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		Criterion III Metric 3.4.1

RESEARCH METHODOLOGY COURSES offered with Inclusion of RESEARCH ETHICS.

Syllabus of M. Sc. Mathematics (2020-21)

Course Code 192MT2ASSA

Course Name: Research Methodology, IPR and Entrepreneurship

SEMESTER: III

Unit I Hypotheses, Theories and Laws Hypotheses – Theories – Laws. Scientific Statements: Their Justification and Acceptance: Verification – Falsification – Acceptance – Peer Review.

Unit II

Experimentation and Design of Research Validity and Reliability in Experimentation – Design of Experiments. Scientific and their Design of Research: The Scientific Method – Research Design.

Unit III Research Ethics and Responsibilities Basic, Applied and Evaluation Research – Multidisciplinary and Interdisciplinary Research – The Value of having Research Skills – Formulating a Research Problem – Research in Relation to Teaching and Publishing. **Research Ethics – Guidelines for Ethical practices in Research.**

Unit IV Intellectual Property Rights - Introduction to intellectual property - Fundamentals of patent - Copyright - Trademarks.

Unit V The practice of Entrepreneurship

Entrepreneurial Management - The Entrepreneurial Business - Entrepreneurship in the Service Institution.

Text Books

Pruzan P., 2016, Research Methodology The Aims, Practices and Ethics of Science, Springer, Switzerland. (Unit-I, II & III)



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		Criterion III Metric 3.4.1

Neeraj Pandey, Khusdeep Dharni, 2014, Intellectual Property Rights, PHI learning Pvt. Ltd. New Delhi. (Unit-IV)

Drucker P.F., 1986, Innovation and Entrepreneurship - Practice and Principles, Harper Publishers, New York. (Unit-V)

References

Thomas C.G., 2015, Research Methodology and Scientific Writing, AneBooks Pvt. Ltd., New Delhi.

Locharoenrat, K., 2017, Research Methodologies for Beginners, Pan Stanford Publishing, Singapore.

Deborah E. Bouchoux, 2000, Intellectual Property: The Law of Trademarks, Copyrights, Patents, and Trade Secrets, Fourth edition, Cengage learning New York.

Birgitte Andersen, 2006, Intellectual Property Rights: Innovation, Governance and the Institutional Environment, Edward Elgar Publishing, UK.

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		Criterion III Metric 3.4.1

Syllabus of M. A. English Literature (2020-21)

Course Code: 191EL2A3CC RESEARCH METHODOLOGY SEMESTER III

CO Number	CO Statement	Knowledge Level
CO1	Identify the fundamentals of planning the research	K2
CO2	Design the Mechanics of Scholarly Prose	K3
CO3	Understand the research ethics while writing the Works Cited	K3
CO4	Utilize the simplification of formatting the research paper	K4
CO5	Develop the art of writing In-Text Citations	K5

Unit I Introduction 13 h

Introduction to Research-Types of Research-Plagiarism and Academic Dishonesty- Think: Evaluating Your Sources -Select: Gathering- Information about Your Sources- Organize: Creating Your Documentation-The List of Works Cited-The Core Elements- Author-Title of Source-Title of Container-Other Contributors-VersionNumber-Publisher-Publication Date-Location-Optional Elements-In-Text Citations

Unit II The Mechanics of Writing 13 h

The Mechanics of Scholarly Prose: Names of Persons: First and Subsequent Uses of Names- Titles of Authors- Names of Authors and Fictional-Characters- Names in Languages Other Than English-Titles of Sources: Capitalization and Punctuation- Italics and Quotation Marks- Shortened Titles-Titles within Titles-Titles of Sources in Languages-Other Than English-



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		Criterion III Metric 3.4.1

Quotations: Use and Accuracy of Quotations Prose-Poetry-Drama-Ellipsis-Other Alterations of Quotations-Punctuation with Quotations-Translations of Quotations

