



MGM INSTITUTE OF HEALTH SCIENCES)

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

Grade "A" Accredited by NAAC

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SYLLABUS

FOR

The Ph.D. Course Work Choice Based Credit System (CBCS)

(Academic Year 2020 - 21)

Approved in BOM-63/2021 dated 17.02.2021

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. The course intends to build knowledge and skills of students in statistics, basic scientific competence, basic Philosophy of Science and Ethics, Research Integrity and Publication Ethics

Ph. D Course work guidelines

As per UGC Regulations 2016:

UGC Circular D.O. No.F.1-1/2018(Journal/CARE) dated December, 2019

Minimum Standards and procedure for Award of Ph.D. Degree, after admission in Ph. D, a research scholar shall be required to undertake course work for a minimum period of one semester.

All candidates admitted to the PhD Program shall be required to complete the course work prescribed by the Department during the initial one or two semesters.

The women candidates may be allowed a relaxation of two terms/semesters in case of maternity.

However, if the student is not in a position to complete the course work in the prescribed time limit as above, due to genuine reasons, may file an appeal and on the recommendation of the RAC, the VC (Vice Chancellor) may grant extension up to additional one semester.

Failing to complete the course work in the extended period may lead to cancellation of admission.

All candidates admitted to the Ph.D. program shall be required to complete the Ph.D. course work prescribed by MGMIHS .

Duration of the course work:

The duration of PhD course work will be 240 hours spread over one semester

Course Structure:

Total Credits Marks -13

Total hours -240

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.

Attendance: 75% attendance for coursework classes in compulsory.

Award of Grade:

A PhD scholar has to obtain a minimum of 50% of marks or its equivalent grade in the UGC 7- point scale (or an equivalent grade/CGPA in a point scale wherever grading system is followed) in the course work in order to be eligible to continue in the program and submit the thesis. - Maximum two chances shall be given to the scholar for clearing the coursework, failing to which may lead to cancellation of admission.

DISTRIBUTION OF MARKS AND CREDIT HOURS OF COURSE WORK

Code No.	Name of Course	Credit	Hours per week	Total Hours per semester	Marks
PH101 T	Research Methodology & Biostatistics a) Research Methodology b) Bioethics, Bio-safety, IPR & Technology Transfer c) Quantitative Qualitative Analysis d) Computer Application	3	4	60	100
PH102 T	Research and Publication Ethics a) Philosophy and Ethics b) Scientific Conduct c) Publication Ethics d) Open Access Publishing e) Publication Misconduct f) Databases and Research Metrics	2	2	30	50
GE 106 T	Disaster management and mitigation resources	2	2	30	50
GE107 T	Human rights				
PH 104 P	Preparation of PhD Thesis Protocol and Presentation in RRC	6	8	120	100
	Total	13	16	240	300

5. CBCS Grading System - Marks Equivalence Table:

5.1 Table 2: Grades and Grade Points:

Letter Grade	Grade Point	% of Marks
O (Outstanding)	10	86-100
A+ (Excellent)	9	70-85
A (Very Good)	8	60-69
B (Good)	7	55-59
C (Above Average)	6	50-54
F (Fail) / RA (Reappear)	0	Less than 50
Ab (Absent)	0	-
NC - not completed	0	-
RC - Repeat the Course	0	0

5.2 Table 3: Cumulative Grades and Grade Points:

Letter Grade	Grade Point	CGPA
O (Outstanding)	10	9.01 - 10.00
A+ (Excellent)	9	8.01 - 9.00
A (Very Good)	8	7.01 - 8.00
B (Good)	7	6.00 - 7.00
C (Above Average)	6	5.01 - 6.00

PhD Course Work

Scheme of University Examination

University Examination - Marks 300(13 credits)

- Theory- Marks 200 (7 credits)
- Practical - Marks 100(6 credits)

Theory Assessment - Marks 200 (7 credits)

Subject	Course code	Question Types	Marks per Section	Total Marks	Duration	Credits
Paper I Research Methodology	PH101 T	Sec.A-SAQ Sec.B-LAQ	10 x 6 =60 20 x2 =40	100	3 hours	3
Paper II Research and Publication Ethics	PH102 T	Sec ASAQ Sec BLAQ	6x5=30 2x10=20	50	2 hours	2
Paper III General Elective Any one <ul style="list-style-type: none"> • Disaster management & mitigation resources/ • Human Rights 	Any one GE 106 T GE107T	Sec ASAQ Sec BLAQ	6x5=30 2x10=20	50	2 hours	2

