Departmental Course Syllabus

Department: Allied Health Revision Date: May 2009
San Antonio College * 1300 San Pedro* San Antonio, TX* 78212-4299

Course Number and Title: MDCA 1352 Medical Assistant Laboratory Procedures

Credit Hours: 3 (2 hrs lecture, 3 hrs lab)

Instructor: Startzell
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I. Catalog Description: The emphasis of this course is on common laboratory procedures performed in the physician's office or clinic setting. It includes blood collection, specimen handling, basic urinalysis, and identification of normal ranges.

II. Pre-requisites: Completion of the following courses with a grade of "C" or better:
MDCA 1313 Medical Terminology
MDCA 1317 Clinical Procedures
MDCA 1302 Human Diseases/Pathophysiology
MDCA 1309 Anatomy and Physiology
Completion of background check and drug screening
Completion of physical exam and documentation of immunizations including
Completion of Hepatitis B vaccination series

III. Text Required:
Garrels, Marti and Oatis, Carol, Laboratory Testing for Ambulatory Settings, Saunders/Elsevier, 2006
DiLorenzo, Marjorie, Strasinger, Susan K., Blood Collections in Healthcare, 1st edition, F.A. Davis, 2002
Heller, Michelle, Krebs, Connie, Delmar Learning's Clinical Handbook for the Medical Office, 2nd edition.
Lindh, Clinical Medical Assisting, 2nd or 3rd edition

IV. Instruction will consist of: Lecture, Powerpoint presentation, group discussion/role playing, return demonstrations by students. All students will be required to provide blood and body fluid samples for examination via capillary puncture, venipuncture, and other methods. Students will perform capillary puncture and venipuncture on other students and allow the same to be performed on themselves in order to comply with exit competency requirements.

V. Course Content: Asepsis and infection control, specimen collection and processing, CLIA-waived diagnostic testing , patient care and instruction, quality control and quality assurance in the laboratory. All students will successfully complete OSHA Regulations training certification and a Bloodborne Pathogen test.
For detailed course content, see attached document.

VI. Learning Outcomes and Performance Objectives with their methods of measurement as used to determine the students' mastery of those outcomes.

Learning Outcome 1: The student will be able to define and describe compliance with standard precautions and OSHA guidelines.

Performance Objectives/Methods of Measurement for this outcome.

1 The student will be able to differentiate between work practice controls and engineering controls.
Method of measurement: Written tests and return demonstrations.

2 The student will be able to identify the components of personal protective equipment (PPE) and describe the purpose of each item.
Method of measurement: Written tests and return demonstrations.

3 The student will be able to explain and demonstrate safety precautions in the laboratory.
Method of measurement: Written tests and return demonstrations.

4 The student will be able to differentiate between Standard Precautions and Universal Precautions.
Method of Measurement: Written tests.

Learning Outcome 2: The student will be able to describe safe techniques of, and demonstrate performance of, specimen collection.

Performance Objectives/Methods of Measurement for this outcome.

1 The student will be able to discuss and demonstrate how to obtain blood specimens by capillary puncture and venipuncture.
Method of measurement: Return demonstrations, written tests.

2 The student will be able to discuss and demonstrate how to obtain specimens for microbiological testing.
Method of measurement: Return demonstrations, written tests.

3 The student will be able to discuss and demonstrate how to instruct patients in the methods of collection of clean-catch urine and fecal specimens.
Method of measurement: Return demonstrations, written tests.

Learning Outcome 3: The student will be able to describe the methods and demonstrate performance of CLIA waived tests.

Performance Objectives/Methods of Measurement for this outcome.

1 The student will be able to list the steps and precautions in the performance of urinalysis, hematology, chemistry, immunology and microbiology testing and demonstrate correct procedures for same.
Method of measurement: Written tests and return demonstration.

2 The student will be able to describe the methods of quality control and quality assurance in the performance of laboratory testing.
Method of measurement: Written tests and return demonstration.

Learning Outcome 4: The student will be able to screen and follow up on test results.

Performance Objectives/Methods of Measurement for this outcome

1 The student will be able to analyze laboratory reports and differentiate between normal and abnormal test results
Method of measurement: Written tests and return demonstration.

2 The student will be able to list the steps of compliance in reporting and following up on tests results.
Method of measurement: Written tests and return demonstration.

Evaluation Ratio:

Tests and Quizzes (multiple choice, short answer, matching, fill in the blank)	45%
Return Demonstrations	35%
Comprehensive Final Exam	20%

Return demonstration requirements: 100% competency must be demonstrated in the performance of return demonstrations. Points will be deducted for each subsequent attempt according to this scale:

1st attempt = 100%
2nd attempt = 85%
3rd attempt = 74%

Failure to obtain a perfect score on the third attempt constitutes a failing grade for the procedure and may result in failure of the course and/or dismissal from the program.

