

COURSE INFORMATION					
Course Title	Code	Semester	L+P+L Hour	Credits	ECTS
Clinical Immunology	MED 555	Phase 5/9-10	24	2	2*

\* ECTS credits are the university credits of the courses in Yeditepe University, Faculty of Medicine, Undergraduate Medical Education Program

<b>Prerequisites</b>	Students apply to this course in their 5 <sup>th</sup> year of Faculty of Medicine
----------------------	--

<b>Language of Instruction</b>	English
<b>Course Level</b>	Second Cycle including First Cycle Degree (One Tier Programme)
<b>Course Type</b>	Area Elective
<b>Course Coordinator</b>	Gülderen Yanıkkaya Demirel
<b>Instructors</b>	Prof. Dr. Gülderen Yanıkkaya Demirel, Prof. Dr. L. Arzu Aral, Assist. Prof. Dr. Başak Aru
<b>Assistants</b>	MSc. Mol. Bio. Abdullah Demir, Bio. Ebru Baktemur, Mol. Bio. Furkan Aydın
<b>Goals</b>	<p>The aim of this course is to bridge the gap between theoretical knowledge and clinical practice and to provide medical students who have completed theoretical immunology lectures with a more in-depth knowledge of clinical immunology in order to effectively apply immunological concepts in the diagnosis and treatment management of various diseases and to emphasize the critical role of immunology in clinical practice.</p> <p>As part of this integrated approach, during the clerkship the student will first gain theoretical knowledge of immunoassays commonly used in the clinical setting and later be involved in the interpretation of immunological tests from the clinical perspective, allowing them to understand how these diagnostic tools inform patient care. This will be reinforced through individual applications and case-based examples as well as hand-on training, providing a practical context to enhance their learning experience.</p> <p>This integrated and practical approach is designed to ensure that students not only understand the theoretical basis of immunology but also gain the competence to apply this knowledge to the diagnosis and management of various immunologic diseases in a clinical setting.</p>
<b>Content</b>	<p><b>The Importance of Immunology in Diagnosis and Treatment:</b> Clinical immunology applications play an important role in the diagnosis and treatment of various diseases by elucidating the mechanisms of immune responses and their pathological implications. One of the objectives of this clerkship is to provide the student with theoretical knowledge of the principles and applications of immunoassays commonly used in the clinical setting.</p> <p><b>Autoimmune Diseases and Immunologic Tests:</b> Tests performed in our laboratories include indirect immunofluorescence assays (IIFA) and extractable nuclear antigen (ENA) assays, which evaluate the presence of autoantibodies in patient serum samples and aid in the diagnosis of autoimmune diseases. This clerkship provides theoretical information on sample preparation for IIFA and ENA tests, followed by evaluation of test slides under the microscope by students under supervision.</p>

	<p><b>Immuno-hematological diseases and tests:</b> Immuno-hematological tests are essential for ensuring the compatibility of blood products during transfusion as well as diagnosing hematological malignancies. This clerkship will focus on the role of the immunology laboratory in the diagnosis and follow-up of conditions such as hematologic malignancies and hematopoietic stem cell transplantation. In addition, as a part of hands-on training, students will also prepare samples for flow cytometry analysis in the stem cell laboratory.</p> <p><b>Basics of Organ Transplantation and Tissue Typing Tests:</b> In transplantation, immunology is involved in tissue typing and serological evaluations, including crossmatch tests and measurement of reactive antibodies in patient sera. These tests are essential to minimize the risk of graft rejection and ensure long-term graft success. This clerkship provides theoretical information on HLA typing, crossmatching, panel reactive antibody (PRA), and donor specific antibody (DSA) tests. Moreover, the student will observe HLA typing analysis on the respective software in the tissue typing laboratory.</p>
--	--

