



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari institute of medical sciences  
and health care  
Semester-1

**Subject:** Basic Immunology-PGDMT11503

**Type of course:** Major

**Prerequisite:** Basic knowledge about immunology

**Rationale:** To understand the fundamental of immune system of human body

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		C	Theory Marks		Practical Marks		
			ESE		MSE	V	P	ALA	
4	0	2	5	60	30	10	20	30	150

*Legends: CI-Class Room Instructions; T- Tutorial; P - Practical; C - Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V - Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*

**Continuous Assessment:**

Sr. No	Active Learning Activities	Marks
1	<b>Presentation</b> students need to prepare presentation individually and upload on Moodle	10
2	<b>Assignment</b> students make assignments individually and upload on Moodle	10
3	<b>Research paper</b> Student will study the research paper allotted by faculty according to their units	10
<b>Total</b>		<b>30</b>



**Course Content:**

Sr. No	Course content	Hrs	% Weightage
1	<p><b>Chapter :1 Immune development system:</b></p> <ul style="list-style-type: none"> <li>Immunity Concept and types of immunity Innate immunity: species, racial and individual. Acquired immunity: active and passive; natural and artificial. Concept of herd immunity. Cell mediated immunity and Humoral immunity</li> <li>Cells of immune system: Lymphocytes (T cells, B cells, and NK cells), neutrophils, and monocytes/ macrophages.</li> </ul>	15	25%
2	<p><b>Chapter:2 Introduction to Antigen &amp; Antibody:</b></p> <ul style="list-style-type: none"> <li>Antigens: Characteristics, Properties of antigen Types of Antigen- Haptens and Epitopes Antigenic responses of Bacterial cells</li> <li>Antibodies: Characteristics, Properties of antibodies Immunoglobulin- Classes, Physicochemical and structural property</li> <li>Monoclonal Antibodies and their production</li> </ul>	15	25%
3	<p><b>Chapter:3 Antigen-Antibody Interaction</b></p> <ul style="list-style-type: none"> <li>Criteria for Antigen-antibody reaction</li> <li>Mechanism and Factors affecting antigen –antibody reactions: Principle, procedure and applications of various antigen antibody reactions: Precipitation; Agglutination; Fluorescent–antibody technique (Immunofluorescence); Radio Immunoassay (RIA); Enzyme Linked Immune Sorbent Assay (ELISA);</li> <li>Complement fixation test; Skin tests.</li> </ul>	15	25%



4	<p><b>Chapter:4 Immunological Disorder &amp; Vaccines</b></p> <ul style="list-style-type: none"> <li>• Hypersensitivity: Classification and Immunological basis</li> <li>• Auto-immunity: Mechanisms and classification of auto immune disorders.</li> <li>• Immunodeficiency, Transplantation Immunity, MHC Vaccines: Introduction to the vaccines Various types of vaccines</li> </ul>	15	25%
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**Suggested Specification table with Marks (Theory):60**

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weightage	20%	40%	30%	10%	-	-

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcome:**

After learning the course the students should be able to:	
CO1	Understand the basic structure and function of immune system.
CO2	Define antigen and antibody
CO3	Define the interaction between antigen and antibody.
CO4	Define the immunological disorder and vaccine



**List of practical:**

<b>Sr no.</b>	<b>Discription</b>	<b>Unit no.</b>	<b>Hrs.</b>
1	Study of flocculation reaction: RPR test.	4	4
2	Demonstration of agar gel immune-diffusion precipitation reaction (Demonstration).	3	3
3	Collection of blood by vein puncture and separation of serum and plasma.	2	4
4	Determination of human blood group: ABO and Rh systems.	2	3
5	Estimation of hemoglobin by Sahli's acid hematin method.	3	3
6	Total count of erythrocytes.	1	2
7	Total count of leucocytes.	1	2
8	Differential count of leucocytes by Field's method.	4	4
9	Strip test of pregnancy	3	2
10	Strip test of typhoid	3	2
	<b>Total</b>		<b>30</b>



**Instructional Method:**

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

**Reference Books:**

- 1) Kindit T.J, Goldsmith R A et al (2006) ,Kuby Immunology 6th Edition W.H.Freeman & Co
- 2) Godkar P.B., (2005), Textbook of Medical Laboratory Technology Vol 1 & 2, BhalaniPublications.
- 3) Parija S C, (2016), Textbook of Microbiology and Immunology, 3rd Ed., Elsevier Publication.
- 4) Kanungo R, (2017), Ananthanarayan and Paniker's Textbook of Microbiology, 10th Ed.
- 5) Amitava Dasgupta; Amer Wahed (2014) Clinical Chemistry, Immunology and LaboratoryQuality Control. Himmelfarb Health Sciences. ISBN: 9780124078215

