Subject Description Form

Subject Code	ABCT3108
Subject Title	Chemical Pathology
Credit Value	3
Level	3
Pre-requisite	Human Physiology (ABCT2133) and Biochemistry (ABCT2101)
Objectives	Through lectures and practical sessions: 1. to provide students an understanding of the fundamental principle of diagnostic technologies and their applications in Chemical Pathology laboratories; 2. to equip students to perform appropriate laboratory tests and evaluate results for diagnosis.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: a. understand the basic principles of various diagnostic technologies in Chemical Pathology laboratories. b. perform Chemical Pathology laboratory tests with appropriate skills. c. interpret results based on quality evaluation and health conditions of human subjects.
Subject Synopsis/ Indicative Syllabus	**Diagnostic technology and biomarkers in Chemical Pathology:** • Principles and application of spectrophotometry, immunochemistry, electrochemistry, osmometry, enzymology, electrophoresis, chromatography, mass spectrometry, molecular diagnostic technologies • Common biomarkers and influencing factors • Point-of-care testing **Method validation and quality assurance:** • Instrument maintenance, calibration, quality control, quality assurance and accreditation • Precision, accuracy, Levy Jennings chart, Westgard Rules and types of errors • Test method validation and data analysis **Biomarker measurement and result interpretation in various health conditions with associated case studies:** • Glucose tolerance and glycaemic control • Renal diseases and renal function tests (RFT), water & electrolyte balance • Acid-base balance & blood gases assessment

	• Liver diseases and liver function tests (LFT) • Lipid, cardiovascular diseases risk assessment, acute myocardial infarction • Nutritional status, gastrointestinal disorders and bone health • Therapeutic drug monitoring and toxicology • Maternal and foetal/neonatal health, reproduction related disorders • Endocrine disorders (thyroid, pituitary & adrenal), autoimmune diseases • Tumor markers & inborn errors of metabolism
Teaching/Learning Methodology	**Lecture:** to introduce and reinforce knowledge, principles and concepts **Practical session:** to perform diagnostic tests and result interpretation **Tutorial:** to relate theories to clinical scenarios through case studies
Assessment Methods in Alignment with Intended Learning Outcomes	See table below

Assessment Methods table:

Specific assessment methods/tasks	Percentage weighting	Intended subject learning outcomes to be assessed		
		a	b	c
1. Laboratory assignments	30%		✓	✓
2. Quizzes / Tests	30%	✓		✓
3. Examination	40%	✓		✓
Total	100%			

Laboratory assignment will assess students' laboratory skills, result accuracy and the ability to analyze clinical data based on quality evaluation and health conditions.

Quizzes and tests will assess students' understanding of the basic concepts and knowledge in diagnostic technologies, biomarkers and and their clinical meaning.

Students are required to attend at least 75% of scheduled sessions for subjects. Failure to fulfill the attendance requirement would result in a failing grade in this subject.

Student Study Effort Expected	Class contact:	
	▪ Lectures	18 Hrs.
	▪ Tutorials / Laboratory Practical	21 Hrs.
	Other student study effort:	
	▪ Self and Guided Study	65 Hrs.

	▪ Assignment	20 Hrs.
	Total student study effort	124 Hrs.
Reading List and References	Linne & Ringsrud's Clinical Laboratory Science: Concepts, Procedures, and Clinical Applications. (2019) Turgeon ML. 8th Ed. Elsevier: Maryland Heights.	
	Clinical Chemistry: Principles, Techniques, and Correlations. (2018) Bishop ML, Fody EP, Schoeff LE. 8th edition. Wolters Kluwer, Philadelphia.	
	Tietz Fundamentals of Clinical Chemistry and Molecular Diagnostics. (2019). Rifai N. (8th ed). Elsevier. St. Louis, USA.	
	Clinical Biochemistry (2008) Luxton R. (2nd ed). Scion Publishing Ltd, Bloxham, UK.	