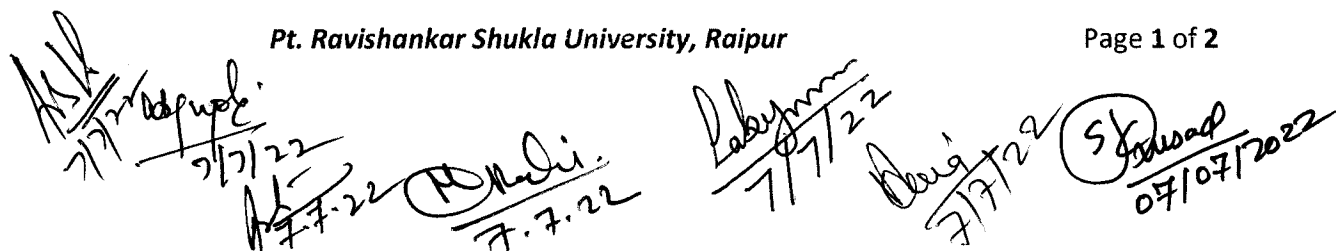


Pt. Ravishankar Shukla University, Raipur

School of Studies in Life Science

Syllabus for Ph.D. Course Work in Bioscience (2022-2023)			
Program code-Ph.D. BS (0409)			
One Semester			
There are Two papers; each with 100 maximum marks. The candidate must obtain 50% or more marks in each paper independently 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 (0409 A)	Research Methodology, Advanced Tools & Techniques, Quantitative Data Analyses and Computer Fundamentals	--	100
A	Research Methodology:	24	
	Introduction and Scope Research problem: Identification, Selection, Formulation of research objectives	2L	
	Research design: Components, Importance, Types	3L	
	Types of data, Data collection - Methods and Tools	2L	
	Research ethics, Institutional ethics committee	2L	
	Plagiarism – Pitfall, Regulation [UGC, ICMR, ICAR, DBT]	2L	
	Patents and IPR: Patent laws, process of patenting a research finding, Copy right, Cyber laws	3L	
	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	10L	
B	Advanced Tools & Techniques: Principle, protocol and application	28	
	Histological, Histochemical, Cytochemical, Immunohistological and Immunohistochemical techniques	8L	
	Chromatography – GLC & HPLC, Electrophoresis	5L	
	DNA laddering, DNA methylation, Comet Assay	5L	
	PCR, Real time PCR, DNA microarray, DNA sequencing, Protein sequencing	5L	
	Biosensors: DNA Biosensor, Immunosensors, Biosensors techniques, Biosensor applications.	5L	
C	Quantitative Data Analyses	20	
	Hypothesis testing	2L	
	Normal and Binomial distributions and their property	3L	
	Tests of significance: Student <i>t</i> -test, <i>F</i> -test, <i>Chi-square</i> test	5L	
	Correlation and Regression	4L	
	ANOVA – One-way and Two-way, Multiple-range test	6L	



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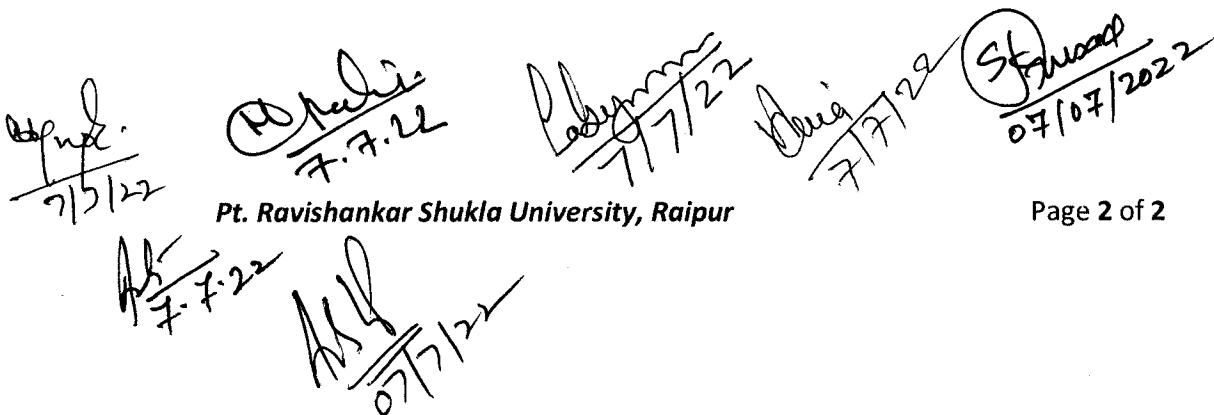
	D	Computer Fundamentals	08	
		Introduction to MS-Office software: MS-Word (Track change)	2L	
		MS-Excel, Power Point	3L	
		Features for Statistical data analysis using computers and software, Microsoft Excel Data Analysis ToolPak, SPSS	3L	

Paper-II Course code- Ph.D. BS (0409 B)	Review of Literature & Seminar		--	100
	A	Review of Literature – Writing review of literature in the area of the proposed Ph.D. work		50
	B	Seminar – Based on the review of 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 Buranen L and Roy AM Campbell RC Cassel P <i>et al.</i> Chatwal and Chatwal Coleman P and Dyson P CR Kothari Gilmore B Gralla P Habraken J Kumar Anupa P 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	Analytical chemistry Perspectives on Plagiarism and Intellectual Property in a Post-Modern World Statistics for biologists Inside Microsoft Office Professional Instrumentation Mastering Internets Research Methodology: Methods & techniques, 2008 Plagiarism: Why it happens, How to prevent it? How the Internet Works Microsoft® Office 2003 All in One, Microsoft® Office 2010 In Depth Cyber Law Research Methodology Microsoft® 2007: Introductory Concepts and Techniques Statistical Methods Introduction to Biostatistics Cyber Law Simplified Computers: Concepts & Uses Instrumentation Practical Statistics for Experimental Biologists How Computers Work Biostatistical Analysis
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