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Received(time)	2:32 pm
Date	2/27/06

**Ohio Articulation Number (OAN)
Course Submission Form
2005-2006**



College/University Stark State College of Technology

Course(s) Submitted(Title & Course #) Fundamentals of Lab Tech - MLT121 for

Ohio Articulation Number OHL008

Date 11/9/2005 Course 1 of a 1 Course OAN mapping.

Name and title of individual submitting on behalf of the college/university

Name John Thornton Title Dean, Health Division

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Credit Hours 3 qtr _____ sem X

Lecture Hours 2

Laboratory Hours 2 (if applicable)

Pre-Requisites(s) Course work (if applicable)

Placement Score (if applicable)

(Name of test)

(Domain) (Score)

Catalog/Course Description (Includes Course Title and Course #)

This course is designed to expose the student to basic skills and techniques used in the clinical laboratory. Topics to include: lab safety, lab units of measurement and calculations, preparation of solutions, care and use of lab equipment, pipetting and concepts of quality control. Phlebotomy, obtaining blood specimens by venipuncture and skin puncture is part of this course.

Texts/Outside Readings/Ancillary Materials

Clinical Laboratory Science, The Basics, Linne' & Ringsrud

Course Objectives and/or Plan of Work

By the completion of this course the student should be able to:

1. Identify or recall the main departments in the clinical laboratory
2. Identify the hierarchy of laboratory personnel
3. Identify or recall the various levels of laboratory personnel, their qualifications, and responsibilities
4. identify or recall what accreditation, certification, licensure is and how these relate to the laboratory field
5. Identify or recall the agencies which accredit, certify, and license laboratory personnel, clinical laboratories, and laboratory education programs
6. Recognize or explain the general capabilities expected of a MLT at entry level
7. Identify, recognize, recall safety rules and practices to be followed in the clinical laboratory for chemical, electrical, fire, radiation, biohazard safety
8. Recognize poor safety practices and suggest corrections
9. Recognize, recall the diseases caused, modes of transmissions, risks, and prevention of Blood borne pathogens
10. Make conversion within the metric system
11. Calculate simple concentration/volume and percentage problems
12. Calculate and make single and serial dilutions
13. Describe, identify, or demonstrate proper choice and use of equipment for liquid measure in the laboratory
14. Describe, identify, demonstrate proper use of basic laboratory equipment as discussed in class
15. Identify the main components and state their function of: centrifuges, microscopes, spectrophotometers
16. Recognize, recall, explain the use of function checks, QC serums, calibrators
17. Recognize, recall, explain use of standard curve
18. Given data, calculate patient values from a student generated standard curve
19. Create Levy Jennings chart from control range and plot control values
20. Calculate control/reference ranges when given the mean and standard deviation
21. Calculate mean and standard deviation when given the range
22. Recognize, recall the % of a normal population falling within 1,2,3 sd from the mean
23. Recognize, recall the meaning of the terms: sensitivity, specificity, analytical sensitivity and specificity, precision, accuracy, false positive, false negative, true positive, true negative
24. Given data, calculate sensitivity and specificity of a test method
25. Choose the best test for a situation based on the sensitivity and specificity of the test method
26. Recall the use of CV and calculate the CV given mean and sd
27. Given a QC chart with the controls plotted, evaluate the chart, noting which days are not in control and state the reason why. Recognize trends, shifts, systematic and random error patterns on the plot
28. Recall the identify the equipment required for blood specimen collection and the function of each component
29. Recognize and recall the additives in the vacutainer tubes and the action of each
30. Recognize, recall, demonstrate the ethics and responsibilities required of the MLT performing phlebotomy
31. Demonstrate the proper technique for skin puncture. Must be successful according to a checklist, and be a two capillary tube draw.
32. Demonstrate the proper technique for venipuncture. Must be successful according to a checklist, and be a two tube draw.
33. Given a nomogram and two values, determine the third. This may be for a centrifuge or for determining body surface area.

Affective Objectives

Students completing the fundamental course are expected to:

1. Work well as a team member that can be depended upon.
2. Demonstrate the ability to establish a two-way communicative atmosphere with classmates and instructors.
3. Demonstrate respect for others in the laboratory.
4. Accept constructive criticism without being defensive, resentful or hostile.
5. Demonstrate a friendly, helpful and pleasant attitude.
6. Demonstrate honesty and reliability.
7. Demonstrate integrity appropriate to a future health care worker.
8. Adhere to regulations of the classroom and laboratory.
9. Keep absences to a minimum and to report all absences.
10. Be neat and clean in appearance and dress professionally.
11. Observe laboratory safety procedures at all times.
12. Explain how a patient's health can be negatively impacted if the technician reports incorrect lab results.
13. Explain the importance of quality laboratory results in the health care setting.

Objective for Laboratory Activities

1. Recognize basic laboratory glassware and use each type correctly.
2. Demonstrate the proper use of all types of pipettes.
3. Recognize, recall metric conversions when measuring patient specimens, reagents in test procedures.
4. Demonstrate proper use of the microscope, including proper care, cleaning, and Kohler illumination.
5. Demonstrate the proper use and care of basic laboratory instrumentation: centrifuges, heating baths, incubators, spectrophotometers, Coulter analyzer
6. Demonstrate single and serial dilutions.
7. Demonstrate the ability to follow a laboratory procedure correctly.
8. Demonstrate the ability for performing a capillary puncture, successfully collecting 2 capillary tubes.
9. Demonstrate the ability for venipuncture, successfully drawing 2 tubes on two different draws.
10. Demonstrate proper hand washing technique.

