ESSENTIALS FOR FORENSIC LAB - BIMS 3103
DEPARTMENT OF LIFE SCIENCES
FALL 2018

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 the Sciences 130B
   Office hours: M – 12:00 - 1:00 PM; T – 12:00 – 2:00 PM; R – 2:00 – 4:00 PM
   Telephone: 361-825-2473
   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
   CLSC/BIMS 3200
   Corequisites
   STME 0092

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**

By the end of this lab, students should be able to:

State proper laboratory safety regulations or considerations relative to each of the following:

- warning signs
- labeling
- flammable
- fires
- biohazardous materials
- hepatitis
- radiation

**Lab 2: Glassware and Resources**

By the end of this lab, students should be able to:

1. Identify each of the following types of pipets and describe the proper use of each type:
   - volumetric
   - serological
   - 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**

By the end of this lab, students should be able to:

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**

By the end of this lab, students should be able to:

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**

By the end of this lab, students should be able to:

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
By the end of this lab, students should be able to:
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.

Labs 7: UA Chemical and Point-of-Care Testing
By the end of this lab, students should be able to:
1. Prepare normal and abnormal urines for microscopy and perform chemical testing.
2. Describe and perform proper technique for performing chemical tests on urine by reagent strip and give possible errors if this technique is not followed.
3. Perform quality control procedures routinely performed with reagent strip testing.
4. Perform routine UA quality control.
5. Perform and interpret an Ictotest for detection of urine bilirubin.
6. Perform and interpret a sulfosalicylic acid test for protein.
7. Perform and interpret a Clinitest for detection of reducing sugars.
8. Perform and interpret an Acetest for the presence of ketones in urine.
9. Perform procedures for point of care testing for glucose.
10. Perform and interpret quality control procedures on point of care instrument.
11. Correlate results with clinical findings of patient.

Lab 8: UA Drug Monitoring
By the end of this lab, students should be able to:
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.

Lab 9: ABO Blood Typing
By the end of this lab, students should be able to:
Detect and interpret with perfect accuracy the ABO group of whole blood samples.

Lab 10: DNA Fingerprinting
By the end of this lab, students should be able to:
1. Develop an understanding of some of the basic scientific principles involved in DNA Fingerprinting.
2. Weigh evidence and be able to analyze and interpret data that are generated in this investigation with clarity and confidence.
3. Use critical thinking to solve problems.

Labs 11 & 12: Case Studies
By the end of these case studies, students should be able to:
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 two exams, laboratory average, attendance, and a final exam according to the following percentages:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>PERCENT OF FINAL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination average (2 exams)</td>
<td>40%</td>
</tr>
<tr>
<td>Laboratory average</td>
<td>25%</td>
</tr>
<tr>
<td>Attendance</td>
<td>5%</td>
</tr>
<tr>
<td>Final examination (comprehensive)</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

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>Aug. 28</th>
<th>Introduction and Laboratory Safety</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday</td>
<td>Sep. 04</td>
<td>Glassware and Resources</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Sep. 11</td>
<td>Phlebotomy Equipment</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Sep. 18</td>
<td>Phlebotomy Techniques</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Sep. 25</td>
<td><strong>EXAM 1</strong></td>
</tr>
<tr>
<td>Tuesday</td>
<td>Oct. 02</td>
<td>UA Physical and Microscopy</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Oct. 09</td>
<td>UA Chemical and Microscopy</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Oct. 16</td>
<td>UA Chemical, Microscopy, and Point of Care Testing</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Oct. 23</td>
<td>UA Drug Monitoring</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Nov. 30</td>
<td><strong>EXAM 2</strong></td>
</tr>
<tr>
<td>Tuesday</td>
<td>Nov. 06</td>
<td>ABO Blood Typing</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Nov. 13</td>
<td>DNA Fingerprint</td>
</tr>
<tr>
<td>Tuesday</td>
<td>Nov. 20</td>
<td>Case Studies</td>
</tr>
</tbody>
</table>
Tuesday  Dec. 04  Review

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.

Participation
N/A

Others
None

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty
includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **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.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day 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, and the College of Science and Engineering Grade Appeals webpage at 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**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.
  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

  [http://disabilityservices.tamucc.edu/](http://disabilityservices.tamucc.edu/)

• **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, websites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. **OTHER INFORMATION**

• **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928

  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.