MGM INSTITUTE OF HEALTH SCIENCES

(Deemed to be University u/s 3 of UGC Act, 1956)

Grade 'A' Accredited by NAAC

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CHOICE BASED CREDIT SYSTEM

(CBCS)

(with effect from 2018-19 Batches)

Coursework for

Ph.D Programmes
(Doctor of Philosophy)

Approved as per BOM-53/2018, Resolution No. 4.5.5 Dated 19/05/2018

Amended History

1. Approved as per BOM-53/2018, Resolution No. 4.5.5 Dated 19/05/2018

NAME: Ph. D. course work

AIMS OF THE PROGRAM

The course intends to build knowledge and skills of students in research. The aim of course is to learn how research is being done, and how to apply a great number of statistical techniques, draw conclusions from those, and determine what statistical technique would be appropriate for a given dataset and/or research design. In this course, here the emphasis lies on interpretation and communication of result. In other words, students can learn how to take a step back and think about what they can conclude from a certain experiment or statistical test. The course intends to build knowledge and skills of students in statistics and basic scientific competence.

Learning objectives and expectations

- To defend the use of Research Methodology
- To judge the reliability and validity of experiments
- To be able to perform exploratory data analysis
- To be acquainted with use of parametric and non-parametric tests (and interpreting their results).
- To be able to draw conclusions from categorical data
- Using computer-intensive methods for data analysis
- Drawing conclusions from statistical test results

Duration of Study: The duration of the study for PhD course work is 34 hours per week spread over for six months.

Instruction Methods: Lectures in this course are meant to be a complement to the knowledge student can obtain by reading the textbook and related literature from various sources.These objectives will be achieved by means of lectures, interactive sessions, group discussion, exercise or solving the problems, hands on training on computers and practical for analyzing the data using SPSS (version 24.0) and interpretation of output.Students will practice their skills by making use of datasets

DISTRIBUTION OF MARKS AND CREDIT HOURSOF COURSE WORK

Syllabus Ref. No.	Subject	Credit	Hours per week	Marks
PH101	Research Methodology	3	3	50
PH 102	Quantitative and Qualitative Analysis	2	2	50
PH 103	Computer Application	2	2	50
*GE 105	Bioethics, Biosafety, IPR & Technology transfer	2	2	50
*GE 106	Disaster management and mitigation resources			
*GE107	Human rights			
PH 104	Preparation for protocol of PhD thesis	5	15	100
	Total	**14**	**24**	**300**

Note: - * GE: Generic Elective (Any one)

Assessment Methods
FINAL THEORY marks will be 50 Marks (University Exam)

Section	Question types	Marks distribution	Marks allotted per section
Sec A	SAQ	6 x 5 M	30
Sec B	LAQ	2 x 10 M	20
			Total = 50 M

Assessment of 'Preparation for protocol of PhD thesis'

Heading	Marks
Subject Knowledge	20 M
Concept and Methodology	20 M
Interpretation Skill and Discussion	20 M
Question and Answer	20 M
General Awareness, Manners, Personality, Enthusiasm	20 M
Total	**100M**

Name of the Programme	**Ph.D. Course Work**
Name of the Course	**Research Methodology**
Course Code	**PH-101**

Teaching objective	This course is to impart student's knowledge and skills on the principals and methods of Biomedical research to be used in health sciences analysis of various disease, health and injuries. The purpose is to equip students with the skill to prepare a scientific research proposal with application of various bio statistical techniques and skills learnt during the course and also to conduct social science research with the help of hospital data.
Learning outcomes	To equip the students with the skill of writing research proposal and report, purpose of a dissertation content of report/ dissertation critical review of research report and journal article Introductory section, methodology adopted, Development of research tools Protocol preparation Analysis and inferences, Summary, conclusions and recommendations. References/Bibliography, Appendices, Footnotes. research Ethics, general principles informed consent and human subject protection ICMR ethical guidelines for biomedical research on human participants.

Sr.No.	Topics
1	Introduction to Research: Meaning of research, Definition, Scope, Limitations of research, and types of research objectives of Research, Motivation in Research, Research Process, Research Methods vs. Methodology, criteria for good research.
2	Scaling techniques: Concept, types of Scales, rating Scales & ranking scales, Construction techniques, multi dimensional scaling. Evaluation Strategies. Types of variable. and importance
3	Formulating a Research Problem , Definition and Process, Conceptualizing a Research Design, Need for research Design, Meaning and features of research design, Ethics and Ethical Practices in Research, Quality Control: Overview and Quality Control Tools, Quality Assurance.
4	Review of Literature: How to review the Library Resources and Information Service, e-resources and searching, how to write references in the thesis and research papers. Writing a Research Proposal and Writing a Research Report and research paper.What is Plagiarism? How to reduce and avoid plagiarism.
5	Tools & Methods of Data Collection, Conceptual Framework: Types of data, primary and secondary data, designing of Questionnaire, Methods of data collection, importance of Pilot study (with example)

