CLINICAL MEDICINE AND LABORATORY DIAGNOSTICS	
GENERAL INFORMATION	
Course teacher	Assoc. Prof. Tatjana Bačun, MD, PhD
Associates	Asst. Prof. Dubravka Mihaljević, MD, PhD Asst. Prof. Ružica Palić Kramarić, MD, PhD Asst. Prof. Mirjana Stupnišek, MMedLAbDiagn, PhD
Study programme	Graduate University Study of Medical Laboratory Diagnostics
Course status	mandatory
Year of study, semester	2nd year, 3rd semester
ECTS credits	**5**
Form of teaching (number of classes)	Lectures: 30; Seminars: 30
Expected number of students attending the course	20
COURSE DESCRIPTION	
Course objectives	
Students will acquire knowledge on general principles of proper evaluation of test findings, and on the scope of particular tests or groups of tests in terms of their specificity, sensitivity, predictive and clinical value. That way, future masters of Medical Laboratory Diagnostics will know how to apply a rational approach when choosing diagnostic algorithms and tests to monitor the efficiency of treatment.	
Course entry requirements and competencies needed for the course	
Attended and passed subjects from the 1st year of the study programme.	
Learning outcomes at study programme level	
1.1, 1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2	
Expected learning outcomes at course level	
After attending lectures, completing seminars, independent study and passing the exam, students will be able to: 1. apply the knowledge on principles of laboratory diagnostics based on scientific evidence. 2. critically evaluate test results. 3. integrate the knowledge of laboratory diagnostics in clinical practice. 4. evaluate the risks and scope of particular tests and algorithms. 5. perform tests in emergency medicine (point-of-care testing, POCT). 6. educate patients in self-control (diabetes, pregnancy, hypertension, haemodialysis). 7. communicate with patients, physicians and medical specialists. 8. apply the acquired knowledge in planning scientific research ranging from population-based studies to clinical trials.	
Course content	
Lectures: Principles of laboratory diagnostic tests in clinical medicine (for distinguishing between physiological and pathological conditions, giving diagnoses, monitoring the patient's treatment, predicting disease onset and outcome, implementing predictive and preventive public health programmes). Evaluation of laboratory findings with regard to reference values, and pre-analytical, analytical and post-analytical factors. Quality standards and indicators and rules of good professional practice in a diagnostic medical laboratory. Selection of rational guidelines and algorithms in diagnosing and monitoring the course of treatment of: medical emergencies (poisoning, myocardial infarction, stroke, trauma, inflammation and sepsis); water metabolism disorders, electrolyte and acid-base balance disorders; kidney diseases; liver diseases; gastrointestinal system and pancreas diseases; carbohydrate metabolism disorders; lipid and lipoprotein metabolism disorders; nutrition disorders. Selection and interpretation of tests for:	

hereditary and metabolic diseases; cardiovascular and cerebrovascular diseases; haematooncologic diseases; anaemia; coagulative system and thrombosis disorders; endocrine system disorders; immune system disorders; rheumatological and skeletal degenerative diseases; tumours, pathobiochemical pregnancy disorders, neurodegenerative and inflammation diseases. Selection and interpretation of tests for: pre-operative patient treatment; patient treatment before and after organ and tissue transplantations; blood and blood preparations transfusion. Rational use and interpretation of DNA testing for prenatal and postnatal diagnostics of genetic diseases and determination of modified gene carriers. Selection and evaluation of tests for monitoring the level of medications in biological material and tests for drug therapy individualization based on pharmacogenetic analysis.

Seminars: Laboratory diagnostic tests as a basis for distinguishing between physiological and pathological conditions. Shock syndrome, multiorgan failure. Safety of blood products, side effects and adverse reactions of transfusion treatment. Quality standards and indicators and rules of good professional practice of the diagnostic medical laboratory. Assessment of laboratory findings with regard to: reference values, pre-analytical, analytical and post-analytical factors. Laboratory tests in order to establish a diagnosis. Selection and assessment of tests for monitoring drug levels in biological material and tests for individualizing therapy based on pharmacogenetic analysis. Inflammatory and degenerative diseases of the CNS. Medical laboratory diagnostics in other medical fields. Laboratory tests in public health, predictive and preventive programs, screening. Diseases of the esophagus, stomach and intestines. Medical laboratory diagnostics of emergency conditions.

Forms of teaching

Lectures, seminars; independent assignments.

Students' responsibilities

Attendance is obligatory throughout all course forms and the student has to attend all the exams. Student absence of up to 30% is considered acceptable in each teaching form. Seminars that were not completed have to be taken in the form of colloquiums. The student has to attend all forms of exams required.

Monitoring students' work *(Connecting learning outcomes, teaching methods and evaluation)*

Teaching activity	ECTS	Learning outcome	Student activity	Evaluation methods	Grade points	
					Min.	Max.
Attending classes	0.25	1-8	Attendance	Attendance records	2	10
Seminar paper	1.75		Seminar paper	Writing and presenting seminar paper	9	20
Final exam	3	1-8	Studying for final exam	Written exam	24	40
				Oral exam	15	30
Total	**5**				**50**	**100**

Evaluation of written part of final exam

Percentage of correct answers (%)	Grade points
96.00-100	40
90.00-95.00	36
80.00-89.00	32
70.00-79.00	28

60.00-70.00	24

Evaluation of oral part of final exam:
15 grade points: answer satisfies minimum criteria; 16 – 20 grade points: average answer with clearly identifiable errors; 21 – 25 grade points: very good answer with minor errors; 26 – 30 grade points: excellent answer

Formulating the final grade:
Grade points achieved in classes are combined with points achieved in the final exam. Grading in the ECTS system is absolute grading and represents one's final achievement. Grades are numerically expressed as follows: A – excellent (5): 80-100 grade points; B – very good (4): 70-79.99 grade points; C – good (3): 60-69.99 grade points; D – sufficient (2): 50-59.99 grade points.

Assigned reading (available in the library and in other media)

Title	Number of copies in the library	Availability in other media
E. Topić, D. Primorac et al. Medicinska biokemija i laboratorijska medicina u kliničkoj praksi, 2nd revised edition, 2017	8	

Further reading

1. Janković S, Eterović D: Fizikalne osnove i klinički aspekti medicinske dijagnostike. Medicinska naklada, Zagreb, 2002
2. Sertić J et al. Katalog dijagnostičkih laboratorijskih pretraga, Medicinska naklada, Zagreb, 2008

Quality assurance methods that ensure the acquisition of exit competencies

Anonymous, quantitative, standardised students' opinion survey on the course and teacher's work, carried out by the Quality Assurance Office of the Faculty of Medicine in Osijek.