FACULTY OF HEALTH SCIENCES AND SPORTS

BACHELOR OF SCIENCE IN BIOMEDICAL TECHNOLOGY

LEARNING MODULE OUTLINE

Academic Year	2025-2026	Semester	2
Module Code	BSCM2102		
Learning Module	Clinical microscopy		
Pre-requisite(s)	Nil		
Medium of Instruction	Chinese & English		
Credits	3	Contact Hours	45
Instructor	Lei Iun Fan, Miriam	Email	iflei@mpu.edu.mo
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MODULE DESCRIPTION

Using the microscope as a tool to diagnosis the urine and other body fluids. This course will cover basic theory in urine formation, renal physiology, and metabolic disorders that produce abnormalities in the urine. Complete urinalysis examinations will be performed in the student laboratory. Other body fluids lectures cover human anatomy as it relates to the formation of various fluids including synovial fluid, serous fluid, spinal fluid, semen, amniotic fluid, and feces. Microscopic and biochemical analysis of each fluid and important disease processes are also discussed.

MODULE INTENDED LEARNING OUTCOMES (ILOS)

On completion of this learning module, students will be able to:

M1.	Understand the fundamental principles and clinical significance of urinalysis and body fluid analysis.
M2.	Able to collect, handle, and analyze urine and other body fluid samples using appropriate techniques, equipment, and standard laboratory protocols, ensuring accuracy and reliability of test results.
M3.	Interpret and evaluate urinalysis and body fluid test results, and correlate these findings with specific medical conditions.
M4.	Able to recognize and identify abnormal findings and patterns in urinalysis and body fluid analysis.
M5.	Apply quality control and assurance measures in urinalysis and body fluid analysis, and proper documentation of results.
M6.	Communicate and report urinalysis and body fluid test results effectively, and adhere to ethical and professional standards of patient confidentiality.

These ILOs aims to enable students to attain the following Programme Intended Learning Outcomes (PILOs):

PILOs	M1	M2	M3	M4	M5	M6
P1. To demonstrate understanding of a range of subjects, fields, principles and approaches relevant to medical laboratory technology	✓	✓	✓	✓	✓	
P2. To demonstrate understanding of theories, analytical approaches and practices that underpin medical laboratory operations and management	✓	✓	✓	✓	✓	
P3. To demonstrate understanding of major trends and issues related to medical laboratory technology	✓	✓	✓	✓	✓	
P4. To apply professional knowledge and skills to analyse, interpret and solve problems, challenges and risks in medical laboratory practice	✓	✓	✓	✓	✓	
P5. To critically appraise and interpret scientific and clinical literature and apply evidence-based practice			✓	✓	✓	
P6. To acquire and apply research skills in medical laboratory technology	✓	✓	✓	✓	✓	
P7. To demonstrate effective communication and teamwork skills						✓
P8. To maintain professional and ethical standards in medical laboratory practice and research						✓

MODULE SCHEDULE, COVERAGE AND STUDY LOAD

Week	Content Coverage	Contact Hours
1	Subject outline	1
1,2	01 - Urinalysis Specimen	4.5
2,3	02 - Urinalysis Sediment	5.5
4	03 - Urinalysis automation	2
4	04 - Urinary stones	1
4	05 - Introduction to body fluids	1
5	Lab - Urinalysis	3
6	Mid-term exam	2
7	06 - CSF	3
8	07 - Seminal fluid	4
9	08 - Synovial fluid	3
10	09 - Serous fluid	3
11	10 - Stool Analysis	3

12, 13	11 - Amniotic fluid	4
14	12 - Sputum analysis	3
15	Final exam (2 hr)	2

TEACHING AND LEARNING ACTIVITIES

In this learning module, students will work towards attaining the ILOs through the following teaching and learning activities:

Teaching and Learning Activities	**M1**	**M2**	**M3**	**M4**	**M5**	**M6**
T1. Lectures	✓	✓	✓	✓	✓	✓
T2. Video and animation	✓	✓	✓	✓	✓	✓
T3. Cases studies	✓	✓	✓	✓	✓	✓
T4. Lab practices	✓	✓	✓	✓	✓	✓
T5. Mid and Final exam	✓	✓	✓	✓	✓	✓

ATTENDANCE

Attendance requirements are governed by the Academic Regulations Governing Bachelor's Degree Programmes of the Macao Polytechnic University. Students who do not meet the attendance requirements for the learning module shall be awarded an 'F' grade.