Name of the Programme	Ph.D. Course Work
Name of the Course	Quantitative & Qualitative Analysis
Course Code	PH-102

Teaching objective	To equip the students with, tools of data representation, sampling techniques, sample size estimation and to provide concepts of design weight sampling and non-sampling errors, testing of hypothesis , Concepts of tests of significance, to make them understand a great number of statistical techniques, draw conclusions from those, and determine what statistical technique would be appropriate for a given dataset and/or research design. Students should be able to identify which test to be applied and emphasis lies on interpretation and communication of result.
Learning outcomes	Student is expected to understand the essential design issues of randomized and apply statistical principles concepts and methods for analysis of data. Students will be able to utilize fundamentals tools for data presentation and use of statistical tests for testing of hypothesis; data analysis and interpretation of results using various non parametric and parametric methods including diagnostic test.

Sr.No.	Topics
1	DATA PRESENTATION: Classification and tabulation of data, Diagrammatic and graphical representation of data. Construction of univariate and bivariate frequency distributions. escriptive statistics Measures of central tendency (mean, median, mode) Measures of Dispersion (Range, Inter quartile range, variance, standard deviation, coefficient of variation), Group data: grouped mean, grouped variance.
2	DESCRIPTIVE STATISTICS: Measures of Central Tendency: Mean, Median, Mode, skewness and Kurtosis Measures of Dispersion: Standard Deviation, Standard Error, Coefficient of variation, Skewness and kurtosis: Concept and Discussion (not necessarily the formulas or equations, but at least the intuition behind it).
3	SAMPLING DESIGNS AND TECHNIQUES: Concepts of statistical population and a sample, sample size decision, Data Collection methods, Secondary and primary Data, Designing questionnaire, Data Preparation: Tabulation, Coding, and Editing. Types of Sampling Methods.
4	CORRELATION AND REGRESSION: Linear and multiple Correlation and Regression (Introduction, Definition, types of correlation, Rank correlation, Limitation of Correlation, Regression coefficient, Lines of regression, Properties and example with solutions)
5	TESTING OF HYPOTHESIS: Assumption of parametric test, General Concepts, Statistical Hypothesis, confidence interval, Two sided tests of hypothesis, One sided tests of hypothesis, Types of error, Power.
6	TESTS OF SIGNIFICANCE I - Chi Square test: Definition, concept and formula. Chi Square test: for goodness of fit, population variance, for attributes (2x2 contingency table), Yates correction method. (example with solution and practical on SPSS)
7	TESTS OF SIGNIFICANCE II *Parametric tests*: t – test, (independent, paired, unpaired), z tests, F tests , one way ANOVA, two way ANOVA, Problem solving manually and using spreadsheet applications. (example with solution and practical on SPSS)
8	TESTS OF SIGNIFICANCE – III : Non-parametric tests: (Sign test, Wilcoxon rank sum test, Mann-Whitney Test, Krushkal Whllis test, Friedman test), transforming data to create Gaussian Distribution (example with solution and practical on SPSS)

9	DIAGNOSTIC TESTS: Sensitivity and Specificity, Application of Bayes' Theorem, ROC curve, Calculation of Prevalence. The relative risk and the odds ratio and further application, Test-retest, validity and reliability test.

Name of the Programme	**Ph.D. Course Work**
Name of the Course	**Computer Applications**
Course Code	**PH-103**

Teaching objective	This course will focus on what is computer? How does it function? How does it help in research? Computer is immensely used in research. Researchers are using it for conducting their research effectively. Problems can be solved with the help of computers rapidly. Computers are very useful and important particularly in case of large sample. It saves the time of researcher and gives more accurate and fast results. Emphasis will be given on interpreting and understanding of the results obtained from these statistical package viz SPSS (version 24) and computer outputs as well as analysis interpretation & reporting of results.
Learning outcomes	Students are able to upgrade their computer skills and this course will be very useful for conducting their research successfully. Students will analyze the research data with the help of computers rapidly. Students will be able to generate more accurate and fast results. They will be able to interpret and understand the results of statistical models/computer outputs its interpretation.