SCANS Competencies: C-1, C-2, C-3, C-4, C-5, C-6, C-7, C-9, C-10, C-11, C-14, C-19, C-20
Foundations: F-1, F-2, F-3, F-5, F6, F-8, F-9, F-10, F-11,F12, F-13, F-17

CAAHEP Competency Standards - Psychomotor and Affective:

I.P. Anatomy and Physiology
2. Perform venipuncture
3. Perform capillary puncture
11.Perform quality control measures
12. Perform CLIA waived hematology testing
13. Perform CLIA waived chemistry testing
14. Perform CLIA waived urinalysis
15. Perform CLIA waived immunology testing
16. Screen test results

I.A. Anatomy and Physiology
2. Use language/verbal skills that enable patients' understanding
3. Demonstrate respect for diversity in approaching patients and families

II.C. Applied Mathematics
7. Analyze charts, graphs, and/or tables in the interpretation of healthcare results

II.P. Applied Mathematics

2. Maintain laboratory test results using flow sheets

II.A. Applied Mathematics

2. Distinguish between normal and abnormal test results

III.C. Applied Microbiology/Infection Control

3. Discuss infection control procedures.
4. Identify personal safety precautions as established by the Occupational Safety and Health Administration (OSHA)
5. List major types of infectious agents
6. Compare different methods of controlling the growth of microorganisms
7. Match types and uses of personal protective equipment (PPE)
9. Discuss quality control issues related to handling microbiological specimens
10. Identify disease processes that are indications for CLIA waived tests
11. Describe Standard Precautions, including:
    - A. Transmission based precautions
    - B. Purpose
    - C. Activities regulated
12. Discuss the application of Standard Precautions with regard to
    - a. All body fluids, secretions and excretions
    - b.Blood
    - c. Non intact skin
    - d. Mucous membranes
13. Identify the role of the Center for Disease Control (CDC) regulations in healthcare settings.

III.P. Applied Microbiology/Infection Control

1. Participate in training on Standard Precautions
2. Practice Standard Precautions.
3. Select appropriate barrier/personal protective equipment (PPE) for potentially infectious situations
4. Perform handwashing
7. Obtain specimens for microbiological testing
8. Perform CLIA waived microbiology testing

III.A. Applied Microbiology/Infection Control

1. Display sensitivity to patient rights and feelings in collecting specimens
2. Explain the rationale for performance of a procedure to the patient
3. Show awareness of patients' concerns regarding their perceptions related to the procedure being performed

IV.C Concepts of Effective Communication

12. Organize technical information and summaries

IV.P Concepts of Effective Communication

2. Report relevant information to others succinctly and accurately
3. Use medical terminology, pronouncing medical terms correctly, to communicate information, patient history, data, and observations
5. Instruct patients according to their needs to promote health maintenance and disease prevention
8. Document patient care
9. Document patient education
12. Develop and maintain a current list of community resources related to patients' healthcare needs

IV.A Concepts of Effective Communication

1. Demonstrate empathy in communicating with patients, family and staff

IX.C. Legal Implications

14. Describe the process to follow if an error is made in patient care

IX.P. Legal Implications

4. Practice within the standard of care for a medical assistant
6. Complete an incident report
7. Document accurately in the patient record
8. Apply state, local and federal health care legislation and regulation appropriate to the medical assisting practice setting (CLIA)

IX.A. Legal Implications

3. Recognize the importance of local, state and federal legislation and regulations in the practice setting (CLIA)

XI. C. Protective Practices

1. Describe personal protective equipment
2. Identify safety techniques that can be used to prevent accidents and maintain a safe work environment
3. Describe the importance of Materials Safety Data Sheets (MSDS) in a healthcare setting
4. Identify safety signs, symbols and labels
7. Describe fundamental principles for evacuation of a healthcare setting
8. Discuss fire safety issues in a healthcare environment
9. Discuss requirements for responding to hazardous material disposal

XI.P. Protective Practices

1. Comply with safety signs, symbols and labels.
2. Evaluate the work environment to identify safe vs. unsafe working conditions.
5. Demonstrate proper use of the following equipment:
   a. Eyewash
   b. Fire extinguishers
   c. Sharps disposal containers
6. Participate in a mock environmental exposure event with documentation of steps taken.
7. Explain an evacuation plan for a physician's office
8. Demonstrate methods of fire prevention in the healthcare setting

12. Maintain a current list of community resources for emergency preparedness

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VII. Course requirements and grade computation.

