

**Pt. Ravishankar Shukla University,**

<b>Syllabus for Ph. D. Course Work in Biochemistry(2024-2026)</b>			
<b>Program code- Ph. D. BC (0410)</b>			
<b>One Semester</b>			
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.			
<b>No.</b>	<b>Name of paper</b>	<b>Lectures</b>	<b>Marks</b>
<b>Paper-I Course code- Ph.D.BS (0410A)</b>	<b>Research Methodology, Techniques in Biochemistry, Quantitative Data Analyses and The art of Presentation</b>	--	<b>100</b>
<b>A</b>	<b>Research Methodology:</b>	<b>24</b>	
	Introduction and Scope Research problem : Identification, Selection, Formulation of research objectives	2L	
	Defining the Research Problem - Identification of broad area of research; Review of literature using appropriate sources – reviews, patents, research papers, books; Utilization of tools for literature source – web and libraries; Defining a research problem	3L	
	Types of data, Data collection-Methods and Tools	2L	
	Ethics and Animal Ethics compliance and concerns; Genetically modified organisms;	2L	
	Guidelines for Ph.D. thesis. Patents and Intellectual property rights; Patent laws, process of patenting a research finding, Copy right, Cyber laws. Regulation [UGC, ICMR, ICAR, DBT]	5L	
	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>B</b>	<b>Techniques in Biochemistry:</b>	<b>28</b>	
	Principle, protocol and application		
	Enzyme assay, enzyme activity and specific activity determination. Cell disintegration and extraction techniques, separation of proteins by fractionation (ammonium sulphate, organic solvents).	8L	
	Chromatography–GLC & HPLC, Electrophoresis	5L	
	Spectroscopy and Spectrometry	2L	
	Concepts of vaccine development	3L	
	PCR, Real time PCR, DNA microarray, DNA sequencing, Protein sequencing	5L	
	Bioinformatics tools - Investigation of hypothesis through <b>in-silico</b> (software emulations) method.	5L	

Chairman (BOS) *M/L* 14/05/2024

Member (BOS) *Pandey*

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	<b>Dry Lab-</b> testing and analyses is performed using data, coding and computer systems. Modeling and analysis of experiments using software.		
<b>C</b>	<b>Quantitative Data Analyses</b>	<b>20</b>	
	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	
<b>D</b>	<b>The art of Presentation</b>	<b>08</b>	
	Development of writing skills – Plan of research, Research project, Research report, Research article and review, Term paper; Bibliography, referencing and footnotes; Creation of reference libraries; Plagiarism check; Development of Oral presentation skills – Planning, Preparation, Practice, Oration; Use of visual aids and software like MS Word, MS PowerPoint, MS Excel, End Note.	5L	
	Analytical software SPSS and Prism.	3L	

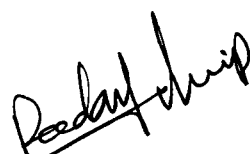
<b>Paper-II</b>		--	<b>100</b>
<b>Course code- Ph.D.BS (0410B)</b>	<b>Review of Literature &amp; Seminar</b>		
<b>A</b>	Review of Literature–Writing review of literature in the area of the proposed Ph.D. work		50
<b>B</b>	Seminar–Based on the review of literature		50

**Note: Research and Publication Ethics (2creditcourse)-As per guidelines of Pt. Ravi Shankar Shukla University, Raipur (C.G)**

**Recommended Books:**

1. Al Vogel Analytical chemistry
2. Buranen Land Roy AM Perspectives on Plagiarism and Intellectual Property in a Post- Modern World
3. Campbell RC Statistics for biologists
4. Casse l P *et al.* Inside Microsoft Office Professional
5. Chatwal and Chatwal Instrumentation
6. C R Kothari Research Methodology:Methods&techniques,2008
7. Gilmore B Plagiarism: Why it happens, How to prevent it?
8. Gralla PHow the Internet Works
9. Kumar Anup a P Cyber Law
10. R Panneer selvam Research Methodology
11. Shelly G B, Verma at ME, Microsoft 2007: Introductory Concepts and Techniques

  
 14/05/2024  
 Chairman (BOS)

  
 Member (BOS)