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BIOM 408.01: Clinical Diagnosis Laboratory

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Syllabus BIOM 408 Clinical Diagnosis – Spring 2022

Laboratory: Health Sciences Center Room 404, F 12:00 – 1:50 PM

Please note: COVID-19 Contingency Plans are highlighted in RED

Course Instructor:

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Course Description and Intended Audience:

This course is intended to introduce the student to the clinical lab. The organization and departmentalization of the laboratory will be presented. Quality control, laboratory equipment and technology will be broadly discussed. In each of the various lab departments (hematology, urinalysis, blood bank, chemistry and microbiology) common tests and their significance will be covered. The overall goal is to prepare the student for their subsequent internship in Medical Laboratory Science. Non-MLS majors will gain an appreciation for the importance the laboratory plays in diagnosing and monitoring human pathology. Laboratory exercises will entail a sampling of manual testing performed in clinical labs as well as “field trips” to area laboratories to gain a hands-on view of daily laboratory activity. It is highly advised to take both the lecture and lab together as they build on one another.

Course Materials:

Materials Required:

1. Linné & Ringsrud's Clinical Laboratory Science. Turgeon. 8th Edition, Elsevier 2020. ISBN: 978-0-323-53082-8
2. Fundamentals of Urine and Body Fluid Analysis. Brunzel. 4th Edition, Elsevier 2018. ISBN: 978-0-323-37479-8
3. Fac-Pac for lab. Contains all lab exercises. Available at UM Bookstore.

Moodle Supplement:

1. This course includes a Moodle supplement. All notes from lecture will be posted on Moodle the week before lecture. Important handouts or web resources will also be listed here. Notes are to be used to review material and as a guide for studying for tests. Handouts are offered as an option to print and bring to class for easier note taking. The slides are also numbered, so an option to printing the handouts is to jot a slide number that you are making a note about to reference as you review the slides. If you have not used Moodle before, be sure to take the online tutorial.
2. Moodle may also be utilized for quizzes/tests as a COVID contingency if there is an outbreak causing a campus shutdown or other implemented restrictions.

Laboratory Equipment:

1. Each student will be responsible for having a laboratory coat for each laboratory exercise. Space will be provided to the coat in the lab. Failure to wear a lab coat and closed toed shoes will result in being asked to leave the class which will count as an unexcused absence.
 2. Safety glasses or goggles are recommended but not required. Eyeglasses are acceptable.
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Learning Outcomes (Laboratory):

1. The student will have a solid understanding of laboratory safety practices and know exactly what is required for Universal Standards practices in clinical laboratories.
2. The student will understand the proper use of glassware, pipettes, balances and solution preparation.
3. The student will become adept at using the microscope properly.
4. The student will learn how to analyze a routine urinalysis, including microscopic exam and identifying normal and pathologic components.
5. The student will learn the correct method for setting up Urine cultures and Sensitivities. They will learn how to assess the significance of the results.
6. The student will perform immunologic tests such as ELISAs, drugs of abuse screening, and Group A Strep screening. They will learn the principles behind the tests, the interfering substances/conditions that can result in errant testing, as well as the pathology of the diseases tested.
7. The student will perform ABO/Rh and antibody screening as part of routine Blood Bank testing in the Clinical Lab.
8. The student will perform fecal occult blood tests. They will learn the principles behind the test, the interfering substances/conditions that can result in errant testing, as well as the significance of findings.
9. The student will tour multiple area Clinical Laboratories, giving them insight to the actual workplace.

Grading:

Total Points and Grading Policy:

Final grade will be determined as a percentage of points based on the following; Lecture: 3 tests, 4 quizzes, a news assignment, a research assignment and a cumulative final. Pass-Fail grade: students in the P/F status must earn the equivalent of a "C" grade for a P. I do not grade on a curve. **Total points may be adjusted if the University requires a shutdown, or further restrictions affecting the ability to perform lab exercises, exams, or quizzes.**

Lab:

Quizzes: 80 (9x10)

Lab Tours: 50 (2x25)

Lab Exercises: 100 (10x10)

Final exam: 50

Total Possible: 280

If you become very ill, miss many classes or become unable to complete the Clinical Case assignment, please know that I will do everything I can to work with you through these challenging times. **If you take one thing away from this message**, please know that I will working with you to help you achieve your goals in the face of illness.

