Pt. Ravishankar Shukla University, Raipur

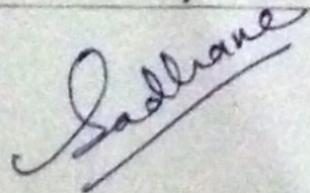
School of Studies in Life Science

Syllabus for Ph.D. Course Work in Microbiology (2025-26) Program code Ph. D. MB 0410

One Semester

There are two papers: each with maximum marks 100. The candidate must independently obtain 50% or more marks in each paper to qualify in the course work. The answer papers will be assessed independently by two examiners.

No.	Name of paper	Lectures	Marks
Paper I	Research Methodology, Tools & Techniques in Microbiology, Data Analyses and Computer application.		100
A	Research Methodology:	25	25
	Introduction and Scope, Research problem: Identification, Selection, and Formulation of research objectives	3L	
	Research design: Components, Importance, Types	3L	
	Types of data, Data Collection - Methods and Tools	2L	
	Research ethics, Institutional ethics committee	2L	
	Plagiarism - Pitfall, Regulation	2L	
	Patents and IPR: Patent laws, process of patenting research findings, Copyright, Cyber laws	3L	
	Bibliometrics: Measurement of academic output- Citation Index: Science Citation Index (SCI), h-index, i-10-index. Journal Impact Factor (JIF); AI in research	5L	
	Style of Bibliography, Reference Management Tools, Project, Research Paper, and Review Writing Literature search technique using SCOPUS, Google Scholar, PUBMED, Web of Science	SL	
В	Tools & Techniques: Principle, protocol and application	25	25
	Histological, Histochemical, Cytochemical, and Immunohistochemical techniques	5L	
	Chromatography - GLC & HPLC, Electrophoresis	7L	
	PCR, Real-time PCR, DNA Microarray, DNA Sequencing, Protein Sequencing	8L	
	Biosensors: DNA Biosensors, Immunosensors, Biosensors Techniques, Biosensor Applications	5L	
C	Data Analyses	20	25
	Hypothesis testing	2L	
	Normal and Binomial distributions and their property	3L	
	Tests of significance: Student t-test, F-test, Chi-square test	5L	
	Correlation and Regression	4L	
	ANOVA - One-way and Two-way, Multiple-range test	6L	
)	Computer application	10	25
	Introduction to MS Office software: MS Word (Track change)	2L	
	MS Excel, PowerPoint	4L	
	Features for Statistical data analysis using computers and software, Microsoft Excel Data Analysis ToolPak, SPSS	4L	



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		-	100
Paper II	Review of Literature & Seminar		50
A	Review of Literature - Writing a review of literature in the area		
	of the proposed Ph.D. work		50
В	Seminar - Based on the review of the literature		

Note: Research and Publication Ethics (2 credit course) - As per guidelines of Pt. Ravishankar Shukla University, Raipur (C.G.)

Recommended Books:

Perspectives on Plagiarism and Intellectual Property in a Buranen L and Roy AM

Post-Modern World Statistics for biologists

Inside Microsoft Office Professional Campbell RC

Cassel P et al. Instrumentation Chatwal and Chatwal Mastering Internets

Research Methodology: Methods & techniques, 2008 Coleman P and Dyson P Plagiarism: Why it happens, How to prevent it? CR Kothari

How the Internet Works Gilmore B

Microsoft Office 2003 All in One, Microsoft Office 2010 Gralla P Habraken J

In Depth Cyber Law

Kumar Anupa P Research Methodology

Microsoft 2007: Introductory Concepts and Techniques R Panneerselvam Shelly GB, Vermaat ME,

Cashman TJ

Snedecor GW & Cochran WG

Sokal RR & Rohlf FJ

Sood V Sumner M

Upadhyaya and Upadhyaya

Wardlaw AC White R Zar JH

Statistical Methods Introduction to Biostatistics Cyber Law Simplified

Computers: Concepts & Uses

Instrumentation

Practical Statistics for Experimental Biologists

How Computers Work Biostatistical Analysis