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**Department of Medical Laboratory Technology (MLT)**

**College of Erbil Technical Health College**

**University of Erbil Polytechnic University**

**Subject: Immunology**

**Course Book : 2nd Year**

**Lecturer's name: Assistant Prof. Dr. Najat Jabbar Ahmed, PhD**

**Lecturer : Zaid Nabeel Elia, Farhang Ali Awla and Liza Jamal Yusif**

**Academic Year: 2023 / 2024**

**Course Book**

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| **1. Course name** | **Basic Immunology** |
| **2. Lecturer in charge** |  |
| **3. Department/ College** | **(MLT) Erbil Technical Health College** |
| **4. Contact** | **e-mail:** [najat.barwary@epu.edu.krd](mailto:najat.barwary@epu.edu.krd) [n**ajat\_mlt@yahoo.com**](mailto:najat_mlt@yahoo.com)  **Tel: (optional)** |
| **5. Time (in hours) per week** | **Theory: 2**  **Practical: 3** |
| **6. Office hours** | **12 hrs.** |
| **7. Course code** |  |
| **8. Teacher's academic profile** | **Reader 2003 Ass. Lecturer 2007 Lecturer 2014, Assistant Prof. 2018**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Experience: Teaching Activities** | | | | | | **Subject** | **From-To** | **Stage – College** | | | | Parasitology | 2005 – 2006 | 2rd stage \ Med. Lab. Tech. | | | | Immunology, Hematology, Histopathology | 2007 – 2009 | 2rd stage \ Med. Lab. Tech. | | | | Academic debate | 2014 - 2015 | 1st stage/ Med. Lab. Tech. | | | | Immunology | 2015 - 2018 | 2nd stage MLT dep. | | | | Histopathology | 2015 – 2016 | 1st stage MLT dep. | | | | Immunology | 2015 - 2018 | Master & higher deploma MLT dep. | | | | **8. Publications** | | | | | | | | CRP as Risk Marker in Diabetic and Obese Women. | | | | Zanko, Erbil | 21(4), 97-101. 2009 | | | Type 1 Diabetes Mellitus (T1DM): Induced by Environmental, genetic and immunity factors | | | | Life Science Journal | 10 (3). 2013 | | | Immunity, Environmental and Genetic Factors Induced Type 1 Diabetes Mellitus. | | | | World Applied Sciences Journal | 23 (6): 771-781. 2013 | | | Viruses Induce Type 1 Diabetes Mellitus in the Presence of HLA-DR3, DR4 Genes. | | | | Middle-East Journal of Scientific Research | 18 (7): 916-925, 2013 | | | The Mechanisms of Inhibition of Advanced Glycation  End Products Formation through Polyphenols in Hyperglycemic Condition | | | | Planta Med | ISSN 0032‑0943 | | | Effect of H. pylori and Cag-A on the infertility among males | | | | International Journal of Bioassays | *6.03 (2017): 5292-5296* | | | Diagnostic Value of Thrombocytopenia in *Helicobacter pylori* Infection Among Pregnant and Non-pregnant Women in Erbil City | | | | Polytechnic Journal | Vol. 7 No. 3 (Aug 2017): Pp:12-16 | | | Prevalence of Urinary Tract Infection and Its effect on the  immunological parameters among Erbilian Women | | | | Polytechnic Journal | Vol.7 No.4 (December 2017):  Pp: 85-94 | | | Case study: Mistake Diagnosis of Thrombocytopenia | | | | Journal of Kirkuk Medical College | Vol. 6, No. 1, December 2018 | | |
| **9. Keywords** | **Basic immunology, humoral and genetic immunity, body line defecnce.** |
| **10. Course overview:**  The course study of immunology includes the function of the immune system, organs of immune system and the main disorders of the immune system with autoimmune diseases. Moreover, study of immunology for students of medical laboratory technology department includes the body line defences as well as It is designed to provide MLT students with the knowledge of basic immunology and principles of the tests. It contains with theories of immunology. After the courses, students will be able to understand basic immunology. Understand current immunological techniques and assays, the students will be familiar with immunopathology of viral, bacterial, parasite, autoimmune, tumour and fungal diseases. Finally students will be have ability to application knowledge of immunology in the future in hospitals and medical laboratories. | |
| **11. Course objective:**   1. Theoretical part:   Immunology principles includes sequence of lectures courses that lead to understand the molecules, cells, Introduce students to the most important theories in immunology, the difference between innate and adaptive immune responses and organs of the immune system. Students will learn the structural features of the components of the immune system as well as the functions of the immune system, functions immune cells and disorders of immune system, but the primary emphasis of this year will be on the mechanisms involved in immune system development and immune responsiveness for different types of antigens and diseases. The details of each part of this course will help students understand how the immune system works inside of the human body.   1. Practical part:   The practical part of this year (two courses) will provide a selective approach to the learning of immunological techniques and assays that helps to the diagnosis of the diseases. The immunology field has continued to develop at a rapid pace during the latter years of the 20th century and the early years of the 21st century. Consequently, numerous assays and techniques are available for whom working in the laboratories that depend on the immunological reactions or immunological techniques for detection different types of antigens or antibodies inside human bodies. | |
| **12. Student's obligation**  **Theory:** lecture, group discussion, seminar, group work**.**  **Laboratory practice**: Lecture, group discussion, workshop, group work, role play, team teaching. | |
| **13. Forms of teaching**  **Theory**: lecture halls with computers equipment for lecture presentations, white board, overhead projector, posters.  **Laboratory practice**: Using instruments for detection Ag and Ab, gloves, white coat, white board, computer with equipment for PowerPoint presentations, overhead projector, posters  **General:** library, computer suite with internet access. | |
| **14. Assessment scheme**  1. Every week performing a quiz about previous lecture in theory & practical part.  2. Daily discussion within the lecture.  3. Open question for students also one of my style. | |
| **15. Student learning outcome:**  This development in this field improved through the new and advanced machines and instruments that offer a best way to obtain accurate results by using different types of samples such as blood, urine, seminal fluid, saliva, cervical fluid, Cerebrospinal fluid.... ect to obtain the accurate best results. Moreover, the students will be able to avoid the common errors that occur in the medical laboratories and how they solve the problems that they face in the medical laboratories especially the mistakes that related with immunological and serological tests. | |
| **16. Course Reading List and References‌:**   1. Immunology: A Short Course, Seventh Edition. Richard Coico and Geoffrey Sunshine.   © 2015. John Wiley & Sons, Ltd. Published 2015 by John Wiley & Sons, Ltd. Companion Website: [www.wileyimmunology.com/coico](http://www.wileyimmunology.com/coico).   1. Basic immunology - function and disorder of immune system. Abul K. Abbas and Andrew Hm LIchtmam. © 2004, second edition. Library of Conpss Cataloging-in-Publiion Data. 2. Medical Microbiology Twenty-Sixth Edition. © 2013. Jawetz, Melnick, & Adelberg’s. The McGraw-Hill Companies, Inc. 3. Immunobiology, the immune system in health and disease. © 6th Edit ion : 2005, Janeway, Travers, Walport, and Shlomchik. Garland Science Publishing, 29 West 35th Street, New York, NY 10001, USA, ISBN: 08153 4101 6. //www.ncbi.nlm.nih.gov/books/bv.fcgi?call=bv.View..Show TOC&rid=imm.TOC&depth=2. | |