If I become very ill, there are contingencies for other faculty to take over the course, with as minimal disruption as possible.

A+	97-100
A	93-96.9
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	77-79.9
C	73-76.9
C-	70-72.9
D+	67-69.9
D	63-66.9
D-	60-62.9
F	Below 60

Course Expectations and Requirements:

Prerequisites:

BIOM 360/361 General Microbiology or BIOH 365 Anatomy & Physiology or BIOM 402/402 Medical Bacteriology & Mycology (may concur) or by consent of the instructor.

Attendance:

Attendance is required in all laboratory sessions. Attendance will be recorded. There will be information shared in labs that is not in the notes or the text. Absence from labs will cause you to miss important content. Quizzes are not always announced and may not be made up. Tests may only be made up with prior approval of the instructor and will require **legitimate documentation** of reason for absence. Examples of documented circumstances that may merit approval include the following: 1) illness or accident, 2) death or family emergency, 3) university sanctioned activity.

Attendance/COVID-19 Contingency Plan

UM is committed to as many face-to-face course interactions, with added safety measures in place. If the spread of the Coronavirus Disease (COVID-19) leads to further disruption of UM activities and community-wide disruption of services, it may be necessary for students to stay in their homes/dorms, and for UM faculty to deliver content remotely, so as to continue course completion on schedule.

Any student with cough/flu-like symptoms should NOT come to class. Email me **prior to the start of class to avoid attendance penalties.** Links to lectures that you miss are posted in Moodle. Videoconferencing (ZOOM) is enabled so that students with symptoms can participate digitally in the discussions. If you are ill enough not to attend those live video sessions, they will be recorded for later viewing. ***There will be no penalty for absence,*** so long as you inform me of your situation.

Lab sessions create a more challenging situation. Each lab is very different by nature, so each missed lab will be treated on a case-by-case setting. Alternative assignments or activities will be offered as much as possible. Depending on how much time is missed, individual make up sessions may be scheduled. Again, I will do my best to make sure goals are met in the course. We are in this together, and a lot of understanding on both ends will get us through!

This is important! Although you may feel you are able to go to class, by doing so **you put others around you at risk.** As healthy undergraduates, it is your responsibility not to transmit the COVID-19 virus or other viruses to others who may be at high risk (i.e., student peers with severe asthma, respiratory conditions, and/or compromised immune systems, and faculty and staff who are older and at greater risk). If you think you may be sick, please **STAY HOME.** We will find ways to accommodate the absence without penalty to your grade.

COVID-19 and other seasonal viruses prevention. Please utilize these basic steps to prevent the transmission of COVID-19 and other seasonal viruses: Wash your hands frequently. Washing your hands is the BEST way to prevent spread of any virus. Do not touch your face. Do not shake hands with others. Maintain 6 feet distance from others where possible. Masks are recommended when social distancing cannot be maintained. Remember that current data suggest COVID-19 can be transmitted by completely asymptomatic individuals. Our goal is to limit transmission.

Reading Requirements:

Reading requirements are spelled out on the schedule. Students are expected to read the required reading **before** class. The text will go into more detail than I will in lecture, however, it helps to understand the big picture. The quizzes at the end of the chapters are helpful for review, with answers in the back of the text to self-check your answers. I recommend taking the time to do these quizzes – it will really help you understand the main points and prepare you for exams.

Tests, quizzes, lab exercises, and assignments:

There will be one comprehensive laboratory exam, 9 quizzes (lowest quiz score dropped), and 10 laboratory exercises. The lab quizzes will be as follows: a 10pt quiz will be given at the start of a lab. The questions will be from the required reading for that day's lab to assure you understand that day's laboratory exercise. Lab exercises will be completed at the bench. The Cumulative lab final will require you to visually identify cells and cell components from power point slides. There is a tremendous amount of material to cover in this course. It is not particularly difficult, but if you fall behind, catching up will be an uphill battle. As mentioned before, quizzes cannot be made up, so missing class will hurt you in more ways than one.

