Urinalysis & Body Fluids
Common Course Outline

Course Information
Revision History 2008-2009
Course Number MDLT 1825
Total Credits 3

Description
The lecture component of this course will cover basic theory in urine formation, renal physiology, and metabolic disorders that produce abnormalities in the urine. Complete urinalysis examinations will be performed in the student laboratory. Basic analysis of other body fluids will be discussed with an emphasis on laboratory methods currently in use.

Types of Instruction

<table>
<thead>
<tr>
<th>Instruction Type</th>
<th>Contact Hours</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Laboratory</td>
<td>32</td>
<td>1</td>
</tr>
<tr>
<td>Lecture (online)</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

Prerequisites
MDLT 1810 may also be taken concurrently or with Program Director permission.

Exit Learning Outcomes
Core Abilities
A. Critical Thinking
B. Professionalism
C. Communication
D. Math Logic

Competencies
1. Define urinalysis and body fluids terminology.
   Learning Objectives
   a. Review urinalysis/body fluids terminology.
   b. Study urinalysis/body fluids terminology.
   c. Practice urinalysis/body fluids terminology.

2. Explain renal physiology.
   Learning Objectives
   a. Study renal physiology
   b. Discuss renal physiology.

3. Discuss urine composition and formation.
   Learning Objectives
   a. Define urine composition and formation.
   b. Study urine composition and formation.
4. **Discuss the physical examination of urine.** Discussion will include, but not be limited to: color, clarity, specific gravity, and clinical correlations.

   **Learning Objectives**
   a. List the common terms used when discussing normal and abnormal urine color.
   b. Discuss the clinical significance of abnormal urine color.
   c. List the common terminology used when discussing urine clarity.
   d. State the clinical significance of urine clarity.
   e. Define specific gravity and explain why this measurement can be significant in a routine urinalysis.
   f. List the common methods for measuring specific gravity.
   g. Correlate physical examination results with pathologic and nonpathologic conditions.

5. **Discuss the chemical examination of urine.** Discussion will include, but not be limited to: performance of reagent strip testing; principles of chemical tests performed for routine urinalysis; common confirmatory tests for glucose, ketones, bilirubin, and protein; correlation of physical and chemical urinalysis results; correlation of pathologic and nonpathologic urinalysis findings with clinical diseases.

   **Learning Objectives**
   a. List the common terminology used when discussing chemical examinations of urine.
   b. Describe the proper technique for performing reagent strip testing.
   c. Discuss the routine chemical tests performed for chemical examinations of urines and their principles.
   d. Discuss the routine confirmatory tests performed for chemical examinations of urines and their principles.
   e. Correlate physical and chemical urinalysis results.
   f. Correlate normal and abnormal chemical examination findings with pathologic and nonpathologic conditions.

6. **Discuss the microscopic examination of urine.** Discussion will include, but not be limited to: microscopic screening; preparation and examination of urine sediment; sedimentation examination techniques; normal and abnormal sediment constituents; correlation of microscopic examination with pathologic and nonpathologic conditions.

   **Learning Objectives**
   a. List the common terminology used when discussing microscopic examination of urines.
   b. Describe and discuss methods for standardizing specimen preparation, examination, and reporting of results.
   c. Differentiate between normal and abnormal sediment constituents.
   d. Correlate physical and chemical urinalysis results with microscopic examination and recognize the discrepancies.
   e. Differentiate between actual sediment constituents and artifact.
   f. Discuss the significance of finding normal and abnormal sediment constituents in a urine.
   g. Correlate the findings of normal and abnormal sediment constituents with pathologic and nonpathologic conditions.

7. **Explain cast formation.**

   **Learning Objectives**
   a. Discuss how cast are formed.
   b. Identify and name the different types of casts that can be formed.
   c. Explain clinical significance of cast formation.

8. **Correlate cast formation with clinical conditions.**
Learning Objectives
a. Identify and name the different types of casts that can be formed.
b. Explain clinical significance of cast formation.

9. Explain crystal formation.
Learning Objectives
a. Identify and name the different types of crystals that can be formed.
b. Explain the clinical significance of crystal formation.

10. Correlate crystal formation with clinical conditions.
Learning Objectives
a. Identify and name the different types of crystals that can be formed.
b. Explain clinical significance of crystal formation.

11. Differentiate common urine specimen types.
Learning Objectives
a. List common urine specimen types.
b. Describe common urine specimen types.
c. Examine common urine specimen types.

Learning Objectives
a. Define quality assurance/quality control measurements.
b. Discuss quality assurance/quality control measurements.
c. Apply quality assurance/quality control measurements.
d. Explain significance of quality assurance/quality control measurements out of established ranges.
e. Determine corrective measures for quality assurance/quality control measurements out of established ranges.

13. Perform physical/chemical/microscopic examination of urines.
Learning Objectives
a. Study how to perform physical/chemical/microscopic examinations of urine specimens.
b. Practice performing physical/chemical/microscopic examinations of urine specimens.

Learning Objectives
a. Study physical/chemical/microscopic examinations of urine specimens.
b. Practiced physical/chemical/microscopic examinations of urine specimens.
c. Interpret physical/chemical/microscopic examinations of urine specimens.

15. Give the details of the common urine confirmatory tests.
Learning Objectives
a. List common urine confirmatory tests.
b. Study details of common urine confirmatory tests.
c. Discuss details of common urine confirmatory tests.
d. Correlate which confirmatory tests relate to tests impregnated on commonly used chemical strips.

16. Carry out common urine confirmatory testing.
Learning Objectives
a. Study procedures for common urine confirmatory tests.
b. Practice performing common urine confirmatory tests.
c. Interpret results of common urine confirmatory tests.

17. **Distinguish biological sediment components.**
   
   **Learning Objectives**
   
   a. List biological urine sediment components.
   
   b. Study biological urine sediment components.
   
   c. Differentiate biological urine sediment components.
   
   d. Discuss common urine artifact.
   
   e. Differentiate common urine artifact.

18. **Correlate urinalysis findings with clinical conditions.**
   
   **Learning Objectives**
   
   a. Differentiate clinically significant urinalysis results from nonpathologic urinalysis results.
   
   b. Interpret clinically significant urinalysis results from nonpathologic urinalysis results.

19. **Discuss commonly collected body fluids and common analyses performed on them.**
   
   **Learning Objectives**
   
   a. List the types of body fluids that are commonly collected for medical laboratory analyses.
   
   b. Discuss the types of commonly collected body fluids.
   
   c. Study the types of analyses performed on commonly collected body fluids.
   
   d. Interpret laboratory findings performed on commonly collected body fluids.

20. **Correlate clinical conditions associated with the laboratory findings performed on commonly collected body fluids.**
   
   **Learning Objectives**
   
   a. List the types of body fluids that are commonly collected for medical laboratory analyses.
   
   b. Interpret laboratory findings performed on commonly collected body fluids.
   
   c. Correlate laboratory findings from commonly collected body fluids with clinical conditions/diseases.

21. **Discuss urinalysis automation.**
   
   **Learning Objectives**
   
   a. Acknowledge the existence of different automated urine analyzers.
   
   b. Differentiate between commonly used automated urine analyzers.