

UNIVERSITY OF MADRAS
B.Sc. DEGREE PROGRAMME IN ADVANCED ZOOLOGY
AND BIOTECHNOLOGY
SYLLABUS WITH EFFECT FROM 2023-2024

SEMESTER - V

Course Code	Course Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
321C5C	BIOSTATISTICS AND COMPUTER APPLICATIONS	Core	Y	-	-	-	5	5	25	75	100
Learning Objectives											
CO1	To understand key concepts and statistical methods used in biology.										
CO2	To compute and interpret basic statistical parameters.										
CO3	To gain knowledge in population statistics.										
CO4	To get an insight into the basic computer applications and operation of various application softwares.										
CO5	To access the internet for scholarly resources for the advancement of knowledge.										
UNIT	Details							No. of Hours	Course Objectives		
I	Biostatistics- Definition and scope- Collection of data- Census and sampling methods- Variable and attribute-classification and tabulation of data-Diagrams and graphs- Bar, Pie, Histogram and Line graph- Concept of statistical population and sample characteristics of frequency distribution.							15	CO1		
II	Measures of central tendency: Arithmetic Mean, Median, Mode; Measures of dispersion: Range, Quartile deviation, Mean deviation and Standard deviation (Computation for Arithmetic Mean, mean deviation and standard deviation for discrete and continuous data).							15	CO2		
III	Correlation-Types of correlation, Calculation of Karl Pearson's correlation coefficient- Regression- Regression Equations- Hypothesis Testing- Null hypothesis- Level of significance- Chi-Square test and student's <i>t</i> -test.							15	CO3		
IV	Vital statistics-population growth and estimation – population forecast- Crude and Specific vital statistics rate- Natality rate- fertility rate- mortality rate (computation not required) .							15	CO4		

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V	Definition of computer – Basic components of computer- Input and output devices- Windows operating system and application software -MS word- MS Excel- MS Power point -Computer network- Introduction- types (LAN, MAN, WAN)- Social networks- Uses of Internet.	15	CO5
Total		75	
Course Outcomes			
Course Outcomes	On completion of this course, students will;		
CO1	Understand the key concepts and statistical methods used in biology.	PO1	
CO2	Be able to Compute and interpret basic statistical parameters.	PO1, PO5	
CO3	Would have gained knowledge in population statistics.	PO4, PO6	
CO4	Gain insight into the basic computer applications and operation of various application soft wares.	PO4, PO5, PO6	
CO5	Will be able to access the internet for scholarly resources for the advancement of knowledge	PO3, PO8	
Text Books (Latest Editions)			
1.	Daniel, W.W. (2012) Biostatistics: A Foundation for Analysis in Health Sciences (10 th edition) John Wiley.		
2.	Zar, J.H. (2013) Biostatistical Analysis (5 th edition) Pearson.		
3.	Milton, J.S. and Tsokos, J.O. (1992) Statistical Methods in the Biological and Health Sciences (2 nd edition) McGraw Hill.		
4	User manual and online user manual of respective softwares for the most updated content		
References Books (Latest editions, and the style as given below must be strictly adhered to)			
1.	Gurumani,N. 2005. Biostatistics, 2 nd edition, MJP Publishers India.		
2.	User manual and online user manual of respective softwares for the most updated content.		

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Web Resources								
1.	https://bit.ly/2VYWOM5							
2.	https://bit.ly/2VZQFiT							
3.	https://bit.ly/3kqdXYA							
4.	https://bit.ly/39rvvgt							
Methods of Evaluation								
Internal Evaluation	Continuous Internal Assessment Test	25 Marks						
	Assignments							
	Seminars							
	Attendance and Class Participation							
External Evaluation	End Semester Examination	75 Marks						
	Total	100 Marks						
Methods of Assessment								
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions							
Understand/Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview							
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain							
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge							
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons							
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations							
Mapping with Programme Outcomes:								
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	S							
CO 2	M	M						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S
	S-Strong(3)			M-Medium (2)		L-Low (1)		