



Jordan University of Science and Technology  
Faculty of Applied Medical Sciences  
Department of Medical Laboratory Sciences

<b>Course Information</b>	
<b>Course Title</b>	Clinical chemistry 2 (2 credit hours)
<b>Course Code</b>	LM 312
<b>Prerequisites</b>	LM 311 (Clinical chemistry 1)
<b>Course Website</b>	www.just.edu.jo
<b>Instructor</b>	Dr. Saleem Bani Hani
<b>Office Location</b>	M5 level - 4
<b>Office Phone #</b>	23794
<b>Office Hours</b>	TBA
<b>E-mail</b>	sabanihani@just.edu.jo
<b>Teaching Assistant(s)</b>	MSc. Belal Omari
<b>Course Description</b>	
<p>This course is an introduction to general fundamentals and principles of clinical bio-analytical chemistry. It is a combined lecture and laboratory course covering methods of analysis as well as the biochemical components of body fluids. Topics include analysis of blood electrolytes, blood gases, amino acids, plasma enzymes, proteins, carbohydrates, and lipids. Quality control and assurance are also covered in this course.</p>	

<b>Textbook</b>	
<b>Title</b>	Clinical chemistry-Techniques, Principles, Correlations
<b>Author(s)</b>	M. Bishop et al.
<b>Publisher</b>	Lippincott's Williams and Wilkins.
<b>Year</b>	2010
<b>Edition</b>	Sixth edition
<b>Book website</b>	-
<b>Other references</b>	Handouts

<b>Assessment</b>		
<b>Assessment</b>	<b>Expected Due Date</b>	<b>Percentage</b>
First Exam	7 <sup>th</sup> week	20%
Second Exam	12 <sup>th</sup> week	25%
LAB (reports + quizzes + midterm)	Week 1 – week 15	15%
LAB final	16 <sup>th</sup> week	10%
Final Exam	To be determined by registration department	30%

Course Objectives	Percentage
1. Learn about various biochemical components (electrolytes, trace elements, amino acids, proteins, enzymes, lipids, carbohydrates, and non-protein nitrogen compounds) in human body fluids, and understand their biochemistry, physiology, and clinical significance.	30%
2. To enable the correct use of basic equipments and supplies and to achieve an understanding of fundamental concepts critical to any bio-analytical procedure.	20%
3. To learn clinical chemistry procedures that yield accurate and precise information that aid in patient's diagnosis.	30%
4. To provide basic information about the quality control, quality assurance, and method evaluation.	10%
5. To describe and discuss different units of measurements used to assess various biochemical analytes of clinical significance.	5%
6. To discuss safety in the clinical bio-analytical chemistry laboratories.	5%

Teaching & Learning Methods
<ul style="list-style-type: none"> <li>• Lecture with discussion</li> <li>• Brainstorming</li> <li>• Case studies</li> <li>• Problems solving</li> </ul> <p><b>Teaching duration:</b> 16 weeks</p>

Objective	Reference(s) Handouts
1, 3	Chapters: 10, 11, 14, 15, 16, 17, 23, 26,27 + Handouts
2, 4	Chapters: 1, 16 + Handouts
5, 6	Handouts

Useful Resources
University library, Internet, experts (assigned by the instructor)

<b>Course Content (lectures)</b>		
<b>Week</b>	<b>Topics</b>	<b>Chapter in Textbook (handouts)</b>
1	-Introduction to clinical chemistry-basic principles and practice of clinical chemistry -Quality control, diagnostic efficiency	1, 16 Handouts
2	-Method selection and evaluation, Quality assurance -Body water distribution, body fluid compartment, composition of body fluid compartments	1, 16 Handouts
3	-Introduction to kidney function, control of sodium and water in the body (renin-angiotensin-aldosterone system) -Serum osmolality, osmolar gap and anion gap - Electrolyte disorders (hyponatremia, hypernatremia)	15 Handouts
4	- Electrolyte disorders (hyperkalemia, hypokalemia) -Calcium (hypocalcemia, hypercalcemia) - Calcium disorders (Osteoporosis, Paget's disease of bone, osteomalacia)	23 Handouts
5	- Phosphorous - Magnesium, Zinc, Selenium.	17 Handouts
6	-Blood gases, transport of CO <sub>2</sub> in the human body and formation of blood buffer. -Acid-base balance	16 Handouts
7	-Renal function: Nonprotein nitrogen compounds - Creatinine, GFR -Urea -Uric acid	11, 26 Handouts
8	-Amino acids, aminoacidopathies	10 Handouts
9	Plasma proteins	Handouts
10	Plasma enzymes (ALP, ALT, amylase, Lipase, AST, CK, GGT, LDH)	12 Handouts
11	Pancreatic function: regulation of blood sugar (hyperglycemia, hypoglycemia) Diabetes ( FBS, RBS, OGTT, HbA1c)	13, 27 Handouts
12	-Lipid profile I (lipoproteins, cholesterol, triglycerides)	14 Handouts
13	-Lipid profile II (lipoproteins, cholesterol, triglycerides)	14 Handouts
14	-Trace elements; Instrumentation and methods	17 Handouts
15	Trace element's toxicity	17 Handouts
16	Review	