Unit III The Mechanics of Writing 11 h

Numbers: Use of Numerals or Words-Commas in Numbers-Inclusive Numbers Roman Numerals- Dates and Times-Abbreviations: Months-Common Academic Abbreviations- Publishers' Names- Titles of Works-Works Cited: Names of Authors: Variant Forms-Titles and Suffixes- Corporate Authors-Titles: Introduction, Preface, Foreword, or Afterword- Translations of Titles- Foot Notes

Unit IV Locational Elements 11 h

Versions-Publisher-Locational Elements: Plus Sign with Page Number-URLs and DOIs- Punctuation in the Works-Cited List: Square Brackets-Forward Slash-Formatting and Ordering the Works-Cited List: Letter-by-Letter Alphabetization-Multiple Works by One Author- Multiple Works by Coauthors-Alphabetizing by Title-Cross-References

Unit V In-Text Citation 12 h

In-Text Citations -Author: Coauthors-Corporate Author-Title: Abbreviating Titles of Sources-Descriptive Terms in Place of Titles-Numbers in In-Text Citations: Style of Numerals-Numbers in Works Available in Multiple Editions - Other Citations Not Involving Page Numbers-Indirect Sources-Repeated Use of Sources-Punctuation in the In-Text Citation

Text Books

Gibaldi, Joseph. 2016. M.L.A Hand Book for Writers of Research Papers. 8th Edition. The Modern Language Association of America, New York, United States.

Kothari, C. R. 1985. Research Methodology: Methods and Techniques. New Age International (P) Ltd, Publishers, New Delhi.

Gibaldi, Joseph. 1994. M.L.A Hand Book for Writers for Research Papers. 7th 3Edition. The Modern Language Association of America. New York, United States.

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References

Anderson, Durston & Pool. 1989. Thesis and Assignment Writing. Wiley Eastern Limited, United States.

Blair, Lorrie. 2016. Writing a Graduate Thesis or Dissertation. Sense Publishers, The Netherlands.

Griffin, Gabriele. Ed. 2013. Research Methods for English Studies. 2nd ed. Edinburgh University Press, Edinburgh.

Sinha, M.P. 2018. Research Methods in English. Atlantic Publications, New Delhi.

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		Criterion III Metric 3.4.1

Syllabus of MHA (2020-21)

Course Code: 196HA2A3CE
Course Name: RESEARCH METHODS FOR MANAGEMENT
Semester : III

Unit I Introduction to Research Methodology 12 h

Meaning of Research - objectives of research –Types - Approaches of research – Research process
 -. Formulation of Research problem – Techniques involved- Research design – meaning – need
 for research design – features of a good research design – different research design.

Unit II Sampling Design 12 h

Steps in sampling design- criteria for selecting sampling procedure – characteristics of good
 sample design – Different types of sample designs- Random sample – Complex random sampling
 design –Sampling error

Unit III Data Collection 12 h

Types of data – Primary Vs Secondary data – Methods of data collection- Scaling techniques –
 measurement – scales – sources of error – Questionnaire construction – Validity –Reliability of
 Instruments

Unit IV Data Processing and Analysis 12 h

Processing operation – Types of analysis – Qualitative Vs Quantitative dataanalyses - Hypothesis
 – concept –procedures – tests- limitations – Application of SPSS - non parametric – parametric
 tests –Research Format of the WHO, ICMR and the use of GRIPP (Getting Research into Policy
 & Planning)

Unit V Interpretation and Report Writing: 12 h

Meaning – Techniques – precautions – Significance- steps – layout of research report- types of
 reports- precautions of writing research reports – Plagiarism – **research ethics**

Note: Case Studies related to the above topics to be discussed. Examined externally (section C:
 Compulsory question for case studies)

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		Criterion III Metric 3.4.1

Text Books

C.R.Kothari. 2004. Research Methodology (Methods & Techniques).New Age International Publishers, New Delhi. II revised edition

UmaSekaran. 2003. Research methods for Business. John Wiley & Sons, Inc. Fourth Edition

References

S.P.Gupta. 2011. Statistical Methods. Sultan Chand & Sons, New Delhi. 41st revised edition

Dr.Suresh K Sharma Stephen. 2011. Nursing Research and Statistics. Elsevier Publishers, New Delhi.