ASSESSMENT

In this learning module, students are required to complete the following assessment activities:

Assessment Activities	**Weighting (%)**	**ILOs to be Assessed**
A1. Case studies	10	M1, M2, M3, M4, M5, M6
A2. Midterm exam	40	M1, M2, M3, M4, M5, M6
A3. Final exam	50	M1, M2, M3, M4, M5, M6

This learning module is graded on a 100-point scale, with 100 being the highest possible score and 50 being the passing score.

Make-up assessments will not be provided for the mid exam and lab practice under any circumstances. Students who are absent will receive a score of zero for that assessment.

Any students scoring less than 35% of the total mark in the final examination will be given an "F" grade for the module even if the overall grade is 50% or higher.

Passing this learning module indicates that students will have attained the ILOs of this learning module and thus acquired its credits.

MARKING SCHEME

Assessment Activities	Assessment Criteria	Mark Ranges				
		88-100	73-87	58-72	50-57	<50
A1. Classroom learning activities	Demonstrate the understanding of the subjects covered in classes and show active learning attitude.	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A2. Assignments	Demonstrate the ability to answer questions on topics covered in the outline	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A3. Prelab quiz	Demonstrate the ability to understand the principles and procedures of experiments	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A4. Lab practices	Master relevant experimental skills or operations, data handling and lab report etc.	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels
A5. Midterm and final examination	Demonstrate the ability to identify and apply appropriate concepts, methods and techniques	Excellent	Good/ Very Good	Satisfactory	Marginal Pass	Fail; not reaching marginal levels

REQUIRED READINGS

Strasinger, S.K. & Di Lorenzo, M.S. (2021). Urinalysis and Body Fluids (7th ed.). Philadelphia: F.A. Davis Company

REFERENCES

1. 朱蘇煜 (2011) 臨床鏡檢學圖譜 第二版 力大圖書
2. 曾永德 (2022) 臨床鏡檢學 第五版 藝軒圖書出版社
3. Brunzel, N.A. (2022). Fundamentals of Urine and Body Fluid Analysis (5th ed.). Philadelphia: Saunders.
4. MS Shodja (2018) Urinalysis and Body Fluids for CLS & MLT Trafford Publishing
5. Kjeldsberg, C. and Hussong, J. (2015). Body Fluid Analysis. (1st ed.). Chicago, IL: ASCP Press.
6. Sunheimer, R., Graves, L., Stockwin, W., & Gockel-Blessing, E. (2014) Clinical Laboratory Urinalysis & Body Fluids (1st ed.). Upper Saddle River, NJ: Prentice Hall.
7. Mundt, Lillian A. and Kristy Shanahan (2015) Graff's Textbook of Routine Urinalysis and body fluids, 3rd edition, Lippincott Williams & Wilkins.
8. Jerry W. Hussong, Carl R. Kjeldsberg, MD (2015) Body Fluids Morphology Bench Guide, ASCP
9. Jerry W. Hussong; Carl R Kjeldsberg (2015) Kjeldsberg's Body Fluid Analysis, ASCP

STUDENT FEEDBACK

At the end of every semester, students are invited to provide feedback on the learning module and the teaching arrangement through questionnaires. Your feedback is valuable for instructors to enhance the module and its delivery for future students. The instructor and programme coordinators will consider all feedback and respond with actions formally in the annual programme review.

ACADEMIC INTEGRITY

The Macao Polytechnic University requires students to have full commitment to academic integrity when engaging in research and academic activities. Violations of academic integrity, which include but are not limited to plagiarism, collusion, fabrication or falsification, repeated use of assignments and cheating in examinations, are considered as serious academic offenses and may lead to disciplinary actions. Students should read the relevant regulations and guidelines in the Student Handbook which is distributed upon the admission into the University, a copy of which can also be found at www.mpu.edu.mo/student_handbook/.