Sr.No.	Topics
1	COMPUTER APPLICATIONS: Introduction, its role in research, Computer technology and its importance.
2	Data Communication and Networks :Data communication concepts, Local area network, internet, intranet, Extranet, Web e- mails, search engine- enterprise: E- Communication and E-Collaboration.
3	Spreadsheet tool: Introduction to spread-sheet applications, features & functions, using formulae & functions, data storing, features for statistical data analysis, generating charts/graphs & other features. [Tools: Microsoft Excel, Open office and similar or other advanced tools] Presentation tool: Introduction to presentation tool, features & functions, creating presentations, customizing presentation. [Tools used: Microsoft PowerPoint, Open Office/other tool]
4	**SPSS (Statistical Package for Social Sciences)** Introduction to SPSS, data entry, coding, assigning the labels to data, preparation of input files, analysis of data in understanding of statistical test, Analyzing the the data and interpretation of output. How to write the conclusion

Name of the Programme	Ph.D. Course Work
Name of the Course	Bioethics, Biosafety, IPR& Technology Transfer
Course Code	GE 105

Teaching objective	The students will gain structural knowledge on: • To list the routes of exposure for a pathogen to a human being . • To demonstrate and assess the proper use of PPE, best practices,biological containment, and be prepared to safely conduct research • To identify the role of the Biosafety Professional inBiomedical Research Laboratories • To appreciate the importance of assertion in interpersonal communication and beintroduced to some key assertion strategies • To understand the interpersonal nature of giving feedback, receiving criticism and resolving conflicts. • To establish attentive listening as an assertion strategy
Learning outcomes	Students will learn to: • Effectively manage the health and safety aspects of a biological laboratory. • Give reliable, professional and informed advice and information to colleagues and managers. • Help to ensure that their institution complies with relevant legislation, liaise effectively with enforcing authorities and be aware of the penalties for failing to comply. • Build a context of understanding through communication. • Mediate between other conflicting parties. • Exhibit de-escalatory behaviors in situations of conflict. • Demonstrate acknowledgment and validation of the feelings, opinions, andcontributions of others.

Sr.No.	Topics
1	**Ethics***: Benefits of biotechnology, ELSI of Bioscience, recombinant therapeutic products for human health care, genetic modifications and food consumption, release of genetically engineered organisms, applications of human genetic rDNA research, human embryonic stem cell research.
2	**Patenting:**Patent and Trademark, Bioscience products and processes, Intellectual property rights, Plant breeders rights, trademarks, industrial designs, copyright biotechnology in developing countries. Biosafty and its implementation, Quality *control in* Biotechnology. Introduction to quality assurance, accreditation & SOP writing :Concept of ISO standards and certification , National regulatory body for accreditation, Quality parameters, GMP & GLP, Standard operating procedures, Application of QA in field of genetics, Data management of clonical and testing laboratory

3	Funding of biotech business(Financing alternatives, VC funding, funding for Bioscience in India, Existrategy, licensing strategies, valuation), support mechanisms for entrepreneurship (Bio-entrepreneurship efforts in India, difficulties in India experienced, organizations supporting biotech growth, areas of scope, funding agencies in India, biotech policy initiatives), Role of knowledge centers and R&D (knowledge centers like universities and research institutions, role of technology and up gradation)

Reference Books:

1. www.pdfdrive.net
2. www.khanacademy.org
3. www.acadeicearths.org
4. www.edx.org
5. www.open2study.com
6. www.academicjournals.org

Name of the Programme	**Ph.D. Course Work**
Name of the Course	**Disaster Management and Mitigation Resources**
Course Code	**GE 106**

Teaching objective	The course will uplift about: - Understand and appreciate the specific contributions of the Red Cross/Red Crescent movement to the practice and conceptual understanding of disaster management and humanitarian response and their significance in the current context. - Recognize issues, debates and challenges arising from the nexus between paradigm of development and disasters. - Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives. - Respond to disaster risk reduction initiatives and disasters in an effective, humane and sustainable manner.
Learning outcomes	At the successful completion of course the student will gain: - knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences. - Knowledge and understanding of the International Strategy for Disaster Reduction (UN-ISDR) and to increase skills and abilities for implementing the Disaster Risk Reduction (DRR) Strategy. - Ensure skills and abilities to analyse potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.

Sr.No.	Topics
1	**Introduction:** Definition of Disaster, hazard, global and Indian scenario, general perspective, importance of study in human life, Direct and indirect effects of disasters, long term effects of disasters. Introduction to global warming and climate change.
2	**Natural Disaster and Manmade disasters:** Natural Disaster: Meaning and nature of natural disaster, Flood, Flash flood, drought, cloud burst, Earthquake, Landslides, Avalanches, Volcanic eruptions, Mudflow, Cyclone, Storm, Storm Surge, climate change, global warming, sea level rise, ozone depletion Manmade Disasters: Chemical, Industrial, Nuclear and Fire Hazards. Role of growing population and subsequent industrialization, urbanization and changing lifestyle of human beings in frequent occurrences of manmade disasters.
3	**Disaster Management, Policy and Administration:** Disaster management: meaning, concept, importance, objective of disaster management policy, disaster risks in India, Paradigm shift in disaster management.