IPE Component:

Interprofessional Education is..." when students from two or more professions learn about, from and with each other to enable effective collaboration and improve health outcomes." – WHO, 2010. In many professional programs, IPE participation is a requirement. While the MLS program does not mandate this, I am a strong advocate of the initiative. Therefore, I encourage all students to participate in one or more IPE activities and will award extra credit for participation (up to a maximum of 30 extra points). UMHM offers Friday Medical Conference talks and IPE workshops, as well as other activities. I will award 10 points to each FMC you attend (up to 3 talks, although you may attend as many as you wish). I will award 30 points if you attend the 3-hour IPE workshop in the spring. A flyer for the workshop will be put on Moodle. FMC talks take place at 7:30 am each Friday in Skaggs 174. Please indicate MLS on the attendance form. **Topics are streamed live online. In order to get credit for attending, you must email a brief description of the topic including at least 3 key take-away points you learned during the talk you attended.** Please visit <https://www.wmtahec.org/friday-medical-conference/schedule/default.php> for current schedule.

Graduate Level Increments:

For those students enrolled as a graduate course, there will be higher expectations and additional assignments. For the lecture, the graduate student will be required to complete a 8-10 page research paper reviewing at least 6 published research journal articles on the appropriate use of a common lab test such as PSA (Prostate Specific Antigen). There is a lot of discussion on appropriate use of lab tests, when they are over-used, under-used or not as relevant with new technology replacing them. The student may pick a topic or test of choice upon approval of instructor. The paper will include a bibliography and must be of publishable quality (grammar, content, outline, etc.) This assignment will be worth 50 points added to the total possible points for the class. The paper will be graded on relevance (10 points), thoroughness of research (10 points), grammar/spelling (10 points), conclusion (10 points) and overall presentation including outline & bibliography (10 points.)

Email Communications:

I will use email to communicate schedule changes and other notifications. I will only use the official University email address, so be sure to check your email regularly.

Professionalism and Classroom Etiquette:

Medical Laboratory Scientists, Physical Therapists, Pharmacists, Exercise Physiologists, Dieticians, Nurses, etc. are all considered professionals in the health care field. Being enrolled in this class, you are expected to always act professional, observing safety standards, confidentiality rules (HIPAA), and demonstrating ethical behavior. Please be on time to class, be responsible for your own learning, be prepared to work with others in lab, and treat other fellow students, staff, and faculty with respect. Turn off all cell phones and leave them out of sight. Laptops and tablets are acceptable only if they are used for note taking or following notes on Moodle. No cell phones, computers, or other electronic devices may be used during exams. Some basic math will be utilized on tests, but you will be expected to perform these functions without aid.

Students with Disabilities:

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you believe you

may have a disability with the potential to adversely affect your academic performance, and you have not already registered with ODE, please contact ODE in Lommasson 154 (phone: 243-4216) or consult their website: www.umd.edu/disability Please let me know as soon as possible about any assistance you may need. I will work with you and ODE to provide an appropriate accommodation.

University Policy for drops, adds, or changes of grade option:

It is the student's responsibility to know the required dates for drops, adds or changes of grade option. I will not bend the rules on this. Please consult the registrar's website for specifics.

<http://www.umd.edu/registrar/students/dropadd.php>

Academic Honesty and Misconduct:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. Anyone caught plagiarizing or cheating on an exam or assignment will be given a grade of "F" for the course and will be reported to the Department Chair and the to the Dean of Students. All students must be familiar with the Student Conduct Code. The code is available for review online at: http://www.umd.edu/student-affairs/documents/Student_Conduct_Code.pdf

Emergency Preparedness and Response:

Should an emergency of any type develop, please observe the following:

1. In the event we need to evacuate the building during lecture, our primary exit route will be to exit the classroom door, turn left to the closest stairwell, walk down three flights and exit into the breeze way.
2. If you hear an alarm or are told to evacuate, always assume the emergency is real. Without panic, pick up your backpack, coat and belongings as the building may be closed for some time.
3. Do not use elevators as a means of evacuating.
4. In the event of a lock down, please follow all directions. If you are asked to stay in the classroom, please do so. If you have text enabled emergency notifications, you may use your cell phone for updates.
5. If you have a medical condition that will make evacuation a challenge, please inform me privately so we can plan an appropriate alternative and safe response.
6. Please take responsibility to assist others.

Student Supports for Online and Remote Learning – Office of the Provost

Supports are available for many facets of student life: academic, staying connected, and personal well-being. The following are resources, strategies, and links for students. [Keep on Learning](#) provides strategies for supporting students for online and remote learning and the Student Resources tab at the [Moodle home page](#) provides links to updated resources as well.

