Syllabus for Ph.D. Course work

Department of Bio-Medical Laboratory Science and Management

Vidyasagar University

2016

Course Structure

Course	Subject	Full Marks	Unit	Distribution of Marks	Credit
Course I	Research Methodology	50	I	Written: 40 (Exam Hours: 2)	16
			II	Assignment writing on anyone (Practical): 10 Marks	
Course II	Computer and Bio-statistics	50	I	Written: 20	16
			II	Written: 20 (I+II, Exam Hours: 2)	
			III	Assignment writing on anyone (Practical):10 marks	
Course III	Research Techniques & Bio-safety	50		Written (Exam Hours: 2)	20
Course IV	Review Paper	50		Assignment to be Submitted* [**A Literature Review or data generated on the related research topic be submitted by each scholar duly signed and recommended by the Supervisor*]	

Course I
Paper 101: Research Methodology
Credit Hours:
Marks: 50
[Written: 40 (Exam Hours: 2) +
One Assignment: 10]

Unit I [Marks 40]

1. Research and its general concept

2. Research Hypothesis Definition, Concept, Types

3. Research Problems, Criteria of a good Research Problem, Impact of good Research Problem on Project formulation

4. Classification of research: Basic Research, Applied Research, Action Research, Experimental Research, Historical research, Quantitative and Qualitative Research, Quasi Research

Unit II: Assignment writing on any one (Practical) – 10 marks

- Review of articles
- Research proposal
- Sample design
- Data analysis

Course II
Paper 102: Computer and Bio-Statistics
Credit Hours: 16
Marks: 50 [Written: 40 (Exam Hours: 2) + One Assignment: 10]

Unit: I [Marks: 20]

- **Data Presentation:** Numerical and graphical presentation of data
- **Descriptive Statistics:** Measures of central tendency and measures of dispersion
- **Inferential Statistics:**
  - Testing of significance of hypothesis by student's t-test, paired t-test, and Fisher's t-test
  - Determination of correlation coefficient between two variables
  - Regression analysis: simple, multiple, and stepwise
  - Analysis of variance (ANOVA) and post-hoc tests (Dunnett and Tukey)
- **Statistical Modelling:** Basics of statistical modelling

Unit: II [Marks: 20]

- **Basics of Computer:**Basics of software and hardware, RAM and ROM
- **Productivity Software:** Office management (MS-Word, MS-Excel, MS-PowerPoint)
- **Research Software:**
  - Image analysis: ImageJ, Image Lab Software
  - Bioinformatics: FASATA, BLAST
  - Statistical Software: SPSS, origin
- **Miscellaneous:**Adobe software (e.g., Photoshop, Illustrator), graphical presentation, PDF editing, publication proof correction

Unit III: Assignment writing on any one (Practical) – 10 marks

· Powerpoint presentation on a research topic.

· Analysis of data using MS Excel.

· Analysis of data on given statistical methods.

Course III
Paper 102:Research Techniques & Bio-safety
Credit Hours: 20
Marks: 50 [Written (Exam Hours: 2)]

Research Techniques

1. Immunohistochemistry
2. PCR and RT PCR
3. Gene sequencing study
4. In-situ study
5. Tunel Study
6. Amino acid serum study
7. Receptor assay technique
8. Signal transduction by mobile model and fix model receptor assay
9. Immuno-suppressing technique.
10. Gene mutation and its evaluation

Biosafety

1. National Health Policy
2. National safety for healthcare
3. Laboratory management/ Personal/ Quality

Course IV
Paper 104: Review Paper
Marks: 50
Assignment to be submitted

1. Review writing (soft and hard copy) preference would be given to the P.h.D. work

Introduction, Aims of Objectives, Review & Literature, Discussion, Summary and Conclusion, References.

2. Power slide submission on any topic soft and hard copy