| 1. COURSE DECRIPTION – GENERAL INFORMATION | | | |
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| 1.1. Course teacher | Professor Slavica Dodig,PhD | 1.6. Year of study | 4th |
| 1.2. Name of the course | **Immunochemistry** | 1.7. Credit value (ECTS) | 2,5 |
| 1.3. Associate teachers | Renata Zrinski Topić, PhD | 1.8. Type of instruction (number of hours L+E+S+e-learning) | 15+8+7 |
| 1.4. Study programme (undergraduate, graduate, integrated) | Integrated study of Pharmacy | 1.9. | 25 |
| 1.5. Status of the course | Compulsory | 1.10. Level of use of e-learning (1, 2, 3 level), percentage of instruction in the course on line (20% maximum) | 2nd |

| 2. COURSE DESCRIPTION | |
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| 2.1. Course objectives | To learn chemical processes in immunology, basic principles of immunoassays, as well as range and implementation of immunoassays in clinical medicine. |
| 2.2. Enrolment requirements and required entry competences for the course | Passed Clinical chemistry and Immunology |
| 2.3. Learning outcomes at the level of the study programme to which the course contributes | Implementation of basic knowledge in immunoassays in laboratory medicine, in defining, analysis and suggestions about investigation procedures, quality assurance and implementation on new laboratory procedures in detection of diseases and monitoring of therapy. |
| 2.4. Expected learning outcomes at the level of the course (4-10 learning outcomes) | Students will be able to:<br>1. Explain the antigen-antibody reaction;<br>2. Explain the principles of immunoassays;<br>3. Describe production of antibodies;<br>4. Describe the reagents for immunoassays;<br>5. Identify the interferences in immunoassays;<br>6. Describe the principles of investigations of cellular immunity;<br>7. Know the work on auto automated immuno- analysers. |
| 2.5. Course content broken down in detail by weekly class schedule (syllabus) | LECTURES:<br>• Introductory lecture; Antigen; Antibody.<br>• Antigen-antibody reaction; Complement; Immunisation. |

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| | • Unlabelled immunoassays; Labelled immunoassays.<br>• Investigation of cellular immunity; Immunoassays - new strategy; Production of antibodies.<br>• Reagents in immunoassays; Standardization.<br>• Interferences in immunoassays.<br>SEMINARS:<br>• Antigens of EBV- virus; specific antibodies; Screening methods; confirmative methods; evaluation of electrophoretic pattern; Immunoelectrophoresis; Immunofixation.<br>• Comparison of methods for tumour markers; Deficit IgA; Standardization of flow cytometry; Subclasses of IgG; Determination of referent values; Characteristics of IgD.<br>• Insulin antibodies; Interferences; Methods for CRP; Multiplex methods; Determination of thrombopoietin; Diagnostic efficiency of CRP determination in acute inflammation and hsCRP in chronic inflammation; Validation of methods for drug monitoring.<br>EXERCISES:<br>• Immunoturbidimetry, Imunotrubidimetry on latey particles; Hook effect; Interferences of endogenous and exogenous antibodies; Practice on auto automated analyser AU 400.<br>• Immunoassays in solutions; labeled methods (FIA- tIgE, sIgE); Automatisation of immunoassays; Practice on auto automated analyser ImmunoCAP 100.<br>• Practice on auto automated analyser Architect and Immunlite (feritin; TSH, T4, fT4); *Ex vivo* investigation of cellular immunity – IFN-gamma released from T-lymphocytes; cell isolation; Incubation of cell cultures; ELISA; ELISA-washer; ELISA-reader of microplates. |
| 2.6. Type of instruction | **lectures**<br>**seminars and workshops**<br>**exercises**<br>online in entirety<br>mixed e-learning<br>field work<br>independent study<br>multimedia and the internet<br>**laboratory**<br>work with the mentor<br>(other)<br>2.7. Comments: |
| 2.8. Student responsibilities | |

| 2.9. Screening of student's work (specify the proportion of ECTS credits for each activity so that the total number of CTS credits is equal to the credit value of the course) | | | | | | |
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| | Class attendance | 0.5 | Research | | Practical training | 0.5 |
| | Experimental work | | Report | | | |
| | Essay | | Seminar essay | | (Other--describe) | |
| | Tests | | Oral exam | | (Other—describe) | |
| | Written exam | 1.5 | Project | | (Other—describe) | |

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| 2.10. Grading and evaluation of student work over the course of instruction and at a final exam | Regulary contribution on Lectures, Seminars; Exercises; Expercises are performed in small groups (up to 5 students) in clinical laboratory. |

| 2.11. Required literature (available at the library and via other media) | **Title** |
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| | Dodig S. Immunochemistry (University handbook), Medicinska naklada, Zagreb 2014 |

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| | Andreis I, Čulo F, Marušić M, Taradi M: Imunologija, (University handbook), Medicinska naklada, Zagreb, 2004. | | |
| | Štraus B, Stavljenić-Rukavina A, Plavšić F.: Analytical techniques in clinical laboratory, (University handbook), Medicinska naklada, Zagreb, 1997. | | |
| | Čepelak I, Dodig S, Štraus B, Labar B: Medical - biochemical guidelines, (University handbook), Medicinska naklada, Zagreb, 2004. | | |
| 2.12. Optional literature | | | |
| 2.13. Methods of monitoring quality that ensure acquisition of exit competences | Learning outcomes 1-6 are checked by written exam and during seminars. LO 7 is tested during laboratory practice. | | |