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|  | **17. The Topics:** | **Lecturer's name** |
| 1 | Definition of immunology, Branches of immunology, Application of immunology in medicine. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 2 | Organs of immune system. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 3 | Overview of innate immunity. The Body’s Lines Defense/ line 1 Part non-specific immunity. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 4 | The Body’s Lines Defense/ line 2 : Part non-specific immunity. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 5 | The Body’s Lines of Defense/ line 3 specific immunity | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 6 | The role of immune system in inflammation and infection. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) (2 hrs) |
| 7 | Phagocytosis and Antigen presentation cell . Types of Major Histocompatibility Complex, | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 8 | Exo-antigen and Antigen presentation by MHCII. Immunity against bacteria. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 9 | Endo-antigen and Antigen presentation by MHCI, Immunity against viruses and tumor cells. Ab production, memory cells, T suppressor. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 10 | Super Ag. Antigen Recognition by B-cell and T-cell Receptors,  Antigen, Immunogen, Hapten, Epitope or antigenic determinant,  Types of Ag, properties of Ag. | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 11 | Antibodies. The structure of a typical antibody molecule. The interaction of the antibody molecule with specific antigen. Classes of Abs, function | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 12 | Ag-Ab Reactions: Affinity, Avidity, Specificity, Cross reactivity, Agglutination, | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
| 13 | Complement system | Lecturer’s name: Dr. Najat Jabbar Ahmed (2 hrs) |
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| **18. Practical Topics** |  |

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| Definition immunological lab., Importance of application of immunology in medicine. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Preparation of serum and how to deal with samples in immunology lab. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Preparation of Ag. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Preparation of Ab. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Complement fixation test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Classification of immunological and serological investigations | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) (3 hrs) |
| Methods for detection Ag or Ab. Direct & indirect test, direct reaction & indirect reaction. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Ag-Ab reactions, False reactions, false results | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| C – Reactive protein test. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Widal test. | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Brucella test. IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Pregnancy test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| ASOT test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| RF test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| ABO blood group | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Anti Chlamydia Ab, test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Anti Rubella Ab, test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Anti CMV Ab, test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| HBs Ag., Anti HBs.HBe and HBc Ab, test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Anti HCV Ab, test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| EBV test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Herpes simplex virus test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Detection of anti Toxoplasma Ab. test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Detection of anti nuclear Ab. test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Detection of anti DNA Ab. test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Detection of anti cardiolipin Ab. test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Detection of anti phospholipids Ab. test IgG & IgM | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| AIDS &Anti HIV 1,2 test | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Estimation of Igs | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |
| Estimation of complements | Lecturer’s name: Dr. Najat Jabbar Ahmed (3 hrs) |

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| **19. Examinations:**  ***1. Compositional:*** In this type of exam the questions usually starts with Explain how, What are the reasons for…?, Why…?, How….?  With their typical answers  Examples should be provided  ***2.True or false type of exams:***In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence. Examples should be provided  ***3. Multiple choices:***  In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase. Examples should be provided. |
| **20. Extra notes:**  Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks. |
| **21. Peer reviewپێداچوونه‌وه‌ی هاوه‌ڵ**  This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.  *(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*  ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.  هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌  Ruqaya Muhammed  Assistant Prof. Dr. Ruqaya Muhammed Ghareeb Taher  [ruqayataher2012@gmail.com](mailto:ruqayataher2012@gmail.com) |