BANARAS HINDU UNIVERSITY, INSTITUTE OF MEDICAL SCIENCES

FACULTY OF MEDICINE

Outlines for Ph.D Course Work

I FIRST SEMESTER

1 **FACULTY LEVEL COURSES** **6 Credits**

(1 credit = 14 hr. teaching for the entire semester)

These courses are broadly divided into 6 credits

S.NO	Name of the topic	Hours
CR-1	1) **Research Methodology and Biostatistics** i) Identification of problem ii) Research question and hypothesis generation iii) Sample size determination iv) Sampling techniques v) Graphical presentation vi) Numerical summarization of data vii) Tests of significance – Parametric and non-parametric	**14**
CR-2	2) **Literature search and Library data base** i) Introduction to Database ii) Literature search iii) Pubmed search iv) Scopus / Web of science, Science direct & getting full articles v) Use of google scholar vi) Searching for systematic reviews, metaanalysis and introduction to Corchane library	**14**
CR-3	**3) Computer Applications, Bioinformatics and Ethics in Research** i) Data processing: Data entry, Data cleansing, Data mining, ii) Introduction to Statistical package iii) Project Work iv) Bioinformatics: Part I and Part II v) Ethics in Research	**04** **04** **02**

	- Human Research - Clinical Trial - Animal Research - Stem Cell Research & Therapy - Publication Ethics	**04**

S.NO	Name of the topic	Hours
CR-4	**General Laboratory Techniques I** (Common for all students)	
	1 Quality Assurance - Good Laboratory Practices	**02**
	2 Microscopy - Compound Microscopy - Special Microscopes: - Confocal, Fluorescent Electron, Dark ground, Phase contrast	**03**
	3 Sterilization and Disinfection	**01**
	4 Universal safety precautions & Disposal of waste	**02**
	5 Immunological techniques i) Introduction to immunology ii) Immuno assays	**02**
	6 Cell culture techniques	**01**
	7 Histochemical techniques i) Introduction to histochemistry ii) Immunohistochemical techniques	**02**
	8 Radio isotopes: Uses and safely precautions / Radiation safety measures	**01**
CR-5	**General Laboratory Techniques Part II** **9 Centrifugation and homogenization**	**04**
	10 Spectrophotometry & Flowcytometry	**04**

	11 Chromatography, HPLC and Electrophoresis- Principles and applications **Therapeutic Drug Monotoring** **12 DNA technology** i) Isolation of DNA ii) Isolation of RNA iii) Primer designing and PCR iv) Cloning and restriction analysis v) DNA sequencing and others	
	13 Proteomics	**02**
	14 Methods in Social Science Research : Psychology & Sociology	**04**
CR-6	**15 Scientific writing and communication** - Abstract - IMRAD – Pattern scientific - Thesis / Report writing - Online submission / LATEX for publication - Referencing style and pattern **Practical Assignments**	**14**

II <u>SECOND SEMESTER</u> (BY THE DEPARTMENT) 150 Marks

A Research topic based courses **(by supervisor – 3 x 25)** 75 Marks

C Preparation of Research Plan Proposal (write up) and Presentation and **d**efense (synopsis – 3 x 25) 75 Marks

<u>The candidate has to secure 50% marks in aggregate</u>.