will cause false negative and false positive results in the procedure being performed.
5. State the confidentiality policy of the facility during testing procedure and reporting in accordance with HIPAA guidelines.
6. Observe basic computer applications where relevant.

TECHNICAL PROCEDURE - (PSYCHOMOTOR AND COGNITIVE)

1. Review the departmental procedure manual or reagent package inserts.
2. Perform serological testing on assigned specimens with 95% accuracy according to the following:
   a. Evaluate suitability of sample.
   b. Review principle and limitations of the procedure.
   c. Carefully review the instructions PRIOR to performing the test.
   d. Determine additional supplies required to perform the procedure.
   e. Organize sample, reagents and supplies in a manner to perform the procedure within appropriate time limits.
   f. Interpret the controls and determine their validity.
   g. Interpret the patient results.
   h. Bring aberrant results to the attention of the instructor.
   i. Report the results in the proper format as stated in the package insert.
COGNITIVE OBJECTIVES

1. Correctly perform with 95% accuracy a variety of serological tests by:
   b. Following the reagent package insert to correctly perform the test.
   c. Gather appropriate supplies as needed for the test requirements.
   d. Perform the test in a timely fashion by utilizing appropriate organizational skills.
   e. Accurately analyze and interpret the result of the test.
   f. Evaluate the results of controls for validity of test results.
   g. Accurately record the result.
   h. Accurately document the information needed for the kit used.
   i. Maintain a neat and orderly work station.
2. Briefly define, compare and contrast active and passive immunity.
3. State the purpose for performing an antibody titration.
4. Given the contents of tube 1 in a serial dilution calculate the titer of each tube.
5. Contrast primary and secondary (anamnestic) immune responses as to length of latent phase, speed of antibody production, and general class of antibody produced.
6. Describe, in detail, the structure of a single basic antibody molecule.
7. State the two types of light chains in an antibody molecule.
8. For each of the following immunoglobulin state the structure, where it is found, function, ability to bind complement and ability to cross the placenta.
   a. IgM
   b. IgG
   c. IgA
   d. IgA
   e. IgD
9. Describe the primary and secondary immune responses including length of time for antibody production and antibody class involved.
10. State the term used to describe an antibody which binds complement and causes red cell lysis.
11. List four factors which influence antigen-antibody reactions
12. Compare and contrast hapten with antigen.
13. State the numbered order in which the complement components are activated in the classical pathway, alternate pathway and lectin pathways.
14. Compare agglutination with hemagglutination.
15. Briefly describe the four reaction combinations that occur in gels.
16. Describe radial immunodiffusion (RID). Include what is mixed in the agar, and what is being quantitated and how.
17. Compare and contrast RID and Ouchterlony gel diffusion.
18. State the three principle of reactions may be observed in Ouchterlony gel diffusion.
19. Compare the terms “competitive” and “non-competitive”as they relate to immunoassays.
20. Compare the terms “homogeneous” and “heterogeneous” as the apply to immunoassays.
21. State the pathogenic organism responsible for human syphilis.
22. State the method of transmission of human syphilis.
23. Describe the signs, symptoms and results of serologic tests for each stage of syphilis.
24. Define “reagin” as it relates to syphilis.
25. State the two most commonly used reagin tests used as screening tests for syphilis.
26. Define biologic false positive as it relates to syphilis testing.
27. List four (4) causes of false-negatives in the VDRL and RPR test.
28. Compare and contrast the VDRL and RPR tests as to the make up of the antigen, speed of rotator, time of rotation of test and how results are observed.
29. State the expected results for the following RPR Quality Control checks for: needle delivery, rotator RPMs, controls and room temperature and the action to take if acceptable results are not obtained.
30. List the two most commonly performed syphilis tests which are classified as “reagin” tests.
31. List four specific Treponmenal tests which may be performed when a positive reagin test is obtained.
32. State the challenges for testing infants for syphilis.
33. State the syphilis screening test to perform on a CSF sample.
34. Describe C-reactive protein including the significance of elevated amounts.
35. State the principle of the CRP latex agglutination test.
36. Compare and contrast the CRP and ESR in regards to: how test results are affected by the following: serum protein concentration, anemia, during inflammation and after inflammation.
37. State the causative agent of primary atypical pneumonia.
38. State the principle of the cold agglutinin test including the specificity of the antibody involved.
39. For a serial dilution state the result which would indicate a clinically significant rise in titer in two samples collected one week apart.
