

# **SCHOOL OF STUDIES IN BIOTECHNOLOGY**

**Pt. Ravishankar Shukla University  
Raipur-492 010**

## **Syllabus**

### **Ph.D. Course Work in Biotechnology**

**Session  
2020-2021**

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9/11/2020

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**BoS approved syllabus for Ph.D. Course Work in Biotechnology  
(Academic session 2020-21)**

**School of Studies in Biotechnology**  
**Syllabus for PhD Course Work in Biotechnology (2020-21)**  
**One Semester**

There will be two papers; each with 100 marks maximum.

**Paper-I: Research Methodology, Advanced Tools & Techniques, Quantitative Data Analyses and Computer Fundamentals**

**Paper-II Review of Literature & Seminar**

<b>Paper- I: Research Methodology, Advanced Tools &amp; Techniques, Quantitative Data Analyses and Computer Fundamentals</b>		<b>Maximum Marks</b>
<b>A</b>	<b>Research Methodology</b> Essential steps in research: Identification, Selection of objectives, Research design: - Components, importance of literature collection, citation & indexing. IPR, Experimental error and control, Research Report Presentation-table, Figure, Formatting and typing	<b>25.0</b>
<b>B</b>	<b>Advanced Tools &amp; Techniques</b> Electrophoresis, HPLC, Microscopy, PCR, Biosensors: Types, Application of biosensor, Protein sequencing, DNA sequencing, Radioisotope Techniques & Computer Fundamentals in relation to Research –Software, Databases	<b>25.0</b>
<b>C</b>	<b>Quantitative Data Analysis</b> Measures of variability: Standard Deviation, Standard Error, Coefficient of Variation, Correlation and Regression, Test of Significant: t-test, chi-square test, Frequency distribution: Binomial and normal distribution	<b>25.0</b>
<b>D</b>	<b>Research and Publication Ethics</b> As per the UGC Notification [D.O. No.F.1-1/2018 (Journal/CARE), dated on December, 2019]. Enclosed ( <b>Annexure 01</b> )	<b>25.0</b>
<b>Paper-II: Review of Literature &amp; Seminar</b>		<b>Maximum Marks</b>
<b>A</b>	<b>Review of Literature- Writing review of literature in the area of the proposed Ph.D. program</b>	<b>50.0</b>
<b>B</b>	<b>Seminar-Based on the review of literature</b>	<b>50.0</b>

**Note:**

- There will be FOUR units (A, B, C & D) of 25 marks each. The pattern will include both objective (multiple-choice questions) and subjective (short answer, using 50 to 100 words) questions.
- The candidate should obtain 50% or more marks to qualify in the course work examination. Each answer paper will be assessed by two examiners independently.

## Annexure 01:

### Syllabus in detail

#### Theory

#### RPE 01: PHILOSOPHY AND ETHICS

1. Introduction to philosophy: definition, nature and scope, concept, branches
2. Ethics: definition, moral philosophy, nature of moral judgments and reactions

#### RPE 02: SCIENTIFIC CONDUCT

1. Ethics with respect to science and research
2. Intellectual honesty and research integrity
3. Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP)
4. Redundant publications: duplicate and overlapping publications, salami slicing
5. Selective reporting and misrepresentation of data

#### RPE03: PUBLICATION ETHICS

1. Publication ethics: definition, introduction and importance
2. Best practices/standards setting initiatives and guidelines: COPE, WAME, etc.
3. Conflicts of interest
4. Publication misconduct: definition, concept, problems that lead to unethical behavior and vice versa, types
5. Violation of publication ethics, authorship and contributorship
6. Identification of publication misconduct, complaints and appeals
7. Predatory publishers and journals

#### PRACTICE

#### RPE 04: OPEN ACCESS PUBLISHING

1. Open access publications and initiatives
2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
3. Software tool to identify predatory publications developed by SPPU
4. Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, etc.

#### RPE 05: PUBLICATION MISCONDUCT

##### A. Group Discussions

1. Subject specific ethical issues, FFP, authorship
2. Conflicts of interest
3. Complaints and appeals: examples and fraud from India and abroad

##### B. Software tools (2 hrs.)

Use of plagiarism software like Turnitin, Urkund and other open source software tools

#### RPE 06: DATABASES AND RESEARCH METRICS

##### A. Databases

1. Indexing databases
2. Citation databases: Web of Science, Scopus, etc.

##### B. Research Metrics

1. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score
2. Metrics: h-index, g index, i10 index, altmetrics

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