ESSENTIALS FOR FORENSIC LAB - BIMS 3103
DEPARTMENT OF LIFE SCIENCES
FALL 2015

A. COURSE INFORMATION
Course number/section: BIMS_3103_101
Class meeting time: T 2:00-4:50 PM
Class location: CS 231
Course Website: https://bb9.tamucc.edu/

B. INSTRUCTOR INFORMATION
Instructor: Dr. Felix Omoruyi
Office location: Center for Sciences 130B
Office hours: M – 12:00 - 1:00 PM; T – 12:00 – 2:00 PM; R – 2:00 – 4:00 PM
Telephone: 825-2473
E-mail: felix.omoruyi@tamucc.edu
Appointments: N/A

C. COURSE DESCRIPTION
This course consist of studies of general laboratory techniques and procedures, laboratory safety and regulations, professional ethics, phlebotomy technique, microscopy and chemical examination of urine and body fluids.

D. PREREQUISITES AND COREQUISITES
None
Corequisites None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES


Supplies
You will need a scientific calculator.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing
these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

**Lab 1: Introduction and Laboratory Safety**
1. State proper laboratory safety regulations or considerations relative to each of the following:
   a. warning signs
   b. labeling
   c. flammable
   d. fires
   e. biohazardous materials
   f. hepatitis
   g. radiation

**Lab 2: Glassware and Resources**
1. Identify each of the following types of pipets and describe the proper use of each type:
   a. volumetric
   b. serological
   c. micropipets
2. Describe the proper technique for use of automatic pipets.
3. Explain the difference between TD and TC as applied to volumetric measurements.

**Lab 3: Phlebotomy Equipment**
1. List and describe the assembly and handling of phlebotomy equipment.
2. Discuss the order of draw of tubes when using an evacuated tub system.
3. Assemble the proper equipment for a venipuncture and a capillary puncture.
4. Practice the proper application of the tourniquet on the practice arm.
5. Discuss ways of dealing with difficult patients and difficult situations that may be encountered in collecting blood from patients.

**Lab 4: Phlebotomy Techniques**
1. Assemble the proper equipment for a venipuncture.
2. Practice the proper application of the tourniquet on a ‘real’ arm.
3. Perform a correct venipuncture on a human subject.
4. Perform a correct fingerstick on a human subject.
5. Perform the proper technique for holding a heel for capillary puncture.

**Lab 5: UA Physical and Microscopy**
1. Describe the appearance and discuss the significance of amorphous phosphates and amorphous urates in freshly voided urine.
2. Define specific gravity and explain why this measurement is significant in a routine urinalysis.
3. Perform several specific gravity measurements using a refractometer.
4. Perform several microscopic identifications of epithelial cells, wbc's and rbc's.
5. Identify artifacts in the urine.

**Lab 6: UA Chemical and Microscopy**
1. Describe and identify normal and abnormal formed elements in urinary sediments.
2. Prepare urines for microscopy through centrifugation.
3. Correlate physical and chemical urinalysis results with microscopic observations.
4. Differentiate between red blood cells and yeast cells.
5. Identify crystals found in the urine and state their significance.

**Lab 7: UA Chemical and Microscopy**
1. Describe and perform proper technique for performing chemical tests on urine by reagent strip and give possible errors if this technique is not followed.
2. Perform quality control procedures routinely performed with reagent strip testing.
3. Discuss causes of premature deterioration of reagent strips and state how to avoid them.
4. Prepare quality control material properly.
5. Prepare normal and abnormal urines for microscopy and perform chemical testing.
6. Discuss the principle of each reagent strip test.

**Labs 8 & 9: UA Chemical and Point-of-Care Testing**
1. Prepare normal and abnormal urines for microscopy and perform chemical testing.
2. Perform routine UA quality control.
3. Perform and interpret an Ictotest for detection of urine bilirubin.
4. Perform and interpret a sulfosalicylic acid test for protein.
5. Perform and interpret a Clinitest for detection of reducing sugars.
6. Perform and interpret an Acetest for the presence of ketones in urine.
7. Perform procedures for point of care testing for glucose.
8. Perform and interpret quality control procedures on point of care instrument.
9. Correlate results with clinical findings of patient.

**Lab 10: UA Drug Monitoring**
1. Perform routine procedures for chemical examination of urine with quality control.
2. Perform color inspection of urine and other physical characteristics.
3. Perform procedure for positive identification of urine drugs.
4. Discuss importance of chain of custody and professionalism involved in urine drug testing.

**Labs 11 & 12: Case Studies**
1. Correlate physical and chemical urinalysis results with microscopic observations and correlate results with clinical data on patients.
2. Correlate different body fluid results with clinical conditions in patients.
3. Differentiate between normal and abnormal cells and correlate the presence or absence of cells with clinical conditions in patients.