Practical Assessment Methods -Marks 100 (6 credits)

Assessment of Protocol of PhD Thesis at Research Recognition Committees

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

Course Code PH-101 T - Research Methodology & Biostatistics

This Course has total 4 units focusing on Research Methodology,- Bioethics, Biosafety, IPR & Technology Transfer, Quantitative & Qualitative Analysis & Computer Applications

a. Research Methodology

Teaching objective	This course is to impart students with knowledge and skills on the principals and methods of biomedical research to be used in health sciences for analysis of various diseases, health and injuries.
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 Competent in writing methodology, development of research tools. Protocol preparation. Analysis and inferences, Summary, conclusions and recommendations. References/Bibliography, Appendices, Footnotes.

Sr. No	Topics
1	Introduction to Research: Meaning of research, Definition, Scope, Limitations of research, and types of research objectives of Research, Research Process, Research Methods vs. Methodology, criteria for good research.
2	Variables: Defining variables, Types of variables. Data Scales: Concept, types of Scales, Rating Scales & Ranking Scales, Construction Techniques and Multi dimensional scaling.
3	Formulating a Research Problem , Definition and Process, Conceptualizing a Research Design, Need for research Design, Meaning and features of research design,: Overview and Quality Control Tools, Quality Assurance. Types of Research Design: Observational/Experimental, Case-Control/Cohort/Randomized Controlled Trials, Systematic Review/Meta-analysis.
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, Writing a Research Report and Research paper. What is Plagiarism? How to reduce and avoid plagiarism.
5	Tools & Methods of Data Collection, Conceptual Framework: Designing of Questionnaire, Methods of data collection, Importance of Pilot study (with example) Randomization Technique.

b. Bioethics, Biosafety, IPR & Technology Transfer

Teaching objective	<p>Research Ethics, general principles informed consent/assent and human subject Protection. Identify the role of the Biosafety Professional in Biomedical Research Laboratories. ICMR ethical guidelines for biomedical research on human participants. Demonstrate and assess the proper use of PPE, best practices, biological containment, and be prepared to safely conduct research Patent, copyrights and Trademark, validation and technology transfer</p>
Learning outcomes	<p>Effectively manage the health and safety aspects of a biological laboratory. Give reliable, professional and informed advice and information to colleagues , Managers and patients. 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. Mediate between other conflicting parties. Demonstrate acknowledgment and validation of the feelings, opinions, and contributions of others. How patents/copyrights/trademarks are filed</p>

Sr. No.	Topics
1.	Ethics and Ethical Practices in Research, Benefits of biotechnology, Ethical Legal Social Aspects (ELSA) of Bioscience, Informed Consent, Good Clinical Practice, ICMR Guidelines for Research on Human Subjects.
2.	<p>Patenting: Patent, copyrights and Trademark, Bioscience products and processes, Intellectual property rights, Plant breeders rights, trademarks, industrial designs, Copyright biotechnology in developing countries. Biosafety and its implementation, Quality control in Biotechnology.</p> <p>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 clinical and testing laboratory</p>

c. Quantitative & Qualitative Analysis

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.
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 Collection & Presentation: Collection methods, Secondary and primary Data, Coding, and Editing. Data Presentation: Classification and tabulation of data, Diagrammatic and graphical representation of data. Group data: grouped & grouped data.
2	Descriptive Statistics: Measures of Central Tendency, Measures of Dispersion
3	Sampling Techniques: Concept of population and sample, complete enumeration versus sampling. Types of sampling: non-probability and probability sampling, basic principle of sample survey. Sample size decision.
4	Testing Of Hypothesis: General Concepts, Hypothesis & Types of Hypothesis, confidence interval, One tailed & Two tailed test, Types of error, Power. Assumption of parametric and Non-parametric test.
5	Parametric test: Chi Square test, <i>Students t</i> -test, Z-test & F-test. Concept & Problems
6	Non-parametric tests: Sign test, Wilcoxon rank sum test, Mann-Whitney Test, Krushkal Whllis test & Friedman test. Concept & Problems.
7	Correlation And Regression: Types of Correlation, measures of correlation, Karl Pearson correlation & Rank Correlation.