Description of Assessment and/or Evaluation of Student Learning

Completion of all quizzes (40%)

Attendance

Labs/assignments/presentations (30%)

Final exam (30%)

Maintain a "C" average in all courses to remain in the MLT Program

Assessment in the Classroom and in the Laboratory

Students will be given 3-4 written quizzes consisting mainly of multiple choice questions. There will also be some calculations, depending on the unit studied.

Laboratory sessions are based on attendance and successful completion of the task. Depending on the nature of the lab, students may be required to hand in appropriate paperwork for a lab grade. Various homework assignments, primarily in a worksheet format, will be given to reinforce a number of concepts and calculations. Some of these may be further discussed in the classroom. Students will be required to successfully perform both skin puncture (fingerstick) and venipuncture procedures, according to a checklist.

Course Objectives

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34. Identify or recall the main departments in the clinical laboratory
35. Identify the hierarchy of laboratory personnel
36. Identify or recall the various levels of laboratory personnel, their qualifications, and responsibilities
37. Identify or recall what accreditation, certification, licensure is and how these relate to the laboratory field
38. Identify or recall the agencies which accredit, certify, and license laboratory personnel, clinical laboratories, and laboratory education programs
39. Recognize or explain the general capabilities expected of a MLT at entry level
40. Identify, recognize, recall safety rules and practices to be followed in the clinical laboratory for chemical, electrical, fire, radiation, biohazard safety
41. Recognize poor safety practices and suggest corrections
42. Recognize, recall the diseases caused, modes of transmissions, risks, and prevention of Blood borne pathogens
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58. Choose the best test for a situation based on the sensitivity and specificity of the test method

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20. Demonstrate integrity appropriate to a future health care worker.
21. Adhere to regulations of the classroom and laboratory.
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23. Be neat and clean in appearance and dress professionally.
24. Observe laboratory safety procedures at all times.
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26. Explain the importance of quality laboratory results in the health care setting.

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19. Demonstrate the ability for venipuncture, successfully drawing 2 tubes on two different draws.
20. Demonstrate proper hand washing technique.

**FUNDAMENTALS OF LABORATORY TECHNIQUES
TENTATIVE CLASS SCHEDULE**

Aug 25 – First day of class – orientation to the MLT program; Review of MLT handbook (handout)

Aug 27 – Read chapter #1 pp. 2-1 Lecture: Lab personnel, certification, accreditation, licensure

Sept 1 – NO CLASS LABOR DAY

Sept 3 – laboratory safety blood borne pathogens; read chapter #2 pp. 22-40

Sept 8 – Continue safety in the lab

Sept 10 – **Quiz #1** – Introduction to lab & lab safety

Sept 15 – Systems of measurement, metric system, glassware, equipment

Sept 17 – read chapter #4 p. 88-112, 120-124

Sept 22 – Continue systems of measurement

Sept 24 – Lab; liquid measures

Sept 29 – Use of the microscope

Oct 1 – Read chapter #5 pp. 136-153; Practice focusing on slides, talc (low and high dry)

Oct 6 – **Quiz #2** – systems of measurement, metric system, microscope; Glassware

Oct 8 – Basic Lab equipment; photometry: pp. 156-167; centrifuges: pp. 129-133; H₂O baths, heating blocks (handout)

Oct 13 – NO CLASS COLUMBUS DAY

Oct 15 – Lab: total protein determination; loading centrifuges

Oct 20 – concepts in lab testing

Oct 22 – Standard curves, QC; read chapter #8 pp. 188-204; chapter #6 pp. 158-161 (preparation of a standard curve)

Oct 27 – Laboratory math; Read chapter #7 pp. 174-180

Oct 29 – concentration/volume problems, % problems, dilutions, w/v, v/v problems

Nov 3 – Continue laboratory math

Nov 5 – **Quiz #3** – Lab math, concepts in lab testing, standard curves, QC

Nov 10 – Specimen collection

Nov 12 – read chapter #3 pp. 42-85

Nov 17 – Collecting and processing laboratory specimens

Nov 19 – Begin venipuncture and finger sticks

Nov 24 – Collecting and processing laboratory specimens

Nov 26

Dec 1 – Collecting and processing laboratory specimens

Dec 3

Dec 8 – LAST DAY OF CLASS

Dec 10 – FINAL EXAM

This syllabus is subject to change due to the needs of the class and the semester

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Additional Documentation

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Ohio Articulation Number Form Directions

This form is used to submit your course information to the Ohio Board of Regents, for all courses that make up OAN requirements. This document is a form, so the only fields that need to be filled in can be. When you open this, make sure the top of the screen, where the name of the document is displayed, says "Document1" or something similar to that. When you open this form from a location other than inside of word, it creates a blank template to fill in. Please fill it in with the appropriate course information from your institution. All of the fields in this document are expandable, and will grow to fit as much data in them as you need.

Once you are done submitting your course information, you need to save this file. Since Word opened a blank version of this file, so you will need to rename it to save it. Under file, choose "Save as" and then input the name of the file. The naming scheme for this form is Institution-Year-OAN number-Course Title.

Example, if you were ABC Community College, and you were submitting your Calculus110 course, the name of the file would be ABC-2005-OMT005-Calculus110. If two (or more) courses are required to fulfill that same OAN, you would submit ABC-2005-OMT005-Calculus110Calculus111.

When you are done with your submissions, please send them electronically to the Ohio Board of Regents so we can keep your information on file.