



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

LM729 Advanced Clinical Chemistry Practical Training li. - JNQF Level: 6

Second Semester 2023-2024

Course Catalog

3 Credit Hours. This practical course will provide the students with the opportunity to analyze constituents from blood, urine, spinal fluid, and other body fluids. Emphasis will be on the use of advanced instrumentation (e.g., nephelometry, turbidimetry, RIA, EMIT, ELISA, HPLC, MEIA, AAS, SPE, UPE, 2-DE, LC-MS/MS, ICP-MS) preventive maintenance, quality control & assurance procedures, application of theoretical information, and technical competence. Students will also obtain Practical experience in special chemistry tests and procedures such as amino acids and organic acids analysis, drug monitoring, and others.

Teaching Method: On Campus

Text Book

Title	Tietz Textbook of Clinical Chemistry and Molecular Diagnostics
Author(s)	Carl A. Burtis, David E Bruns, MD, and Edward R Ashwood, MD
Edition	5th Edition
Short Name	Tietz Book, handouts, and selected articles and protocols
Other Information	Global protocols (e.g., WHO protocols)

Instructor

Name	Prof. Saleem Bani Hani
Office Location	Vice dean office/ Faculty of Applied Medical Sciences
Office Hours	
Email	sabanihani@just.edu.jo

Class Schedule & Room

Section 1:

Lecture Time: Mon, Wed : 08:30 - 11:30

Room: HOSPITAL

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2	-Overview of clinical laboratory analysis -Importance of analyzing constituents in body fluids -Basic principles of biochemical analysis -Introduction to advanced instrumentation	From Tietz Book, handouts, and selected articles and protocols
Weeks 3, 4	-Nephelometry and turbidimetry -Radioimmunoassay (RIA) and -Enzyme-multiplied immunoassay technique (EMIT) -Enzyme-linked immunosorbent assay (ELISA) - High-performance liquid chromatography (HPLC)	From Tietz Book, handouts, and selected articles and protocols
Weeks 5, 6	-Microparticle enzyme immunoassay (MEIA) -Atomic absorption spectroscopy (AAS) and inductively coupled plasma mass spectrometry (ICP-MS) -Solid-phase extraction (SPE) -Ultra-performance liquid chromatography (UPE)	From Tietz Book, handouts, and selected articles and protocols
Weeks 7, 8	-Two-dimensional electrophoresis (2-DE) -Liquid chromatography-tandem mass spectrometry (LC-MS/MS) -Application of advanced techniques in clinical analysis	From Tietz Book, handouts, and selected articles and protocols
Weeks 9, 10	-Importance of preventive maintenance in clinical instrumentation -Quality control procedures in clinical laboratories -Ensuring accuracy and reliability of test results	From Tietz Book, handouts, and selected articles and protocols
Weeks 11, 12	-Amino acids and organic acids analysis -Drug monitoring techniques -Other specialized clinical assays	From Tietz Book, handouts, and selected articles and protocols

Mapping of Course Outcomes to Program Outcomes and NQF Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Understand the theoretical principles and biochemical basis of analyzing constituents in body fluids, as well as the application of advanced instrumentation in clinical settings. [1SLO1] [1L6C4]	15%	
Proficiently perform a range of Clinical Bio-analytical techniques using basic and advanced instrumentation. [1SLO2] [1L6S1]	40%	
Students will execute preventive maintenance and quality control procedures with precision. [1MSLO4] [1L6S2]	20%	

Demonstrate technical proficiency in conducting specialized chemistry tests and procedures, ensuring adherence to clinical standards and protocols. [1SLO4] [1L6C2]	25%	
---	-----	--

Relationship to Program Student Outcomes (Out of 100%)											
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6	MSLO1	MSLO2	MSLO3	MSLO4	MSLO5	MSLO6
15	40		25						20		

Relationship to NQF Outcomes (Out of 100%)			
L6S1	L6S2	L6C2	L6C4
40	20	25	15

Policy	
Statement on Professionalism	Students are expected to maintain professional behavior at all times, as it is a minimum requirement for passing this training. Examples of unprofessional behavior include, but are not limited to: missing LABs, being late, not paying attention to the speaker, talking to others during training, leaving training early without prior authorization from the instructor, and sleeping during class.
Cheating	University regulations will be applied on cases of cheating and/or Plagiarism.
Cell phone	The use of cellular phones is strictly prohibited in classrooms and during exams. Cellular phones must be switched off during both classroom sessions and exams.
Attendance	Attendance points will be counted for this training.
Absences	University regulations will be strictly enforced. Students are prohibited from exceeding an absence rate of more than 20% of LABs for any reason or excuse. Should a student surpass this limit, they will be ineligible to sit for future course exams. (Please refer to university regulations for further details).
Make-up Exam	Make-up exams are available to students who miss an exam with an accepted legal or medical excuse, provided it is endorsed by the instructor within 24 hours after the scheduled exam. (Please refer to university regulations for further details)

Date Printed: 2024-02-29