A. College Requirements:

A written, comprehensive final examination, not to exceed two and one-half hours in length, shall be given at the end of each semester for each course at the regularly scheduled time. Any exceptions to these requirements must be approved by the appropriate dean. Other examinations are given at the discretion of the instructor.

A student who must be absent from a final examination should petition that instructor for permission to postpone the examination. **A student absent without permission from a final examination is graded "F."** Postponed examinations result in a grade of "I." The final exam must be taken within 120 calendar days from the end of the semester or the grade automatically becomes an "F." (San Antonio College Bulletin, Faculty Handbook - January 1995)

B. Departmental Requirement:

Successful completion of the course with a minimum score of 74%.
Attendance of a minimum of 80% of the contact hours.
Admission Requirements for Program:
Advisement by faculty member and completion of program admission forms.
Current Physical Examination.
Ability to meet the national medical assisting technical standards.
Up to date and complete immunizations, to include completed Hepatitis B vaccination series.
TB test.
Satisfactory Criminal Background Check.
Negative Drug Screening Results.

C. Instructor Requirements:

Grading Policy:
93-100 = A
85-92 = B
74-84 = C
65-73 = D
0-64 = F

This is an invasive procedures class, therefore 100% competency is required to pass. Failure to complete any one return demonstration will result in failure of the entire course and may result in termination from the program.

Return demonstration make up exams are not generally available. Students must make every effort to take exams at the time scheduled. Students are expected to notify instructor of known absences or when ill. Written examinations must be made up by appointment only and before the next class

meeting. The instructor reserves the right to refuse to accept late work. Deductions from the grade will be made if late work is accepted.
See individual instructor course outlines for attendance policies.

Materials Required: Three ring binder with 10 dividers, Scantron Forms # 882-ES Medical/Surgical Scrubs Uniform, White Shoes, wrist watch with a second hand. Jewelry other than a wrist watch and stud earrings is not allowed.
Hair must be pulled back and off of the face. **No artificial nails. Nails must be no more than 1/4 inch long.**

VIII. College Policies:

A. San Antonio College does not discriminate on the basis of race, religion, color, national origin, sex, age, or disability with respect to access, employment programs or services.

B. Students are urged not to bring children to either a class or a lab. Minors under the age of twelve (12) must not be left unattended on campus. College Academic Council - April, 1998

C. ADA Statement: "As per Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, if accommodation is needed contact the Office of DisABILITY Support Services, CAC 124C, Phone: (210) 486-0020.

D. A Rapid Response Team exists for the purpose of responding to emergencies. If you have a disability that will require assistance in the event of a building evacuation, notify Disability Support Services, Chance Academic Center 124C, Phone: (210) 486-0020.

E. Academic Dishonesty: Students may be subject to disciplinary proceedings resulting in an academic penalty or disciplinary penalty for academic dishonesty. Academic Dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion. For additional information refer to the "Student Code of Conduct" in the San Antonio College Bulletin.

F. Students are required to silence all electronic devices (e.g., pagers, cellular phones, etc.) when in classrooms, laboratories and the library. College Academic Council, 01/ 2000.

G. San Antonio College Attendance Policy: Regular and punctual attendance at all classes and laboratories, day and/or evening is required. A student absent for any reason is responsible for all work missed. Both tardiness and early departure from class are forms of absenteeism. The instructor establishes the policy with regard to each. Absences of each student are recorded without exception. The counting of absences begins on the first day of class. A student absent the equivalent of two weeks of instruction in a 16-week semester may be dropped by the instructor. If a student is dropped from a class for excessive absences, the instructor will record a grade of "W" (withdraw). It is the student's responsibility to ensure that the withdrawals have been submitted.

H. San Antonio College is a smoke free campus.

I. ACCD DPS Emergency Phone Numbers:

ACCD DPS Emergency Phone	(210) 222-0911
ACCD DPS General Phone	(210) 208-8099
ACCD DPS Weather Phone	(210) 208-8189 (For information on college closures)

J. Students must also abide by the policies, procedures, and rules set forth in the "Student Code of Conduct" and all other policies set forth in the San Antonio College Bulletin. . www.alamo.edu/sac/sacmain/schedule/SAC_Bulletin_07-08.pdf

LEARNING OUTCOMES/OBJECTIVES
MDCA 1352 MEDICAL ASSISTING LABORATORY PROCEDURES

Textbooks: Garrels, Marti and Oatis, Carol, Laboratory Testing for Ambulatory Settings, Saunders/Elsevier, 2006
DiLorenzo, Marjorie, Strasinger, Susan K., Blood Collections in Healthcare, 1st edition, F.A. Davis, 2002
Heller, Michelle, Krebs, Connie, Delmar Learning's Clinical Handbook for the Medical Office, 2nd edition.

