

ORIENTAL UNIVERSITY, INDORE

SYLLABUS

OF

COURSE WORK OF Ph.D. IN PHARMACY

ORIENTAL UNIVERSITY, INDORE

SCHEME OF EXAMINATION

COURSE WORK OF Ph.D. (PHARMACY)

S. No.	Subject code	Subject name	Theory			Total Marks	Total credits	Remarks
			End sem	*Sessional exam (Best of two tests)	Assignments			
1	PDPH-101	Research Methodology	60	20	20	100	10 One credit refers to 15 hrs teaching in theory	
2	PDPH-102	Quantitative Techniques and computer application	60	20	20	100		
3	PDPH-103	Review of Literature	60	20	20	100		
						300	10	

*Internal assessment

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SUBJECT 1- PDPH- 101: RESEARCH METHODOLOGY

Course Objectives: The objectives of the course are to equip the students with the concept and methods of Pharmaceutical Research. The students will be able to plan, design and carry out Pharmaceutical research using scientific methods and prepare research report(s) / paper(s).

COURSE CONTENT:

UNIT -1

Introduction to Research Methodology: 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

Statistical analysis: Basic statistics, Correlation and regression. Testing hypothesis: sampling of attributes, sampling of large and small variances with bussiness applications. Chi-square test, analysis of variance (ANOVA), design of experiments, statstical quality control (including six-sigma).

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.

SUBJECT 2- PDPH- 102: QUANTITATIVE TECHNIQUES & COMPUTER APPLICATION

OBJECTIVE

The candidate should gain sufficient practical knowledge for use of analytical Instruments, computer and computer software for use in research work.

COURSE CONTENT:

UNIT-I

1. Principles, methods, interpretation of data and pharmaceutical applications of UV-Visible, IR and FTIR spectroscopy.

UNIT-II

2. Principles, methods, interpretation of data and pharmaceutical applications of NMR spectroscopy and Mass spectrometry.

UNIT-III

3. Principles, methods, interpretation of data and pharmaceutical applications of various analytical techniques like GC, HPLC, HPTLC, and Flash Chromatography.

UNIT-IV

4. Principles, Methods, Interpretation of Data and application of LCMS and GCMS.
5. Analytical and bioanalytical methods validation using ICH Guidelines.

UNIT-V

6. Computer application in Research-
 - Ms-excel: Construction of spreadsheets from the experimental data. Preparation of graphs, histograms, charts and diagrams.
 - 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.
 - Use of software-SPSS and Internet applications: Exploring various websites and search engines for collecting quality literature and secondary data related to research work.
 - MS power point: Preparation of power point presentations based on the topic of research. Preparation of scientific posters for presentations

SUBJECT 3- PDPH-103: REVIEW OF LITERATURE

OBJECTIVES: Understand the basis philosophical assumptions underlying research literature reviews for different purposes, including what, why, when, for whom and how? Be able to manage to process of conducting a literature review, including reading, note-taking strategies, coding/reference management, synthesizing and writing literature results. Be able to write a quality literature review with variations in references.

COURSE CONTENT:

UNIT-I

Understanding Review of literature: Relevance, Approach and Applications; Developing an outline for the literature review; Formulate key questions for review.

UNIT-II

Organizing a literature search: Identify which literature base to search; Developing the theoretical basis for the Research Question; Searching for, locating and organizing relevant professional.

UNIT-III

Conducting the Review: Abstract relevant information from appropriate studies in a systematic manner; Critically reviewing the literature; Rate the scientific quality of each study and the level of evidence for each question.

UNIT-IV

Synthesizing the Review: Create evidence tables and summary tables; Interpret the pattern of evidence in terms of strength and consistency; Summarize the studies' findings.

UNIT-V

Writing the review: Writing a first draft; Writing references and citations; Obtaining, giving, and making productive use of feedback; the redrafting process; Professional formatting.