

**UNIVERSITY OF MADRAS**  
**M.Sc. DEGREE PROGRAMME IN ZOOLOGY**  
 SYLLABUS WITH EFFECT FROM 2023-2024

**531C4C**

<b>Course Objectives:</b>		
The main objectives of this course are:		
	To provide hands-on training to perform specific lab courses in immunology and ecology	
<b>Course</b>	<b>:</b>	<b>Core XIII</b>
<b>Course title</b>	<b>:</b>	<b>Lab Course in Immunology And Ecology</b>
<b>Credits</b>	<b>:</b>	<b>4</b>
<b>Pre-requisite:</b>		
Students should acquire the basic knowledge relevant to a particular lab course.		
<b>Expected Course Outcome:</b>		
Upon completion of this lab course, the students		
<b>1.</b>	Acquire ability to perform/ demonstrate various basic concepts in immunology as well as applications of research methods for quantitative/ qualitative analysis of biochemical components.	<b>K3 &amp; K4</b>
<b>2.</b>	Attains capability in analysing the various water samples to study the important ecological parameters and to interpret the significance.	

**K1-** Remember; **K2-** Understand; **K3-** Apply; **K4-**Analyze; **K5-**Evaluate; **K6-** Create

**IMMUNOLOGY**

1. Identification of various immune tissues and organs in rat
2. Identification of various types of immune cells in peripheral blood smear
3. Separation of RBC as intact cellular antigen for immunization
4. Methods of blood sampling
5. Preparation and storage of antiserum
6. Agglutination reaction: Qualitative analysis of antigen-antibody reaction using human blood group system
7. Detection of IgG by precipitation ring test
8. Detection of IgG by Ouchterlony double immuno-diffusion test
9. Detection of reactivity of IgG with fractionated antigens by immune - electrophoresis
10. Separation of lymphocytes from peripheral blood and identification of T and B cells

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**ECOLOGY**

I Estimation of the following in given samples

1. Nitrites 2. Calcium 3. Phosphates 4. Oxygen 5. Salinity 6. Silicates

II. Adaptation to the environment

1. Sandy shore fauna  
2. Muddy shore fauna  
3. Rocky shore fauna

III. Animal Association

1. Parasitism  
2. Mutualism  
3. Commensalism

IV. Estimation of Earthworm population

V. Collection, Isolation and identification of Plankton.

VI. Visit to treatment Plants ( Any one )

- a) Drinking water treatment plant - Kilpauk water works.  
b) Effluent Treatment - CETP - Pallavaram.  
c) Sewage treatment - Koyambedu.

<b>Mapping with Programme Outcomes*</b>										
<b>Cos</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>	<b>PO6</b>	<b>PO7</b>	<b>PO8</b>	<b>PO9</b>	<b>PO10</b>
<b>CO1</b>	S	S	M	M	S	M	S	S	M	S
<b>CO2</b>	S	S	M	M	L	S	S	S	M	M
<b>CO3</b>	S	M	M	L	M	S	L	L	S	L
<b>CO4</b>	M	M	S	S	M	L	L	S	S	S
<b>CO5</b>	M	S	S	M	S	M	L	M	L	S

\*S - Strong; M - Medium; L – Low