SAFETY AND INFECTION CONTROL

Cognitive:

- Describe OSHA's Hazard Communication program
- State some of the information required for the Material Safety Data Sheet
- Identify guidelines to protect against injury when using chemicals and electrical equipment
- Explain the OSHA Bloodborne Pathogens Standard
- Tell when and what kind of personal protective equipment is required for various activities involving bloodborne pathogens

INTRODUCTION TO THE LABORATORY

Cognitive:

- Describe laboratory testing and how test results are used by the physician
- List the advantages of performing laboratory tests in the physician's office laboratory
- List the department structure in a clinical laboratory
- List two tests performed in each department in a clinical laboratory
- List the various medical personnel employed in a clinical laboratory

QUALITY ASSURANCE AND QUALITY CONTROL

Cognitive:

- Describe quality assurance in the clinical laboratory and list 3 aspects of quality assurance
- Describe quality control and explain why quality control procedures promote accuracy and precision
- Explain systematic and random error of test results
- List the guidelines for specimen collection and how they relate to quality control

- Explain the relationship of instrument calibration and maintenance to quality assurance
- Describe proficiency testing as it relates to quality assurance
- Describe the proper use and care of the microscope

SPECIMEN COLLECTION AND TRANSPORT

Cognitive:

- State the purpose of the laboratory test request form and tell what information it provides
- List the information that should be on specimen labels and test request slips
- State considerations regarding the transport of clinical specimens
- State why confidentiality is important in specimen collection

Psychomotor:

- Complete a laboratory test requisition form

URINALYSIS SPECIMEN COLLECTION

Cognitive:

- State the directions for collection of various urine specimens
- Identify the proper collection method of urine for routine, quantitative analysis, and bacterial studies

Psychomotor:

- Consult procedure manual or other sources to determine the collection method for various urine tests
- Comply with safety guidelines for the proper handling and disposal of specimens
- Instruct patients on the method of collecting a midstream clean-catch specimen

Affective:

- Identify and assist patients who need special help in collecting the specimens described
- Respond appropriately to patient inquiries as to the proper method of specimen collection

PERFORMING URINALYSIS

Cognitive:

- Describe the anatomy and physiology of the urinary system
- List the 4 steps in urine formation and define each
- Explain renal threshold
- Name the 3 major diagnostic modalities of urinalysis
- Name the 4 tests in the physical assessment of urine
- Identify pathologies associated with abnormal results of urine testing
- Differentiate between a qualitative and quantitative test
- Identify the 10 analytes that are routinely included in chemical analysis of routine specimens
- Name 4 confirmatory tests performed on urine and explain when they are used
- Name the 2 major types of urine sediment

- Correctly identify the structures found in a microscopic urinalysis specimen

Psychomotor:
- Standardize a refractometer following the manufacturer's directions
- Perform a physical assessment of a urine sample that meets the return demonstration competency requirements
- Record the results of physical, chemical and microscopic assessment of urine
- Store, maintain and use reagent strips in accordance with manufacturer's directions to ensure quality control
- Using a reagent strip and confirmatory test kits, perform a chemical urinalysis of a urine sample that meets the return demonstration competency requirements
- Following facility standard procedures, clean laboratory areas used for urinalysis

Affective:
- Recognize the importance of following safety guidelines in the processing, testing, and disposal of urine specimens
- Recognize the importance of logging quality control and test results when performing urinalysis
- Show professional courtesy by cleaning work areas after testing specimens
- Acknowledge that identification of microscopic elements in urine requires special training and experience

BLOOD COLLECTION PROCEDURES

Cognitive:
- Identify the sites for capillary puncture and explain why the sites are selected
- Explain how the capillary puncture is performed using a sterile lancet
- Name the parts of a vacuum tube system and explain their function
- List the order of draw for a multi-draw venipuncture

Psychomotor:
- Perform a capillary puncture following the competency procedure discussed in class
- Perform a venipuncture following the competency procedure discussed in class

Affective:
- Maintain laboratory safety by disposing of blood and sharps objects according to established laboratory procedures
- Maintain a clean laboratory procedure area
- Reassure anxious patients when performing the procedure

HEMATOLOGY

Cognitive:
- Describe the appearance of an erythrocyte and state its major function
- Define reticulocyte
- List the 5 types of leukocytes found in the blood and their primary function
- Describe the appearance and function of the platelet and identify the 3 essential steps of coagulation