d. Computer Applications

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. 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 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 data and interpretation of output. How to write the conclusion

Course Code PH - 102 T Research and Publication Ethics

This Course has total 6 units focusing on basics of Philosophy of Science and Ethics, Research Integrity, Publication Ethics, Hands-on-sessions are designed to identify research misconduct and predatory publications. Indexing and citation databases, open access publications, research metrics (citations, hi-index, impact factor, etc.) and plagiarism tools will be introduced in this course.

a. Philosophy and Ethics

1. Introduction to Philosophy: definition, nature and scope, concept, branches
2. Ethics: definition, moral philosophy, nature of moral judgments and reactions.

b. Scientific Conduct

1. Ethics with respect to Science and Research
2. Intellectual Honesty and Research Integrity
3. Scientific Misconducts: Falsification, Fabrication and Plagiarism (FFP)
4. Redundant Publications: Duplicate and Overlapping Publications, Salami Slicing
5. Selective Reporting and Misrepresentation of Data

c. Publication Ethics

1. Publication Ethics: Definition, Introduction and Importance
2. Best practices/standards setting initiatives and guidelines: COPE, WAME, etc.
3. Conflicts of Interest
4. Publication Misconduct: Definition, concept, problems that lead unethical behaviour and vice versa, types
5. Violation of publication ethics, authorship and contributor ship
6. Identification of publications misconduct, complaints and appeals
7. Predatory publishers and journals

d. Open Access Publishing

1. Open access publications and initiatives
2. SHERPA/RoMEO online resource to check publisher copyright & self-archiving policies
3. Software tool to identify predatory publications developed by SPPU
4. Journal finder/journal suggestion tools viz. JANE, Elsevier Journal Finder, Springer Journal suggested, etc.

e. Publication Misconduct -Plagiarism

1. Ethical issues, FFP, authorship
2. Conflicts of interest
3. Complaints and appeals: examples and fraud from India and Abroad

Software Tools

Use of plagiarism software like Turnitin, Urkund and other open source software tools

f. Databases and Research Metrics (7 hrs.)

1.Databases (4 hrs.)

- i. Indexing databases
- ii. Citation databases : Web of Sciences, Scopus, etc.

2.Research Metrics (3 hrs.)

- i. Impact Factor of journal as per Journal Citation Report, SNIP, SJR, IPP, Cite Score
- ii. Metrics: h-index, g index, i10 index, altmetrics

General Electives (Any One)

Course Code GE 106 T Disaster Management and Mitigation Resources

Teaching objective	<p>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.</p> <p>Recognize issues, debates and challenges arising from the nexus between paradigm of development and disasters.</p> <p>Critically evaluate disaster risk reduction and humanitarian response policy and practice from multiple perspectives.</p> <p>Respond to disaster risk reduction initiatives and disasters in an effective, humane and sustainable manner.</p>
Learning outcomes	<p>Knowledge and understanding of the disaster phenomenon, its different contextual aspects, impacts and public health consequences.</p> <p>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.</p> <p>Ensure skills and abilities to analyses potential effects of disasters and of the strategies and methods to deliver public health response to avert these effects.</p>

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.

General Electives (Any one)
GE 107 T Human Rights

Teaching objective	<p>A branch of public international law, and relevant juridical mechanisms at global as well as regional levels,</p> <p>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.</p> <p>Different forms of promoting and implementing human rights, domestically as well as on the international level.</p> <p>The role of human rights in contemporary issues relating to terrorism, religion, ethnicity, gender and development.</p> <p>Chorally values such as transparency, impartiality, clarity, reliance and the importance of sound reasoning and empirical inference.</p>
Learning outcomes	<p>Identify, contextualize and use information about the human rights situation in a given country</p> <p>Critically appraise source material, including cases from human rights committees and tribunals and reports and summary records from treaty bodies</p> <p>Analyses a country's situation or an international situation in terms of human rights and formulate human rights-based initiatives and policies</p> <p>Promote human rights through legal as well as non-legal means.</p> <p>Participate in legal, political and other debates involving human rights in a knowledgeable and constructive way</p>

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, Article 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