4	**Financing Relief Measures:**Ways to raise finance for relief expenditure, role of government agencies and NGO's in this process, Legal aspects related to finance raising as well as overall management of disasters. Various NGO's and the works they have carried out in the past on the occurrence of various disasters, Ways to approach these teams. International relief aid agencies and their role in extreme events.
5	**Preventive and Mitigation Measures:**Pre-disaster, during disaster and post-disaster measures in some events in general structural mapping: Risk mapping, assessment and analysis, sea walls and embankments, Bio shield, shelters, early warning and communication Non Structural Mitigation: Community based disaster preparedness, risk transfer and risk financing, capacity development and training, awareness and education, contingency plans. Do's and don'ts in case of disasters and effective implementation of relief aids.

Reference Books:

1. ShailendraK.Singh : Safety & Risk Management, Mittal Publishers
2. J.H.Diwan : Safety, Security & Risk Management,APH
3. Stephen Ayers &Garmvik: Text Book of Critical Care, Holbook and Shoemaker
4. www.pdfdrive.net
5. www.khanacademy.org
6. www.acadeicearths.org
7. www.edx.org
8. www.open2study.com
9. www.academicjournals.org

Name of the Programme	**Ph.D. Course Work**
Name of the Course	**Human Rights**
Course Code	**GE 107**

Teaching objective	- Students will comprehend on: - A branch of public international law, and relevant juridical mechanisms at global as well as regional levels, - Human rights as an object of study in history, philosophy and the social sciences, as well as a practical reality in national and international politics. - Different forms of promoting and implementing human rights, domestically as well as on the international level. - The role of human rights in contemporary issues relating to terrorism, religion, ethnicity, gender and development. - Cholarly values such as transparency, impartiality, clarity, reliance and the importance of sound reasoning and empirical inference.
Learning outcomes	Student will be able to virtue: - Identify, contextualise and use information about the human rights situation in a given country - critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies - analyse a country's situation or an international situation in terms of human rights and formulate human rights-based initiatives and policies - Promote human rights through legal as well as non-legal means. - Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way

Sr.No.	Topics
1	Background: Introduction, Meaning, Nature and Scope, Development of Human Rights, Theories of Rights, Types of Rights
2	Human rights at various level : Human Rights at Global Level UNO, Human Rights – UDHR 1948 – UN Conventions on Human Rights: International Covenant on civil and Political Rights 1966, International Convent on Economic, Social and Cultural Right, Racial Discrimination -1966 International, Instruments: U.N. Commission for Human Rights, European Convention on Human Rights.
3	Human rights in India : Development of Human Rights in India, Human Rights and the Constitution of India, Protection of Human Rights Act 1993- National Human Rights Commission, State Human Rights Commission, Composition Powers and Functions, National Commission for Minorities, SC/ST and Woman
4	Human Rights Violations: Human Rights Violations against Women, Human Rights Violations against Children, 35 Human Rights Violations against Minorities SC/ST and Trans-genders, Preventive

	Measures.
5	Political issues: Political Economic and Health Issues, Poverty, Unemployment, Corruption and Human Rights, Terrorism and Human Rights, Environment and Human Rights, Health and Human Rights

Reference Books:
1. JagannathMohanty Teaching of Human sRights New Trends and Innovations Deep & Deep Publications Pvt. Ltd. New Delhi2009
2. Ram Ahuja: Violence Against Women Rawat Publications JewaharNager Jaipur.1998.
3. SivagamiParmasivam Human Rights Salem 2008
4. Hingorani R.C.: Human Rights in India: Oxford and IBA New Delhi.

Name of the Programme	**Ph.D. Course Work**
Name of the Course	**Preparation For Protocol of Thesis**
Course Code	**PH 104**

Format for protocol

1. Name of student :
2. Batch of Registration:
3. Place of Research Work:
4. Department and Subject Area:
5. Name, Designation and Department of Guide:
6. Title of Research Project:
7. Summary of the Proposed Research work and Expected Outcome (about 300 words) :
8. Literature Review (National):
9. Literature Review(International):
10. Lacunae (Rationale) in understanding the related subject :
11. Objectives :
12. Research Methods
13. Research Methodologies
14. Expected Outcome :
15. What new information will emerge?
16. Budget (Fellowship, Consumables, Equipments etc.):
17. Source of Funding:
18. Initiatives to Generate Funding:
19. References cited :
20. The presentation should have slides base on the above (1-19) points

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