<https://www.free-ebooks.net/business-textbooks/Business-ResearchMethodology>

<https://www.digipull.in/2017/12/ranjit-kumar-research-methodology-step>

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		<p align="center">Criterion III Metric 3.4.1</p>

Syllabus of MHA (2019-20)

Course Code: 196HA2A3CE
Course Name: RESEARCH METHODS FOR MANAGEMENT
Semester : III

Unit I Introduction to Research Methodology

Meaning of Research - objectives of research –Types - Approaches of research – Research process
 -. Formulation of Research problem – Techniques involved- Research design – meaning – need
 for research design – features of a good research design – different research design.

Unit II Sampling Design

Steps in sampling design- criteria for selecting sampling procedure – characteristics of good
 sample design – Different types of sample designs- Random sample – Complex random sampling
 design –Sampling error

Unit III Data Collection

Types of data – Primary Vs Secondary data – Methods of data collection- Scaling techniques –
 measurement – scales – sources of error – Questionnaire construction – Validity –Reliability of
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Processing operation – Types of analysis – Qualitative Vs Quantitative dataanalyses - Hypothesis
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 tests –Research Format of the WHO, ICMR and the use of GRIPP (Getting Research into Policy
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		Criterion III Metric 3.4.1

Unit V Interpretation and Report Writing:

Meaning – Techniques – precautions – Significance- steps – layout of research report- types of reports- precautions of writing research reports – Plagiarism – **research ethics**

Note: Case Studies related to the above topics to be discussed. Examined externally (section C: Compulsory question for case studies)

Text Books

C.R.Kothari. 2004. Research Methodology (Methods & Techniques).New Age International Publishers, New Delhi. II revised edition

UmaSekaran. 2003. Research methods for Business. John Wiley & Sons, Inc. Fourth Edition

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S.P.Gupta. 2011. Statistical Methods. Sultan Chand & Sons, New Delhi. 41st revised edition

Dr.Suresh K Sharma Stephen. 2011. Nursing Research and Statistics. Elsevier Publishers, New Delhi.

<https://www.free-ebooks.net/business-textbooks/Business-ResearchMethodology>

<https://www.digipull.in/2017/12/ranjit-kumar-research-methodology-step>

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Research Methodology Course which includes RESEARCH ETHICS has been offered in all 32 UG Programmes from the Batch 2019 - 20 and onwards

All 32 UG Programmes
Course Name: RESEARCH METHODOLOGY
Semester: V

Unit I Introduction to Research

Research: Introduction- Basic, Applied and Evaluation research – multidisciplinary and interdisciplinary Research – value of research skills – formulating a research problem – Research in relation to Teaching and Publishing

Unit II Hypotheses, Theories and Laws

Hypotheses – Theories – Laws. Scientific statements: their justification and acceptance: verification – Falsification – Acceptance – Peer review

Unit III Experimentation and research

The roles and limitations of experimentation – Experimentation and research – conducting experiments – validity and reliability in experimentation – Design of experiments

Unit IV Scientific method and Research Design

Introduction to Scientific method – Research Design - Components - research design and proposal -checklist in the preparation of proposals.

Unit V Ethics and Responsibility in Scientific Research

Ethics – guidelines for Ethical practices in research - unethics to ethics in research - responsibility of Scientists and of Science as an Institution

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Text Books

PerterPruzan, (2016), Research Methodology: The Aims, Practices and Ethics of Science. Springer, Switzerland

References

Thomas, C.G. (2015) Research Methodology and Scientific Writing. Ane Books Pvt. Ltd.: New Delhi.

