

Proposed Syllabus for Ph.D. Course Work (Pharmacy)

S. No.	Subject	Credit
1.	Research Methodology	5
2.	Computer Applications	3
3.	Review of literature	3
4.	Comprehensive Viva-voce	4
	Total Credit	15

1. RESEARCH METHODOLOGY

- Unit 1** Introduction to research methodology: Meaning of research, objectives of research, motivations in research, types of research, research approaches, significance of research, research process. Defining a research problem, selecting the problem, necessity of selecting the problem, techniques in defining the problem. Meaning and need of research design, features of good research design, types of research design, principle of experimental research design, development of a research plan.
- Unit 2** Data collection: Methods of primary and secondary data collection, selection of appropriate method of data collection. Coding, editing and tabulation of data, charts and diagrams used in data analysis, bar and pie diagrams and their significance.
- Unit 3** Scientific Communication: Meaning and significance of report writing, types of reports, steps in report writing, layout of the research report, precautions in writing research report, writing of thesis report. Importance of publishing a research paper, writing of research paper and review article.
- Unit 4** Drug Regulatory Affairs: Indian Patent Act 1970 and its amendments, Concepts of IPR, criteria for granting patents, and filing an Indian patent. Patent infringement. INDA, NDA, ANDA filing, Para I, II, III and IV filing. Hatch-Waxman amendments. Introduction to patent search. OECD guidelines for chemical testing pertaining to use as drug, related substances, excipients, toxicity etc. and ICH guidelines.
- Unit 5** Pharmaceutical Experimental Design: Development, validation and optimization of analytical methods based on UV, HPLC and HPTLC. Experimental designs for animal experiments, statistical analysis of experiments using laboratory animals, sample size determinations in animal experiments, controlling variability in animal experiments, experimental methodology in clinical trials. Experimental design in planning of

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synthesis. Statistical experimental designs for development and optimization of formulations.

2. COMPUTER APPLICATIONS

- Units 1** MS WORD: Features and applications related to presentation of text in suitable format and saving the data for future applications. Practical knowledge of MS Word to type the script, insert tables, figures and graphs to prepare thesis and research papers in presentable format.
- Unit 2** MS EXCEL: Construction of spreadsheets from the experimental data. Design and application of formulae for calculations and their applications to the experimental data. Use of statistical tools, preparation of graphs, histograms, charts and diagrams.
- Unit 3** MS POWER POINT: Preparation of power point presentations based on the topic of research. Insertion of figures, graphs, charts in presentation. Preparation of scientific posters for presentations. Use of various presentation techniques.
- Unit 4** USE OF SPSS & INTERNET APPLICATIONS: Method of preparing data sheets and entering the data according to its characteristics. Use of various statistical tools on SPSS. Exploring various websites and search engines for collecting quality literature and secondary data related to research work.
- UNIT 5** STATISTICAL TOOLS: Measures of Central tendency and Dispersion. Probability distribution- Normal, Binomial and Poisson distribution. Parametric and Non-parametric statistics. Confidence interval, Errors. Quantitative Techniques: Levels of significance, Regression and Correlation coefficient. Use of Computers in Quantitative analysis.

3. REVIEW OF LITERATURE

The research scholar will review the important studies conducted at the national and international level either by individuals or organizations including government agencies and present the methodology adopted and important findings emerged from these studies. Based on this review of literature the researcher will identify the research gaps existing in the available literature and thus justifying the need for the

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present study.

The researcher is supposed to follow the pattern adopted in the standard national and international research journals.

Respective supervisors will evaluate literature review submitted by the student and recommend the topic for registration.

4. COMPREHENSIVE VIVA

As per the provisions of Ordinance 31, a student will appear for comprehensive viva.
