Ph.D. Course Work Syllabus

Department of Microbiology

Revised in 2014

Vidyasagar University
Midnapore 721102, West Bengal

Course Work for Ph.D. Programme in Microbiology

Total Marks: 200

Division of marks

Course Code	MARKS
Course I	Theoretical: 40 Practical: 10 Total: 50
Course II	Theoretical: 40 Practical: 10 Total: 50
Course III	Theoretical: 50 Total: 50
Course IV	Seminar & Review : 50 Total: 50
TOTAL	200

Structure of the Curriculum for Ph.D. Course work

Course Code	Course Name	Marks			Exam Time
		Theor.	Assign.	Total	
Course I	Research Methodology	40	10	50	2 hours
Course II	Computer Application and Statistical Methods	40	10	50	2 hours
Course III	Microbiology	50		50	2 hours
Course IV	Special Topics in Microbiology	50		50	2 hours

Course Contents

Course Code: Course I
Course Name: Research Methodology
Marks: Theoretical – 40 + Assignment (Practical) – 10 = 50

Group A: Theoretical – 40 marks

1.1 Research: definition, importance, meaning and characteristics. Steps in research.
1.2 Research problem: identification, selection and formulation.
1.3 Sampling: definition, theory, types, techniques and steps. Sample size, advantages and limitations of sampling.
1.4 Data: definition, sources and types. Data collection methods. Limitations and cautions. Analysis of data.
1.5 Review of literature and Bibliography.
1.6 Research report: types, contents, styles and steps in drafting. Editing the final draft and Thesis writing.

Group B: Assignment writing on any one (Practical) – 10 marks

(a) Review of articles
(b) Research proposal
(c) Sample design
(d) Data analysis

Course Code: Course II
Course Name: Computer Application and Statistical Methods
Marks: Theoretical – 40 + Assignment – 10 = 50

Group A: Theoretical – 20 marks

2.1 Operating system: latest version of WINDOWS, UNIX.
2.2 Internet: data uploading and downloading, e-mail and e-journal.
2.3 Database management System.
2.4 Office management: MS-Word, MS-Excel, MS-Power Point, and Latex.
2.5 Software Packages: SPSS, R-Statistics, MATHLAB, EMBOS, etc.

Group B: Theoretical – 20 marks

2.6 Normal probability distribution.
2.7 Test for goodness for fit for a proposed distribution.
2.8 Correlation of coefficient: simple linear, multiple linear, and partial.
2.9 Regression; simple, multiple and stepwise.
2.10 Experimental design. Analysis of variance: its model, one or two way ANOVA. Multiple comparison tests.

Group C: Assignment writing on any one (Practical) – 10 marks

(a) Power point presentation on a research topic.
(b) Analysis of data using MS-Excel.
(c) Analysis of data on given statistical methods.

Course Code: Course III
Course Name: Microbiology
Marks: 50

1. HPLC & GC-MS
2. Monoclonal antibody and its pharmaceutical application
3. MALDI – TOF & Protein crystallography
4. Nano technology & drug designing
5. Bioinformatics tools
6. Fermentation Technology and industrial microbiology
7. FACS
8. Recombinant DNA technology -cloning and transgenesis
9. Molecular technique used in microbiology
10. Tissue culture techniques
11. Quality control in microbial technology

Course Code: Course IV
Course Name: Special Topics in Microbiology
Marks: 50

Review and seminar on the relevant topics of research work