Locharoenrat, K. (2017) Research Methodologies for Beginners. Pan Stanford Publishing: Singapore.

Ranjit Kumar, (2014) Research Methodology: A Step-by-Step Guide for Beginners. SAGE Publications Ltd.: Singapore.

Kothari, C.R. Garg, G. (2009) Research Methodology Methods and Techniques. New Age International Publishers, New Delhi..

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Syllabus of B.Sc. Clinical laboratory Technology (AY 2018-19)

Course Code:18UCL6EA
Course Name: Research Methodology
Semester: VI

UNIT – I

Meaning of Research- definition, hypothesis, null hypothesis. Types of Research. Research problem, Sources of research problem, Criteria Characteristics of a good research problem, Errors in selecting a research problem, Scope and objectives of research problem. Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, Necessary instrumentations.

UNIT – II

Effective literature studies approaches, analysis Plagiarism, **Research ethics.** Preparation of Research Papers and Dissertation, Illustrations and Tables.

UNIT - III

Guidelines for writing the research paper. Efficient technical writing and how to write a report. Developing a Research Proposal, Format of research proposal. Journals web search, Scopus and science direct.

UNIT – IV

Nature of Intellectual Property: Patents, Designs, Trade and Copyright. Process of Patenting and Development: innovation, technological research, patenting, development. International Scenario: International cooperation on Intellectual Property. Procedure for grants of patents, Patenting under Patent Cooperation Treaty (PCT).

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UNIT - V

Patent Rights: Scope of Patent Rights. Licensing and transfer of technology. Patent information and databases. Geographical Indications. India's New National IP Policy Administration of Patent System. New developments in IPR; IPR of Biological Systems and Traditional knowledge.

Text Books

Ranjit Kumar., 2011, Research Methodology: A Step by Step Guide for beginners, 3rd Edition, SAGE Publications India Pvt Ltd.

Nithyananda, K V. 2019, Intellectual Property Rights: Protection and Management. India, IN: Cengage Learning India Private Limited.

Reference Books

Neeraj, P., & Khusdeep, D, 2014, Intellectual Property Rights. India, IN: PHI learning Private Limited.

Kothari's C. R, 2014, Research Methodology, New Age International Pvt Ltd Publishers

T. Ramappa, 2008, Intellectual Property Rights Under WTO", Wheeler Pub.

E-resources:

Cell for IPR Promotion and Management (<http://cipam.gov.in/>)

World Intellectual Property Organisation (<https://www.wipo.int/aboutip/en/>)

Office of the Controller General of Patents, Designs & Trademarks (<http://www.ipindia.nic.in/>)

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Syllabus of M. Sc. Bio Chemistry (2018-19)

Course Code: 18PBC33A
Course Name: BIostatistics and Research Methodology
Semester: III

UNIT I

Measures of central tendency; arithmetic mean, median, mode, quartiles, deciles and percentiles. measures of variation: range, quartile, deviation, mean deviation, standard deviation. Correlation analysis: Scatter diagram, Karl Pearson's coefficient of correlation and Spearman's rank method. Regression analysis. Simple problems.

UNIT II

Probability -- definition, concepts, theorems (proof of the theorems not necessary) and calculations of probability. Theoretical distributions. Binomial - Poisson and normal distribution. Normal-importance, properties, conditions and constants of the distribution (proof not necessary). Simple problems.

UNIT III

Sampling distribution and test of significance: Testing of hypothesis errors in hypothesis testing, standard error and sampling distribution. Sampling of variables (large samples and small samples). Student's 't' distribution and its applications. Chi - square test & goodness of fit. Analysis of variance one way and two-way classification, Duncan's Multiple Range Test. Design of experiment - completely randomized block design randomized block design.

