

## SYLLABUS

<b>Name of Course:</b>	<b>CLINICAL CHEMISTRY ACS-345 &amp; Lab ACS-845</b>
<b>Length of Course:</b>	3.5 units, 44 hours (3 hours lecture, 1 hour lab/week)
<b>Course Description:</b>	This course is designed to teach students the proper use of the clinical laboratory within the practice of Chiropractic. Emphasis is placed on the integration of hematology studies with patient history and physical examination. The laboratory section will focus on interpretation of clinical laboratory data, including CBC, anemias, and hemoglobinopathies.
<b>Prerequisites:</b>	PHPA-213, PHPA-337, PATH-315, DIAG-316, DIAG-226, DIAG-236
<b>Course Offered by:</b>	Department of Clinical Sciences & Diagnosis
<b>Recommended Texts:</b>	Bickley, L - <u>Bates': Guide to Physical Examination and History Taking</u> 11 <sup>th</sup> ed. 2013 Fischbach – <u>A Manual of Laboratory and Diagnostic Tests</u> 8 <sup>th</sup> ed. 2009 Porter et.al. – <u>Merck Manual of Diagnostic Therapy</u> 19 <sup>th</sup> ed. 2011 Schmaier, AH – <u>Concise Guide to Hematology</u> 2012 Seidel et. Al. – <u>Mosby's Guide to Physical Examination</u> 7 <sup>th</sup> ed. 2011 Souza – <u>Differential Diagnosis and Management for the Chiropractor</u> 5 <sup>th</sup> ed. 2016 Wallach - <u>Handbook of interpretation Diagnostic Tests</u> 9 <sup>th</sup> Ed.; 2011
<b>Reference Texts:</b>	Discussed and referenced along with course discussions.
<b>Materials:</b>	CANVAS. Class Notes. Selected handouts will be provided.
<b>Method of Instruction:</b>	Lecture, case histories, group & class discussion. *Active Participation expected & required.
<b>Evaluation/Grading Criteria:</b>	Lab Case Studies (5% Composed of Attendance)15% Exam #1: Anemia's 30% Exam #2: WBC Pathology 15% Exam #3 Cumulative Final Exam 40% 100%  <b>A = 90-100%; B = 80-89%; C = 70-79%; F &lt; 70%</b>

**Testing:** Exams in this course will begin on time. You are advised to show up a few minutes early if possible. If you arrive late to an exam, your arrival may distract your classmates whose exams are already

in progress. If you arrive more than 5 minutes late, you will not have an opportunity to take the exam that day. I will post a sign to this effect on the classroom door. If you would like to discuss your reasons for arriving late, you are welcome to come to my office hours or make an appointment, whereupon we will discuss your options. In extreme circumstances (e.g., hospitalization), you may be allowed to take the exam at an alternate time. These exceptions will be rare.

Grades and the Grading System Final Grades are available online through the CAMS student portal. If there are any questions on grading procedures, computation of grade point average, or the accuracy of the grade report, please contact the Registrar's Office or the Office of Academic Affairs. Grades will be reported and evaluation will be based on the Academic Policies, Procedures, & Services. Please refer to Evaluation Policy (**Policy ID: OAA.00007**)

In order to maintain Satisfactory Academic Progress, a student must maintain a 2.0 or better in each and every course. **Any grade less than a C must be remedied by repeating the class.** Please refer to Satisfactory Academic Progress (**Policy ID: OAA.00006**)

**Attendance:** Please refer to Attendance Policy (**Policy ID: OAA.00002**)

**Conduct and Responsibilities:** Please refer to the Personal Conduct, Responsibility and Academic Responsibility Policy (**Policy ID: OAA.00003**)

**Make-up Exams:** Please refer to Make-up Assessment Policy (**Policy ID: OAA.00001**)

**Request for Special Testing:** Please refer to Request for Special Testing (**Policy ID: OAA.00004**)

**Accommodation for Students with Disabilities:**

If you have approved accommodations, please make an appointment to meet with your instructor as soon as possible. If you believe you require an accommodation, but do not have an approved accommodation letter, please see the Academic Counselor Lori Pino in the Office of Academic Affairs. Contact info:

[Lpino@lifewest.edu](mailto:Lpino@lifewest.edu) or 510-780-4500 ext. 2061. Please refer to Service for Students with Disabilities Policy (**Policy ID: OAA.00005**)

**Electronic Course Management:**

**Canvas** is LCCW's Learning Management System (LMS). Canvas will be used throughout the quarter during this course. Lectures, reminders, and messages will be posted. In addition, documents such as the course syllabus and helpful information about the class project will be posted. Students are expected to check Canvas at least once a week in order to keep updated. The website address for Canvas is <https://lifewest.instructure.com/login/canvas> Please refer to the Educational Technologies Policy (**Policy ID: OAA.00009**)

**Course Goals:**

The primary goal of the Clinical Chemistry A course is to develop fundamental skills in collect patient information, history and to understand current diagnosis. To identify circumstance of clinical necessity in collecting additional biomarkers as it relates to a diagnosis and physiological imbalance. You will be able to format the information into a functional medicine matrix and communicate clearly to the parent or guardian a diagnosis or provide additional information regarding the current diagnosis. The student will be capable of reviewing options & referrals available as well as to provide additional resources as they relates to their current health presentation.

Attention will be given on understanding the importance of respecting patient decisions within the confines of their individual & family health philosophy. To achieve this goal, the course examines the detailed relationships between basic science, organ physiology and function, pathophysiology, patient outcomes and selected topics of evidence-informed care and management. The secondary goal is to develop and expand the information and technology literacy of students for the application of research in the evidence-informed clinical decisions of the chiropractic management of patients and referrals to other health care practitioners.

**Course Objectives & Weekly Schedule:**

- Wk 1:           **Introduction & Overview of Clinical Laboratory Testing**  
Medical and Chiropractic necessity of testing, the utility of using biomarkers and their application in Clinical Practice.  
Review properties of blood, hematopoiesis and the complete blood count (CBC), Red Blood Cell (RBC) biochemistry, physiology & morphology  
LAB #1            Intake & Case History Review Exercise
- Wk 2:           **Introduction to Anemia: A Clinical Approach**  
Classification and Description of types of Anemia  
Specific attention to Iron, B12 and Folate (B9) Deficient Anemia's  
LAB #2DDx: CBC
- Wk 3:           **Hemolytic Anemia's: Congenital & Acquired**  
Congenital variants: due to alterations of RBC morphology, cell membrane disorders, metabolic enzyme disorders, hemoglobinopathies.  
Acquired variants of hemolysis due to immune mediated reaction, drug-induced hemolysis & non-immune.  
LAB #3DDx: Anemia's
- Wk 4:           **Hemolytic Anemia's: Congenital & Acquired (Continued...)**  
LAB #4DDx: Myeloproliferative Disorders
- Wk 5:           ***Exam #1: Anemia's (30%)***  
**Introduction of White Blood Cell (WBC) pathology**  
Classification myeloid vs. lymphoblastic pathologies  
LAB #5DDx: Myeloproliferative Disorders

- Wk 6:           **WBC Pathology cont'd...**  
LAB #6DDx: Leukemia/Lymphoma
- Wk 7:           **Overview of Leukemia's & Lymphomas**  
LAB #7Requisitioning Labs at LCCW Clinics – Procedural Review
- Wk 8:           **Exam #2: White Blood Cell Pathologies, Leukemia's & Lymphomas (15%)**  
**Introduction to Functional Medicine Laboratories**  
Mechanism vs. Vitalism in Clinical Laboratory Assessment.  
LAB #8'Be A Match' Presentation – GUEST
- Wk 9:           **Overview of Comprehensive Stool Analysis**  
Functional Laboratory Medicine Testing vs. Conventional Fecal Studies  
Introduction of GI functional assessment: digestion, absorption & gut  
microbiome.  
LAB #9CSA Panels
- Wk 10:          **Overview of Food Sensitivity and Allergy Testing**  
Functional Medicine Laboratory Testing: Food Sensitivity, Intolerance &  
Allergies  
LAB #10           ELISA-IgG & IgE Panels
- Wk 11:          **FINAL EXAM – Cumulative (40%)**