40. In the cold agglutinin titer state the expected results of the cell control and the action which must be taken if the expected result is not obtained.
41. State the name of the chronic inflammatory disease which primarily affects the joints and periarticular tissues.
42. Define rheumatoid factor and the specificity of this substance.
43. State the principle of the latex agglutination test for rheumatoid arthritis.
44. State the organism responsible for the condition known as “Strep throat” (genus and species).
45. List two sequella which may occur if a strep throat is left untreated.
46. List the term used for the skin infection caused by strep.
47. List five exoantigens which are produced by Strep.
48. List five antibodies produced in response to a Strep infection which are most useful for laboratory testing.
49. State the principle of the Streptozyme test.
50. State the causative agent of infectious mononucleosis.
51. Briefly list the symptoms of an infectious mononucleosis infection.
52. Describe the hematological picture seen on a peripheral smear in infectious mononucleosis including the specific type of white cell which will be most predominant.
53. Define the following terms: heterophile antigen, heterophile antibody, Forssman antigen and Forssman antibody.
54. State the principle of the Paul Bunnell screening test for infectious mononucleosis.
55. Describe the principle of the Davidsohn Differential test for infectious mononucleosis including the clinical significance of results obtained with the sheep RBCs.
56. State the principle of the mononucleosis latex agglutination test.
57. Describe the transmission of cytomegalovirus.
58. Describe the clinical symptoms of cytomegalovirus infection including populations most at risk.
59. Briefly list laboratory methods used for the diagnosis of cytomegalovirus infection.
60. State the substance which is detected in a positive pregnancy test.
61. State the amount of time a sample used for a pregnancy test may be used if stored at room temperature compared to a sample stored in the refrigerator.
62. State the principle of the following types of pregnancy tests: latex agglutination and monoclonal antibody (ELISA) test.
63. List four (4) diseases or conditions OTHER THAN pregnancy which may result in a positive pregnancy test.
64. State the causative agent of Lyme’s Disease.
65. Name the vector responsible for transmission of Lyme’s disease.
66. State the length of time the vector of Lyme’s disease must remain attached for transmission of the disease to occur.
67. List and describe three stages of Lyme’s Disease.
68. List the three types of tests commonly performed tests to assist in the diagnosis of Lyme’s disease and indicate which one is most sensitive.
69. State the function and clinical significance of haptoglobin.
70. State the normal values for haptoglobin.
71. Compare and contrast infections due to HSV1 and HSV2.
72. Briefly lists the laboratory test methods used to diagnose HSV1 and HSV2.
73. List the organisms responsible for and give a brief description of chicken pox and shingles.
74. List the laboratory tests utilized to detect infections due to chicken pox and shingles.
75. State the disease caused by the Rubella virus and list the symptoms of the disease.
76. Describe the condition known as “congenital rubella”.
77. List 3 laboratory methodologies utilized to detect rubella antibodies.
78. State the disease caused by the rubeola virus and list the symptoms of the disease.
79. In testing for rubeola state the antibody class is most frequently looked for and explain the significance.
80. List three methodologies utilized to detect rubeola antibodies.
81. List the signs and symptoms of mumps.
82. State the significance of IgM and IgG antibody titers during a mumps infection.
83. State the route of transmission for the five types of hepatitis viruses.
84. State the hepatitis virus which requires an infection with Hepatitis B in order for infection to occur.
85. State the significance of presence of IgM versus IgG class hepatitis antibodies in determining the status of the infection of someone with hepatitis.
86. For hepatitis B, list three markers used for diagnosis and the significance of each one.
87. State the etiologic agent of Acquired Immunodeficiency Syndrome (AIDS).
88. List the three main structural genes of HIV.
89. State four methods of transmission of HIV.
90. List and describe the stages of an HIV infection INCLUDING pertinent laboratory results of each, ie, antibody presence, CD4 count, etc.
91. BRIEFLY describe the following methods:

j. Turbidimetry
k. Nephelometry
l. Electrophoresis
m. Immuno-electrophoresis
n. Immunofixation electrophoresis
o. Radioimmunoassay
p. Immunoradiometric assay (IRMA)
q. Enzyme Immunoassay (ELISA)
r. Fluorescent Immunoassay
s. Fluorescent Polarization
t. Chemiluminescent Immunoassay
u. Nucleic Acid Probe
v. Hybridization Techniques
w. Dot-blot
   i. Sandwich hybridization
   ii. Southern blot
   iii. Northern blot
   iv. Solution hybridization
   v. In-situ hybridization
   vi. DNA Microarray
x. Target amplification
   i. Polymerase Chain Reaction (PCR)
   ii. Ligase Chain reaction