

Semester	Course Code	Course Category	Hours	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UZOVAC1	Value Added Course-I	30	--	--	--	100

<b>Course Title</b>	<b>ANIMAL CENSUS TECHNIQUES</b>
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SYLLABUS		
Unit	Contents	Hours
I	<b>Introduction to Animal Sampling:</b> Sampling designs for population estimation, population estimation methods: Distance based Sampling Methods, Mark-Recapture for Closed Population, Indices.	6
II	<b>Counting Techniques:</b> Total counts - Sample counts – Basic concepts and applications - Direct count (block count, transect methods, Point counts, visual encounter survey, waterhole survey); Indirect count (Call count, track and signs, pellet count, pugmark, camera trap)-Identifying animals based on indirect signs; Capture-recapture techniques- Ringing of Birds.	6
III	<b>Invertebrate Sampling:</b> Species sampling method (Quadrat, Line Transect, Belt Transect, Pit fall, Mark-Recapture technique, Radio-telemetry etc.); Ethics in Field Studies. Methods of recording field observations; Essential Field kit and its usage; Data analysis.	6
IV	<b>GIS and Mapping:</b> Introduction of GPS, Map making. Topo-sheet. Landscape Ecology- Logical and Quantitative Models for Species & Habitat. Map making in QGIS and use of google earth. Image classification Technique for Mapping of Earth Resources.	6
V	<b>Conservation Awareness:</b> IUCN Status of Animal species – Endangered, Vulnerable, critically endangered, least concern with examples. Government and Non-government organisations for Conservation- Biodiversity Authority of India, Tamil Nadu Forest Department. <b>Field Trip:</b> Birds watch, Animal Census	6

<b>Text Book(s):</b>
1. Technical manual on Wildlife (mammals) survey, Japan Overseas Forestry Consultants Association (JOFCA), Pasco corporation
<b>Reference Book(s):</b>
1. K.V. Krishnamurthy, 2018, An advanced Text book on biodiversity: Principles and Practice – Oxford & IBH Publishing Co Pvt.Ltd.
2. Stebbin E P, 1977. A Manual of Elementary Forest Zoology For India. International Book Distributors, Dehra Dun.
3. Dasmann R F, 1964. Wildlife Biology, John Wiley & Sons, New York, p 23
4. Warning R H and Schlesinger W H, 1985. Forest Ecosystems: Concepts and Management. Academic Press, New York.
5. Teague R D (ed.), 1987. A Manual of Wildlife Conservation (The Wildlife Society, Washington D.C.). Nataraj Publishers, Dehra Dun
6. Gilas R H Jr.(ed.), 1984. Wildlife Management Techniques, 3rd ed. The Wildlife Society, Washington D.C., Nataraj Publishers, Dehra Dun
7. Rodgers W A, 1991. Techniques for Wildlife Census in India - A Field Manual: Technical Manual - T M - 2. WII.

**Web Resource(s):**

1. Ecology and Wildlife Conservation (FutureLearn): <https://www.mooc-list.com/course/ecology-andwildlife-conservation>
2. Wildlife Conservation: <https://nptel.ac.in/courses/102/104/102104068/>
3. Wildlife Ecology: [https://swayam.gov.in/nd1\\_noc20\\_bt38/preview](https://swayam.gov.in/nd1_noc20_bt38/preview)  
Animal Census : <https://www.geographynotes.com/wildlife-census/how-to-conduct-wildlife-census-3-methods-geography/5963>

**Course Outcomes**

Upon successful completion of this course, the student will be able to:

<b>CO No.</b>	<b>CO Statement</b>
CO1	Acquire knowledge on animal sampling
CO2	Comprehend the counting techniques
CO3	Apply the knowledge on animal Census
CO4	Understand the scope and importance of invertebrate sampling
CO5	Create awareness on animal conservation

**Course Coordinator: Dr. R. Krishnamoorthy**

Semester	Course Code	Course Category	Hours	Credits	Marks for Evaluation		
					CIA	ESE	Total
V	23UZOVAC2	Value Added Course - II	30	--	--	--	100