#### **STUDENT LEARNING OUTCOMES (SLO):**

1. The student will be able to discuss pathophysiology and clinical presentation of common dysfunctions and disorders as they relates to hematology analysis. [PLO: 1, 2]
2. The student will be able to discuss and effectively communicate the utility of laboratory necessity as it relates to chiropractic care and overall health care management. [PLO: 2,4,5]
3. The student will be able to identify symptomatology outside the scope of chiropractic and refer to other health care practitioners (including allopathic and non-allopathic). [PLO: 2]
4. The student will be able to use and integrate new and evolving information and technology pertaining to patient presentation into a framework and philosophical approach that honors our vitalistic chiropractic philosophy. [PLO: 4,6,10]

**Program Learning Outcomes (PLO):** Students graduating with a Doctor of Chiropractic degree will be proficient in the following:

1. **ASSESSMENT AND DIAGNOSIS:** An assessment and diagnosis requires developed clinical reasoning skills. Clinical reasoning consists of data gathering and interpretation, hypothesis generation and testing, and critical evaluation of diagnostic strategies. It is a dynamic process that occurs before, during, and after the collection of data through history, physical examination, imaging, laboratory tests and case-related clinical services.
2. **MANAGEMENT PLAN:** Management involves the development, implementation and documentation of a patient care plan for positively impacting a patient's health and well-being, including specific therapeutic goals and prognoses. It may include case follow-up, referral, and/or collaborative care.
3. **HEALTH PROMOTION AND DISEASE PREVENTION:** Health promotion and disease prevention requires an understanding and application of epidemiological principles regarding the nature and identification

of health issues in diverse populations and recognizes the impact of biological, chemical, behavioral, structural, psychosocial and environmental factors on general health.

4. **COMMUNICATION AND RECORD KEEPING:** Effective communication includes oral, written and nonverbal skills with appropriate sensitivity, clarity and control for a wide range of healthcare related activities, to include patient care, professional communication, health education, and record keeping and reporting.
5. **PROFESSIONAL ETHICS AND JURISPRUDENCE:** Professionals comply with the law and exhibit ethical behavior.
6. **INFORMATION AND TECHNOLOGY LITERACY:** Information literacy is a set of abilities, including the use of technology, to locate, evaluate and integrate research and other types of evidence to manage patient care.
7. **CHIROPRACTIC ADJUSTMENT/MANIPULATION:** Doctors of chiropractic employ the adjustment/manipulation to address joint and neurophysiologic dysfunction. The adjustment/manipulation is a precise procedure requiring the discrimination and identification of dysfunction, interpretation and application of clinical knowledge; and, the use of cognitive and psychomotor skills.
8. **INTERPROFESSIONAL EDUCATION:** Students have the knowledge, skills and values necessary to function as part of an inter-professional team to provide patient-centered collaborative care. Inter-professional teamwork may be demonstrated in didactic, clinical or simulated learning environments.
9. **BUSINESS:** Assessing personal skills and attributes, developing leadership skills, leveraging talents and strengths that provide an achievable expectation for graduate success. Adopting a systems-based approach to business operations. Networking with practitioners in associated fields with chiropractic, alternative medicine and allopathic medicine. Experiencing and acquiring the hard business skills required to open and operate an on-going business concern. Participating in practical, real time events that promote business building and quantifiable marketing research outcomes
10. **PHILOSOPHY:** Demonstrates an ability to incorporate a philosophically based Chiropractic paradigm in approach to patient care. Demonstrates an understanding of both traditional and contemporary Chiropractic philosophic concepts and principles. Demonstrates an understanding of the concepts of philosophy, science, and art in chiropractic principles and their importance to chiropractic practice.