UNIT IV

Research: General-Introduction, types and classification of research diagnostic, descriptive, **exploratory research ethics**, Topology for literature research-scientific methods-components of scientific methods. Formulation of research paper. Research design-types of research design – histological design, descriptive design, formation of hypothesis, synopsis writing.

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		Criterion III Metric 3.4.1

UNIT V

Organising a statistical survey - Planning and executing the survey. Source of data – Primary and secondary data, Collection - observation; interview; enquiry forms, questionnaire schedule and check list. Classification and tabulation of data. Diagrammatic & graphic presentation of data

TEXT BOOKS

S.P.Gupta (2004) Statistical Methods, 32nd edition, Sultan Chand and Sons publications, New Delhi.

R.S.N Pillai and Bagavathi (2012) – Statistical Theory and Practices 7th edition, S. Chand and company Ltd, New Delhi.

REFERENCE BOOKS

Ajai S Gaur and Sanjaya S. Gaur, (2008) Statistical methods for practice and Research, Response Books publications.

S.K.S Yadav (2002) Statistics Theory and Practice, 1st edition, Sanjeeva Prakashan publication.

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Syllabus of M. Sc. Bio Chemistry (2017-18)

Course Code: 17PBC33A
Course Name: BIostatistics and Research Methodology
Semester: III

UNIT I

Measures of central tendency; arithmetic mean, median, mode, quartiles, deciles and percentiles. measures of variation: range, quartile, deviation, mean deviation, standard deviation. Correlation analysis: Scatter diagram, Karl Pearson's coefficient of correlation and Spearman's rank method. Regression analysis. Simple problems.

UNIT II

Probability -- definition, concepts, theorems (proof of the theorems not necessary) and calculations of probability. Theoretical distributions. Binomial - 'Poisson' and normal distribution. Normal-importance, properties, conditions and constants of the distribution (proof not necessary). Simple problems.

UNIT III

Sampling distribution and test of significance: Testing of hypothesis errors in hypothesis testing, standard error and sampling distribution. Sampling of variables (large samples and small samples). Student's 't' distribution and its applications. Chi - square test & goodness of fit. Analysis of variance one way and two-way classification, Duncan's Multiple Range Test. Design of experiment - completely randomized block design randomized block design.

UNIT IV

Research: General-Introduction, types and classification of research diagnostic, descriptive, **exploratory research ethics**. Topology for literature research-scientific methods-components of scientific methods. Formulation of research paper. Research design-types of research design – histological design, descriptive design, formation of hypothesis, synopsis writing.

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UNIT V

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		Criterion III Metric 3.4.1

Syllabus of M. Sc. Bio Chemistry (2016-17)

Course Code: 15PBC33A

Course Name: BIOSTATISTICS AND RESEARCH METHODOLOGY

Semester: III

UNIT I

Measures of central tendency; arithmetic mean, median, mode, quartiles, deciles and percentiles. measures of variation: range, quartile, deviation, mean deviation, standard deviation. Correlation analysis: Scatter diagram, Karl Pearson's coefficient of correlation and Spearman's rank method. Regression analysis. Simple problems.

UNIT II

Probability -- definition, concepts, theorems (proof of the theorems not necessary) and calculations of probability. Theoretical distributions. Binomial - Poisson and normal distribution. Normal-importance, properties, conditions and constants of the distribution (proof not necessary). Simple problems.

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Sampling distribution and test of significance: Testing of hypothesis errors in hypothesis testing, standard error and sampling distribution. Sampling of variables (large samples and small samples). Student's 't' distribution and its applications. Chi - square test & goodness of fit. Analysis of variance one way and two-way classification, Duncans Multiple Range Test. Design of experiment - completely randomized block design randomized clock design.

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UNIT V



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Organising a statistical survey - Planning and executing the survey. Source of data – Primary and secondary data, Collection - observation; interview; enquiry forms, questionnaire schedule and check list. Classification and tabulation of data. Diagrammatic & graphic presentation of data

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