<b>Course Title</b>	<b>ZOOLOGICAL SPECIMEN PREPARATION</b>
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SYLLABUS		
Unit	Contents	Hours
I	<b>Basics of Preservation</b> - Definition of Preservation - Nature and composition of Animal Specimens - Biodeterioration and its control measures - Preservatives and their types - Advantage and disadvantage of liquid preservatives such as Alcohol & Formalin.	6
II	<b>Preservation techniques</b> - Cleaning and Preservation of Egg - Cleaning and Mounting of skeletons- Dry & Wet preservation of Animal specimens - Preservation of Insects.	6
III	<b>Taxidermy</b> – Definition - Taxidermy- Selection of Specimens - Various techniques and methods of collection – Procedures of Stuffing.	6
IV	<b>Modern Techniques</b> – Plastination – Plastic embedding - Preparation of cabinet skin - Freeze Drying Technique - Micro techniques for Biological Specimens.	6
V	<b>Museum Display and Exhibition</b> - Storage of Biological Specimens in Museums - Material and equipment for display - Colour scheme, Harmonies of related and contrasting colours – Insecticides applied in Museum.	6

<b>Text Book(s):</b>
T.Ambrose, C.Paine, Museum Basics, Routledge, London,2012.
<b>Reference Book(s):</b>
G.Hangry, M.Dingle, Biological museum methods(vol I &II), Academic Press,1985
<b>Web Resource(s):</b>
<a href="https://lsa.umich.edu/ummz/herps/collections/preservation-techniques.html">https://lsa.umich.edu/ummz/herps/collections/preservation-techniques.html</a>

Course Outcomes	
Upon successful completion of this course, the student will be able to:	
CO No.	CO Statement
CO1	Compare different methods employed for the preservation of animals.
CO2	Collect various specimens for preservation.
CO3	Select suitable techniques for different types of specimens.
CO4	Prepare Stuffed birds and animal specimens.
CO5	Apply different techniques in Museum display and exhibition

**Course Coordinator: Mr. P. A. ASHIQUE**

Semester	Course Code	Course Category	Hours	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23PZOVAC1	Value Added Course - I	30	--	--	--	100

<b>Course Title</b>	<b>BASICS OF VACCINE AND VACCINATION - II</b>
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SYLLABUS		
Unit	Contents	Hours
I	Historical evolution of vaccines and vaccination – current vaccination programs for children and adults. *Variolation*	6
II	Basic principles of immunization – Adaptive Immunity – Humoral and cell mediated immunity – Active and Passive immunity – Natural and artificial – Passive immunization – limitations and use. Immunoglobulins – Antigen – Antibody complex. *maternal antibodies, Antivenom*	6
III	Active immunization – concept – factors affecting immunogenicity – Types of immune response – Primary and secondary immune response – Antibodies involved in primary and secondary immune response – Role of vaccines in active immunization. Role of CD4 cells in vaccination.*T cell vaccines *	6
IV	Vaccines development and clinical trials – Adjuvant – features of effective vaccinations – Advantages and limitations of vaccines. . Isolation of pathogens for vaccine development. Role of cell lines in Vaccine development * Thiomersal and vaccines*.	6
V	Types of vaccines – Whole organism: Killed and Live attenuated .Subunit vaccines – purified macromolecules: Toxoid – Bacterial and viral components as vaccines – Vaccine storage and transport. *vaccines for cancer*	6

\*.....\* Self Study

<b>Text Book(s):</b>
1. Textbook of Immunology – including Immunotechnology & Immunotherapy – Ajoy Paul, Books and Allied (P)Ltd., Kolkata (2016).
<b>Reference Book(s):</b>
1. Centres for Disease Control and Prevention; Epidemiology and Prevention of Vaccine preventable Diseases. 2012. 12 th Edition.
2. Vaccine Administration, Recommendations and Guidelines. CDC,2012 Departmental
<b>Web Resource(s):</b>
1. <a href="http://www.phrma-jp.org/wordpress/wp-content/uploads/old/library/vaccine-factbook_e/1_Basic_Concept_of_Vaccination.pdf">http://www.phrma-jp.org/wordpress/wp-content/uploads/old/library/vaccine-factbook_e/1_Basic_Concept_of_Vaccination.pdf</a>
2. <a href="https://www.who.int/ith/ITH-Chapter6.pdf">https://www.who.int/ith/ITH-Chapter6.pdf</a>
3. <a href="https://apps.who.int/iris/bitstream/handle/10665/193412/9789241549097_eng.pdf">https://apps.who.int/iris/bitstream/handle/10665/193412/9789241549097_eng.pdf</a>

### Course Outcomes

Upon successful completion of this course, the student will be able to:

CO No.	CO Statement
CO1	Understand the scope and importance of vaccination
CO2	Comprehend the types of immune response and the different ways of immunization
CO3	Apply the knowledge on vaccination schedule for children and adults
CO4	Judge the safety issues, precautions and management of effective vaccination
CO5	Analyse the bacterial and viral components as vaccines

**Course Coordinator: Dr. A. Sadiq Bukhari**