<b>Learning Outcomes</b> After participating in this clerkship program, students should be able to	<b>Programme Learning Outcomes</b>	<b>Teaching Methods</b>	<b>Assessment Methods</b>
1) Be able to relate theoretical knowledge of immunology to the results of the methods used in the immunology laboratory.	1.1.1, 2.1.1, 2.1.2, 2.1.3, 2.2.1, 2.2.2, 2.2.3, 2.3.1, 2.3.2, 2.4.1, 2.4.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.1, 3.2.2, 3.2.3	1,2,3	A
2) Ensuring the ability to benefit from immunological testing while managing the diagnostic and treatment processes of immunological diseases.	1.1.1, 1.1.3, 1.1.4, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 2.1.1, 2.1.2, 2.1.3, 2.2.1, 2.2.2, 2.3.1, 2.3.2, 2.4.1, 2.4.2, 2.4.3, 2.5.3, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.2, 3.2.3	1,2,3	A
3) Being able to interpret autoantibodies, immuno-hematological tests and tissue typing tests	1.1.1, 1.1.3, 2.1.1, 2.1.2, 2.3.1, 2.3.2, 2.4.1, 2.4.2, 2.4.3, 2.5.3, 3.1.1, 3.1.2, 3.1.3, 3.2.2, 3.2.3	1,2,3	A
4) Knowing the units, interferences as well as factors affecting sample collection for immunological analysis.	2.1.1, 2.3.1, 2.4.1, 2.4.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.2.2, 3.2.3	1,2,3	A

<b>Teaching Methods:</b>	1: Lecture, 2: Question-Answer, 3: Discussion
<b>Assessment Methods:</b>	A: Testing B: Presentation C: Assignment

<b>Day</b>	<b>Topics</b>
<b>1</b>	Importance of immunological tests in clinical practice
<b>1</b>	Factors affecting sample collection for immunological analysis, interferences, and units
<b>1</b>	Essentials of immunological methods

2	Immune tolerance, autoinflammation and autoimmunity
2	Autoantibodies and essentials of immunofluorescence
2	Immunoassays (ELISA, WB, etc)
2	Practice: Clinical interpretation of autoantibodies
3	Hematologic disorders and immunology
3	Immunological tests used in diagnosis and follow-up of the hematological disorders
3	Immuno-hematological tests used in pregnancy and newborn
3	Practice: Clinical interpretation of immunohematological tests
4	Transplantation immunology
4	Essentials of tissue typing
4	Practice: Clinical interpretation of tissue typing tests
5	Examination

#### RECOMMENDED SOURCES

<b>Textbook</b>	<b>Clinical Immunology Principles and Practice, 6. Baski, 2022</b> Editors: Robert R. Rich vd, ISBN: 9780702081651 eBook ISBN: 9780443285226
<b>Additional Resources</b>	Lecture notes, scientific articles

#### MATERIAL SHARING

<b>Documents</b>	Google Classroom
<b>Assignments</b>	Google Classroom

#### ASSESSMENT

IN-TERM STUDIES	NUMBER	PERCENTAGE
Final exam	1	100
<b>Total</b>		<b>100</b>
<b>CONTRIBUTION OF FINAL EXAMINATION TO OVERALL GRADE</b>		100
<b>Total</b>		<b>100</b>

<b>COURSE CATEGORY</b>	Expertise/Field Courses
------------------------	-------------------------

<b>COURSES CONTRIBUTION TO PROGRAM</b>					
<b>COMPETENCE AREA-1 / Professional Practices</b>	<b>Contribution</b>				
<b>COMPETENCE 1.1. Health Service Provider</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Competency 1.1.1.</b> Integrates knowledge, skills, and attitudes acquired from basic and clinical medical sciences, behavioral sciences, and social sciences to provide health services.				X	
<b>Competency 1.1.2.</b> Demonstrates a biopsychosocial approach that considers the individual's sociodemographic and sociocultural background without discrimination based on language, religion, race, or gender in patient management.					
<b>Competency 1.1.3.</b> Prioritizes the protection and improvement of individuals' and community's health in the delivery of healthcare services.		X			
<b>Competency 1.1.4.</b> Performs the necessary actions in the direction of maintaining and improving the state of health as considering the individual, social, social and environmental factors affecting health.	X				
<b>Competency 1.1.5.</b> Provides health education to healthy/ill individuals and their families, as well as to other healthcare professionals, by recognizing the characteristics, needs, and expectations of the target audience.	X				
<b>Competency 1.1.6.</b> Demonstrates a safe, rational, and effective approach in the processes of protection, diagnosis, treatment, follow-up, and rehabilitation in health service delivery.	X				
<b>Competency 1.1.7.</b> Performs interventional and/or non-interventional procedures safely and effectively for the patient in the processes of diagnosis, treatment, follow-up, and rehabilitation.	X				
<b>Competency 1.1.8.</b> Provides healthcare services considering patient and employee health and safety.	X				
<b>Competency 1.1.9.</b> Considers changes related to the physical and socio-economic environment at both regional and global scales that affect health, as well as changes in the individual characteristics and behaviors of those who seek healthcare services.					
<b>COMPETENCE AREA-2 / Professional Values and Approaches</b>	<b>Contribution</b>				
<b>COMPETENCE 2.1. Adopting Professional Ethics and Principles</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Competency 2.1.1.</b> Considers good medical practices while performing the profession.					X
<b>Competency 2.1.2.</b> Fulfills duties and obligations within the framework of ethical principles, rights, and legal responsibilities required by the profession.				X	