**G. INSTRUCTIONAL METHODS AND ACTIVITIES**

Disposable lab coats, gloves, and goggles will be provided for you and are required for all labs. You will not be permitted to work in the lab without these items. You will also need a scientific calculator and a black Sharpie marker.
H. MAJOR COURSE REQUIREMENTS AND GRADING

The final course grade will be based on four exams, attendance, problem portfolio, and a final exam according to the following percentages:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PERCENT OF FINAL GRADE</th>
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<tbody>
<tr>
<td>Examination average (2 exams)</td>
<td>40%</td>
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<tr>
<td>Laboratory average</td>
<td>20%</td>
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<tr>
<td>Attendance</td>
<td>10%</td>
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<tr>
<td>Final examination (comprehensive)</td>
<td>30%</td>
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<tr>
<td></td>
<td>100%</td>
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Grades

You are expected to read the material that corresponds to the objectives as they are covered. Mastering course objectives will require that you have read the material. All questions are keyed to the specific course and lab objectives. Use these objectives to study.

There is no provision for making up late work and/or missed exams or quizzes. A grade of zero will be entered for any late or missed exam, lab, quiz or practical due to an unexcused absence. The only excused absences are personal illness, immediate family medical emergency or immediate family funeral.

The following scale will be used to report grades:

- A 90 - 100
- B 80 - 89
- C 70 - 79
- D 60 - 69
- F below 60

I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Tuesday</th>
<th>Sept.</th>
<th>Introduction and Laboratory Safety</th>
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<tbody>
<tr>
<td>Tuesday</td>
<td>08</td>
<td>Phlebotomy Equipment</td>
</tr>
<tr>
<td>Tuesday</td>
<td>15</td>
<td>Phlebotomy Techniques</td>
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<tr>
<td>Tuesday</td>
<td>22</td>
<td>UA Physical and Microscopy</td>
</tr>
<tr>
<td>Tuesday</td>
<td>29</td>
<td><strong>EXAM 1</strong></td>
</tr>
<tr>
<td>Tuesday</td>
<td>Oct. 6</td>
<td>UA Chemical and Microscopy</td>
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<tr>
<td>Tuesday</td>
<td>13</td>
<td>UA Chemical and Microscopy</td>
</tr>
<tr>
<td>Tuesday</td>
<td>20</td>
<td>UA Chemical, Microscopy, and Point of Care Testing</td>
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<tr>
<td>Tuesday</td>
<td>27</td>
<td>UA Drug Monitoring</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Nov. 3</td>
<td><strong>EXAM 2</strong></td>
</tr>
<tr>
<td>Tuesday</td>
<td>10</td>
<td>ABO Blood Typing</td>
</tr>
<tr>
<td>Tuesday</td>
<td>17</td>
<td>DNA Fingerprint</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Nov. 24</td>
<td>Case Studies</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Dec. 01</td>
<td><strong>Case Studies - Final</strong></td>
</tr>
</tbody>
</table>
Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness
Students are expected to attend all lectures. If you know in advance that you will miss an exam due to official University business, you must provide the Professor with official documentation of the absence at least fourteen days prior to missing. It is the student’s responsibility to obtain official documentation in timely fashion. Once the documentation has been verified, the Professor will decide how to handle the absence. In the overwhelming majority of cases, assignments and exams will be turned in or completed prior to the planned, official absence. Exams given outside regularly scheduled times may vary in format and content at the discretion of the faculty member. Absolutely nothing may be turned in late by anyone for any reason.

Late Work and Make-up Exams
There is no provision for making up late work and missed exams.

Extra Credit
There is no provision for extra credit

Cell Phone Use
No use of cell phone in class

Laptop Use
Only for assessing lecture notes posted on blackboard

Food in Class
No eating in class

Missed Exam
Unexcused absence during exams will result in a zero for that exam. It is the student’s responsibility to contact me in cases of extreme emergency. The only excused absences are personal illness, immediate family medical emergency, or attending funeral of immediate family.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
It is expected that university students will demonstrate a high level of maturity, self-direction, and ability to manage their own affairs. Students are viewed as individuals who possess the qualities of worth, dignity, and the capacity for self-direction in personal behavior.
See Full University Policy at http://catalog.tamucc.edu/content.php?catoid=10&navoid=313#Academic_Integrity
• **Classroom/Professional Behavior**
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

• **Deadline for Dropping a Course with a Grade of W (University)**
The grade of W will be assigned to any student officially dropping a course by Friday, November 06, 2015. No student is eligible to receive a W without completing the official drop process by this deadline. Visit the Office of the University Registrar for the Course Drop Form that must be submitted. After November 06, 2015 a student will not be allowed to drop a course.

• **Grade Appeals (College of Science and Engineering)**
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at [http://www.tamucc.edu/provost/university_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html), and the College of Science and Engineering Grade Appeals webpage at [http://sci.tamucc.edu/students/GradeAppeal.html](http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

• **Disability Services**
Disability Services (DS) is the hub for coordinating services and accommodations to ensure accessibility and utilization of all programs for all Texas A&M University-Corpus Christi students with disabilities. Our services are designed to meet the unique educational needs of enrolled students with documented permanent or temporary disabilities. DS provides intake and consultation services to students seeking to register with our office. DS reviews an individual’s documentation of disability and assesses eligibility for services and the determination of reasonable accommodations. For more information visit the Disability Services Office at 116 Corpus Christi Hall or go to [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

L. **OTHER INFORMATION**
You are expected to read the material that corresponds to the objectives as they are covered. Mastering course objectives will require that you have read the material.
GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.