Tutorials:

- [Moodle 101 for Students](#): A self-enrollable, technical step-by-step tutorial on how to use Moodle as a student.
- [Strategies for Online Students](#): A self-enrollable, self-paced tutorial for students to help them identify their preferred learning styles and learn strategies for being a successful online student.

Academic Strategies:

- Pay attention to communications
- Keep up on coursework
- Avoid distractions

- Maintain a normal daily routine
- Ensure your tools are working
- Identify plans ahead of time
- Have a backup plan
- Use [Navigate for Students](#) to help manage your class schedule
- Use a phone app that can be used for planning and managing time or download the simple weekly planner found in the Learning Strategies module of [Strategies for Online Students](#) tutorial to help you get organized.

Academic Support:

- [Advising Center](#) and [Tutoring Resources](#): Schedule advising or tutoring appointments, available online or by phone. Tutoring available for math, writing, public speaking, Study Jam groups, and TRiO services.
- [Office for Disability Equity](#): Ensures students receive appropriate accommodations, services, and assistance to fully access the campus programs and facilities.
- [Writing and Public Speaking Center](#): Provides help at any point with writing, presentation, and research projects. Online and in-person appointments available.
- [Office for Student Success \(OSS\)](#): Helps students to meet three goals: transition smoothly to college, remain enrolled and progress in a program of study, and graduate in a timely manner.
 - [OSS COVID-19 Website](#)
 - Download the OSS [Online Student Success Guide](#) or [condensed Student Success Checklist](#)

Tools and Spaces:

- **Tools for online and remote learning include:** Moodle, Zoom, UM mobile app, Navigate app, Cyberbear and UMBox. Find specific information about these tools at [Keep on Learning - Tools](#).
- **Remote Learning Spaces:** The University of Montana has many areas where there are strong Wi-Fi signals and good study spaces. Should you need to attend a class remotely we encourage you to look for a space in the library or the University Center. You can [reserve and checkout Wi-Fi hotspots](#) from the library which allow you to create a Wi-Fi signal wherever you have a good cellular signal.
- **Computer labs:** [Check availability of computer stations and labs](#) across campus.
- **Mansfield Library:**
 - [Library Hours](#)
 - [Request learning technology](#): laptops, webcams, and WiFi hotspots
 - [Mansfield Library Remote Services](#)

Technical Support:

- The UM IT Help Desk is available to provide technical support from 8AM-5PM, M-F.
 - For help with email, UMBox, Zoom, or other technical issues:
 - Call 406-243-HELP
 - Submit a ticket by emailing ithelpdesk@umontana.edu or by filling out the [General Help/Questions request form](#).
 - For help with Moodle:

- Call 406-243-HELP
- Submit a ticket by emailing umonline-help@umontana.edu or by filling out the [Moodle Help request form](#).
- View [UM IT's Self-Help Articles](#).

Communication and Staying Connected:

- [The Branch Center](#): A space dedicated to promoting respectful and collaborative dialogue, programming, and resources, in an effort to foster understanding, support, and inclusion for underrepresented students.
- [University of Montana app](#): Download to stay connected! There is an updated virtual events and activities tab to keep you connected to your fellow Grizzlies. It is available for download on the [iPhone App Store](#) or [Google Play](#).
- [Join UM-alerts](#): Subscribe by texting "Join UM-alerts" to 30890. Signing up for these alerts will inform participants, via direct text message, of immediate safety and health notices. [The University of Montana's Emergency notification system](#) will also transmit an email with emergency information to all 'umontana' e-mail addresses.
- Look for the UM Student Weekly Events every Monday in your UM email.
- Stay informed with [UM Events](#) and [UMNews](#).
- Get involved! Use [Griz Hub](#) to stay connected to the campus community.

Personal Wellness Supports:

- [Curry Health Center](#): Provides quality, affordable, accessible health care for students.
 - Call (406) 243-2122 to schedule a tele-health appointment with medical or counseling
 - [Be Well at Home](#)
 - [What to do if I think I have been exposed to COVID-19?](#) (scroll down the page)
- [Campus Rec](#): Keep up with your fitness workouts! Check out the Campus Rec website for modified hours and classes available.
- [University of Montana Emergency Student Support Fund](#): Established to help enrolled students with unexpected crisis or hardship created by COVID-19.
- [UM Food Pantry](#): Currently providing free meal kits and hygiene products for students, staff, faculty, and community members.