- Explain the function of hemoglobin

- Describe 2 methods of hemoglobin determination
- Name 4 substances that affect hemoglobin levels
- List the hemoglobin reference values for adults and children
- Describe methods of quality control in hemoglobin determination

- Explain the purpose of a Microhematocrit
- Describe the method of performing a Microhematocrit
- List the 3 interfaces found in the microhematocrit tube used to interpret the microhematocrit
- Identify pathological conditions that cause changes in the microhematocrit reading

- Explain the purpose of performing a CBC
- List the normal values of RBCs, WBCs and platelets
- Describe the manual method using the Unopette system to determine a blood cell count

- List the criteria for a properly made blood smear
- Name the 5 types of leukocytes and describe how each is identified with Wright's stain
- State the reference range for each type of WBC
- List 5 types of RBC abnormalities
- Define microcytic, normocytic and macrocytic
- Define hypochromic and normochromic
- Define anisocytosis

- Explain the purpose of performing an erythrocyte sedimentation rate (ESR)
- Identify the factors that influence the ESR
- Describe 2 methods of performing an ESR
- List 2 technical factors affecting the accuracy of the ESR

Psychomotor:

- Perform a hemoglobin determination that meets the return demonstration competency requirements
- Record the hemoglobin results in the patient chart and in the test log
- Record the hemoglobin controls in the test log
- Perform a microhematocrit determination that meets the return demonstration competency requirements
- Record the results of the microhematocrit in the patient chart and in the test log
- Prepare and stain a blood smear following the return demonstration competency procedure as presented in class
- Identify blood cells found in the smear
- Calculate RBCs and WBCs from a hypothetical count
- Perform an ESR following the return demonstration competency procedure as presented in class
- Record the results of the ESR in the patient chart and in the test log

Affective:

- Show professional courtesy by cleaning work areas after testing specimens

MICROBIOLOGY

Cognitive:

- Define microbiology and describe classifications and characteristics of microorganisms
- Describe bacterial cell structure and its relationship to staining and antimicrobial drugs
- List and describe equipment used in microbiology
- Explain safe procedures for handling and testing of microbiological specimens
- List different types of stains used on microbiological specimens
- Describe the steps in performing a Gram Stain, AFB stain, wet mount and hanging drop specimen
- identify gram-positive and gram-negative bacteria
- List the different classifications and use of microbiological media in the laboratory
- Explain the role of biochemical testing in the identification of microorganisms
- Describe the significance and methods of sensitivity testing
- List at least 2 common parasites and 2 fungi that can be observed in the microbiology laboratory and the diseases that they cause
- Describe the method used for streaking for isolation and colony count
- Explain the procedures for rapid strep testing, obtaining a throat culture and performing pinworm sample collection

Psychomotor:

- Obtain a throat culture
- Perform the test for group A streptococcus utilizing a rapid strep test
- Prepare a bacteriological smear
- Perform a gram stain
- Perform inoculation and streaking for isolation

Affective:

- Recognize the importance of following safety guidelines in the processing, testing, and disposal of microbiological specimens

SPECIAL LABORATORY TESTS

Cognitive:

- Discuss factors to be considered when evaluating test results
- Discuss transmission, incubation period and symptoms of Epstein-Barr virus infectious mononucleosis
- List the blood group antigens and antibodies found in each of the ABO groups and the Rh factor
- List and discuss differences between normal values for fasting blood glucose, 2 hour postprandial, and glucose tolerance test

- Explain the importance of cholesterol and triglyceride testing
- Give the average values of cholesterol for adults, children, infants and newborns
- Discuss the relationship between LDL and HDL and discuss the acceptable ratios
- Give the normal values of blood urea nitrogen and discuss the significance of elevated levels
- Define the term panel or profile in relationship to chemistry tests and list four chemistry panels and the body system that is associated with these panels
- Describe patient preparation for fecal occult blood testing
- Describe the specimen collection for pregnancy testing
- Describe the immunoassay techniques for detecting HCG

Psychomotor:

- Perform the test for Infectious Mononucleosis
- Perform testing for ABO/Rh typing by the slide method
- Perform glucose testing utilizing automated analyzers
- Perform cholesterol testing utilizing automated analyzers
- Perform a pregnancy test using a variety of CLIA-waived test kits
- Record the results of positive and negative controls
- Record the results of the test for HCG
- Perform fecal occult blood testing

Affective:

- Actively listen and respond appropriately to patient inquiries as to the proper method of specimen collection
- Maintain a clean laboratory procedure area