

Pt. Ravishankar Shukla University, Raipur

School of Studies in Life Science

Syllabus for Ph.D. Course Work in Bioscience (2024-25)

Program Code-Ph.D. BS (0409)

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 Course code – Ph.D. BS (0409A)	Research Methodology, Advanced Tools & Techniques, Quantitative Data Analyses and Computer Fundamentals	--	100
A	Research Methodology: Introduction and Scope Research problem: Identification, Selection, and Formulation of research objectives Research design: Components, Importance, Types Types of data, Data Collection - Methods and Tools Research ethics, Institutional ethics committee Plagiarism – Pitfall, Regulation [UGC, ICMR, ICAR, DBT] Patents and IPR: Patent laws, process of patenting research findings, Copyright, Cyber laws Bibliometrics: Measurement of academic output- Citation Index: Science Citation Index (SCI), h-index, i-10-index. Journal Impact Factor (JIF); Style of Bibliography, Reference Management Tools, Project, Research Paper, and Review Writing Literature search technique using SCOPUS, Google Scholar, PUBMED, Web of Science	25 3L 3L 2L 2L 2L 3L 10L	
B	Advanced Tools & Techniques: Principle, protocol and application Histological, Histochemical, Cytochemical, Immunohistological and Immunohistochemical techniques Chromatography – GLC & HPLC, Electrophoresis DNA laddering, DNA Methylation, Comet Assay PCR, Real-time PCR, DNA Microarray, DNA Sequencing, Protein Sequencing Biosensors: DNA Biosensors, Immunosensors, Biosensors Techniques, Biosensor Applications	25 5L 5L 5L 5L 5L	
C	Quantitative Data Analyses Hypothesis testing Normal and Binomial distributions and their property Tests of significance: Student t-test, F-test, Chi-square test Correlation and Regression ANOVA – One-way and Two-way, Multiple-range test	20 2L 3L 5L 4L 6L	
D	Computer Fundamentals Introduction to MS Office software: MS Word (Track change) MS Excel, PowerPoint Features for Statistical data analysis using computers and software, Microsoft Excel Data Analysis ToolPak, SPSS	10 2L 3L 5L	

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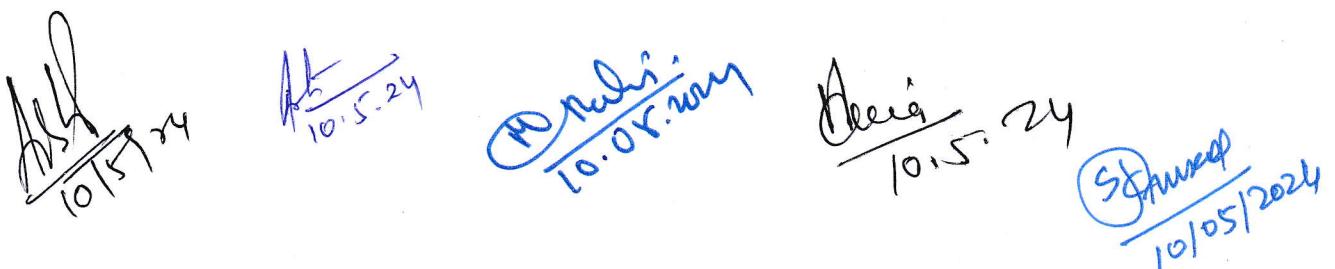
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Paper II Course code – Ph.D. BS (0409 B)	Review of Literature & Seminar	--	100
A	Review of Literature – Writing a review of literature in the area of the proposed Ph.D. work		50
B	Seminar – Based on the review of the literature		50

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

Recommended Books:

Al Vogel	Analytical Chemistry
Buranen L and Roy AM	Perspectives on Plagiarism and Intellectual Property in a Post-Modern World
Campbell RC	Statistics for biologists
Cassel P et al.	Inside Microsoft Office Professional
Chatwal and Chatwal	Instrumentation
Coleman P and Dyson P	Mastering Internets
CR Kothari	Research Methodology: Methods & techniques, 2008
Gilmore B	Plagiarism: Why it happens, How to prevent it?
Gralla P	How the Internet Works
Habraken J	Microsoft® Office 2003 All in One, Microsoft® Office 2010 In Depth
Kumar Anupa P	Cyber Law
R Panneerselvam	Research Methodology
Shelly GB, Vermaat ME, Cashman TJ	Microsoft® 2007: Introductory Concepts and Techniques
Snedecor GW & Cochran WG	Statistical Methods
Sokal RR & Rohlf FJ	Introduction to Biostatistics
Sood V	Cyber Law Simplified
Sumner M	Computers: Concepts &Uses
Upadhyaya and Upadhyaya	Instrumentation
Wardlaw AC	Practical Statistics for Experimental Biologists
White R	How Computers Work
Zar JH	Biostatistical Analysis


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