<b>Competency 2.1.3.</b> Demonstrates determined behavior in providing high-quality healthcare while considering the patient's integrity.		<b>X</b>			
<b>Competency 2.1.4.</b> Evaluates own performance in professional practices by considering own emotions and cognitive characteristics.					
<b>COMPETENCE 2.2. Health Advocate</b>					
<b>Competency 2.2.1.</b> Advocates for the improvement of healthcare service delivery by considering the concepts of social accountability and social responsibility in the protection and enhancement of community health.		<b>X</b>			
<b>Competency 2.2.2.</b> Plans and implements service delivery, education, and counseling processes related to individual and community health, in collaboration with all stakeholders, for the protection and improvement of health.			<b>X</b>		
<b>Competency 2.2.3.</b> Evaluates the impact of health policies and practices on individual and community health indicators and advocates for the improvement of healthcare quality.	<b>X</b>				
<b>Competency 2.2.4.</b> Gives importance to protecting and improving own physical, mental, and social health and takes necessary actions for it.					
<b>COMPETENCE 2.3. Leader-Manager</b>					
<b>Competency 2.3.1.</b> Demonstrates exemplary behavior and leadership within the healthcare team during service delivery.					<b>X</b>
<b>Competency 2.3.2.</b> Utilizes resources in a cost-effective, socially beneficial, and compliant manner with regulations in the planning, implementation, and evaluation processes of healthcare services as the manager in the healthcare institution.				<b>X</b>	
<b>COMPETENCE 2.4. Team Member</b>					
<b>Competency 2.4.1.</b> Communicates effectively within the healthcare team and takes on different team roles as necessary.					<b>X</b>
<b>Competency 2.4.2.</b> Displays appropriate behaviors while being aware of the duties and responsibilities of healthcare workers within the healthcare team.				<b>X</b>	
<b>Competency 2.4.3.</b> Works collaboratively and effectively with colleagues and other professional groups in professional practice.				<b>X</b>	
<b>COMPETENCE 2.5. Communicator</b>					
<b>Competency 2.5.1.</b> Communicates effectively with patients, their families, healthcare professionals, and other occupational groups, institutions and organizations.					
<b>Competency 2.5.2.</b> Communicates effectively with individuals and groups who require a special approach and have different sociocultural characteristics.					
<b>Competency 2.5.3.</b> Demonstrates a patient-centered approach that involves the patient in decision-making mechanisms during the diagnosis, treatment, follow-up, and rehabilitation processes.			<b>X</b>		

COMPETENCE AREA-3 / Professional and Personal Development	Contribution				
	1	2	3	4	5
<b>COMPETENCE 3.1. Scientific and Analytical Approach</b>					
<b>Competency 3.1.1.</b> Plans and implements scientific research, as necessary, for the population it serves, and utilizes the results obtained, as well as those from other research, for the benefit of the community.					X
<b>Competency 3.1.2.</b> Accesses and critically evaluates current literature related to their profession.					
<b>Competency 3.1.3.</b> Applies evidence-based medicine principles in the clinical decision-making process.					X
<b>Competency 3.1.4.</b> Uses information technologies to enhance the effectiveness of healthcare, research, and education activities.				X	
<b>COMPETENCE 3.2. Lifelong Learner</b>					
<b>Competency 3.2.1.</b> Manages effectively individual study processes and career development.	X				
<b>Competency 3.2.2.</b> Demonstrates skills in acquiring, evaluating, integrating new information with existing knowledge, applying to professional situations, and adapting to changing conditions throughout professional career.					X
<b>Competency 3.2.3.</b> Selects the right learning resources to improve the quality of health care and organizes the learning process.					X

ECTS ALLOCATED BASED ON STUDENT WORKLOAD BY THE COURSE DESCRIPTION			
Activities	Quantity	Duration (Hour)	Total Workload (Hour)
Lecture	9	2	18
Practice	3	2	6
Hours for off-the-classroom study (Pre-study, practice, review/week)	5	3	15
Research	6	1	6
<b>Total Work Load</b>			45
<b>Total Work Load / 30 (h)</b>			1.5
<b>ECTS Credit of the Course</b>			2