Course Content (LAB)		
Week	Topics	Chapter in Textbook (handouts)
1	Blood collection (Phlebotomy)	Handouts
2	Spectrophotometry; Total protein determination.	Handouts
3	Albumin determination	Handouts
4	Enzymatic activity (ALP)	Handouts
5	Creatine kinase (CK)	Handouts
6	Calcium determination	Handouts
7	Cystinurea	Handouts
<b>8</b>	<b>Midterm Exam</b>	
9	Creatinine determination	Handouts
10	Determination of Urea	Handouts
11	Determination of serum glucose (FBS, RBS)	Handouts
12	Determination of total cholesterol	Handouts
13	Determination of Triglycerides	Handouts
<b>14</b>	<b>Final Exam</b>	

Additional Notes
<p><b>Attendance policy:</b> Excuses for absence must be first discussed with the instructor, and approved by the deanship.</p> <p><b>Expected workload:</b> The student is expected to attend all the classes and the laboratories, write the assigned reports, solve the assignment, and attend and pass the exams.</p> <p><b>Feedback:</b> Any feedback from the students regarding the progression in the course can be discussed with the instructor (Dr. Saleem Bani Hani) in the assigned office hours</p>

Course Content		
Week	Title of the Lecture	Lecturer
1	-Introduction to clinical chemistry-basic principles and practice of clinical chemistry -Quality control, diagnostic efficiency	Dr.Saleem Bani Hani
2	-Method selection and evaluation, Quality assurance -Body water distribution, body fluid compartment, composition of body fluid compartments	Dr.Saleem Bani Hani
3	-Introduction to kidney function, control of sodium and water in the body (renin-angiotensin-aldosterone system) -Serum osmolality, osmolar gap and anion gap - Electrolyte disorders (hyponatremia, hypernatremia)	Dr. Saleem Bani Hani
4	-Holiday (Eid al-Adha)	
5	- Electrolyte disorders (hyperkalemia, hypokalemia) -Calcium (hypocalcemia, hypercalcemia)	Dr. Saleem Bani Hani

	- Calcium disorders (Osteoporosis, Paget's disease of bone, osteomalacia)	
6	- Phosphorous - Magnesium, Zinc, Selenium.	Dr. Saleem Bani Hani
7	-Blood gases, transport of CO <sub>2</sub> in the human body and formation of blood buffer. -Acid-base balance	Dr. Saleem Bani Hani
8	-Renal function: Nonprotein nitrogen compounds - Creatinine, GFR -Urea -Uric acid	Dr. Saleem Bani Hani
9	-Amino acids, aminoacidopathies	Dr. Saleem Bani Hani
10	-Plasma proteins	Dr. Saleem Bani Hani
11	-Plasma enzymes (ALP, ALT, amylase, Lipase, AST, CK, GGT, LDH)	Dr. Saleem Bani Hani
12	-Pancreatic function: regulation of blood sugar (hyperglycemia, hypoglycemia) Diabetes ( FBS, RBS, OGTT, HbA1c)	Dr. Saleem Bani Hani
13	-Lipid profile I (lipoproteins, cholesterol, triglycerides)	Dr. Saleem Bani Hani
14	-Lipid profile II (lipoproteins, cholesterol, triglycerides)	Dr. Saleem Bani Hani
15	-Trace elements (Instrumentation and methods)	Dr. Saleem Bani Hani
16	-Trace element's toxicity.	Dr. Saleem Bani Hani

Clinical Chemistry: Princ Add to Cart. Buy Now.Â helpful in explaining techniques and concepts but I do also use it in conjunction with another chem book when I feel this book doesn't particularly clear things up for me. Read more. Go to Amazon.com to see all 25 reviews 3.6 out of 5 stars. Clinical Chemistry book. Read 5 reviews from the world's largest community for readers. In its Sixth Edition, this acclaimed text continues to be the mos...Â Goodreads helps you keep track of books you want to read. Start by marking "Clinical Chemistry: Techniques, Principles, Correlations" as Want to Read: Want to Read savingâ€| Want to Read. In its Seventh Edition, this acclaimed Clinical Chemistry continues to be the most student-friendly clinical chemistry text available. This edition not only covers the how of clinical testing but also places greater emphasis on the what, why, and when in order to help today's students fully understand the implications of the information covered, as well as the applicability of this crucial topic in practice. With clear explanations that strike just the right balance of analytic principles, techniques, and correlation of results with disease states, this edition has been fully updated with