



U.G.C Recommended Ph.D Course work for Research and Publication Ethics

Research and Publication Ethics

Credit: 2

Objectives:

At the end of this course the learner is expected:

- To understand the philosophy of science and ethics, research integrity and publication ethics.
- To identify research misconduct and predatory publications.
- To understand indexing and citation databases, open access publications, research metrics (citations, h-index, impact Factor, etc.).
- To understand the usage of plagiarism tools.

Unit I: PHILOSOPHY AND ETHICS (3 Hrs.)

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

Unit II: SCIENTIFIC CONDUCT (5 Hrs.)

Ethics with respect to science and research - Intellectual honesty and research integrity - Scientific misconducts: Falsification, Fabrication and Plagiarism (FFP) – Redundant Publications: duplicate and overlapping publications, salami slicing - Selective reporting and misrepresentation of data.

Unit III: PUBLICATION ETHICS (7 hrs)

Publication ethics: definition, introduction and importance - Best practices / standards setting initiatives and guidelines: COPE, WAME, etc. - Conflicts of interest - Publication misconduct: definition, concept, problems that lead to unethical behaviour and vice versa, types - Violation of publication ethics, authorship and contributor ship - Identification of publication misconduct, complaints and appeals - Predatory publisher and journals.

Unit IV: OPEN ACCESS PUBLISHING (4 Hrs.)

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

Unit V: PUBLICATION MISCONDUCT (4Hrs.)



Criterion III Research, Innovations & Extension

3.4 Research Publications and Awards

3.4.1 The Institution ensures implementation of its stated Code of Ethics for research

Group Discussion (2 Hrs.) : a) Subject specific ethical issues, FFP, authorship b) Conflicts of interest c) Complaints and appeals: examples and fraud from India and abroad Software tools (2 Hrs.) : Use of plagiarism software like Turnitin, Urkund and other open source software tools.

Unit VI: DATABASES AND RESEARCH METRICS (7Hrs.)

Databases (4 Hrs): Indexing databases, Citation databases: Web of Science, Scopus, etc. Research Metrics (3 Hrs.): Impact Factor of journal as per Journal Citations Report, SNIP, SJR, IPP, Cite Score - Metrics: h-index, g index, i10 Index, altmetrics.

References

1. Nicholas H. Steneck. Introduction to the Responsible Conduct of Research. Office of Research Integrity. 2007. Available at: <https://ori.hhs.gov/sites/default/files/rcrintro.pdf>
2. The Student's Guide to Research Ethics By Paul Oliver Open University Press, 2003
3. Responsible Conduct of Research By Adil E. Shamoo; David B. Resnik Oxford University Press, 2003
4. Ethics in Science Education, Research and Governance Edited by Kambadur Muralidhar, Amit Ghosh Ashok Kumar Singhvi. Indian National Science Academy, 2019. ISBN : 978-81-939482-1-7.
5. Anderson B.H., Dursaton, and Poole M.: Thesis and assignment writing, Wiley Eastern 1997.
6. Bijorn Gustavii: How to write and illustrate scientific papers? Cambridge University Press.
7. Bordens K.S. and Abbott, B.b.: Research Design and Methods, Mc Graw Hill, 2008.
8. Graziano, A., M., and Raulin, M.,L.: Research Methods – A Process of Inquiry, Sixth Edition, Pearson, 2007.

Outcome:

At the end of the course the student will have awareness about the publication ethics and publication misconducts



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NAAC - SSR IV CYCLE

Criterion III Research, Innovations & Extension

3.4 Research Publications and Awards

3.4.1 The Institution ensures implementation of its stated Code of Ethics for research

M.Phil., Botany

SEM	COURSE CODE	COURSE	COURSE TITLE	HRS / WEEK	CREDIT	CIA Mark	ESE MARK	TOTAL MARK
I	20MPBO1CC1	CORE-I	Research Methodology	4*	4	25	75	100
	20MPBO1CC2	CORE-II	Recent Advances in Plant Science	4*	4	25	75	100
	20MPBO1CC3	CORE-III	Teaching And Learning Skills	4*	4	25	75	100
	20MPBO1CC4	CORE-IV (Elective)	Paper on Topic of Research (The syllabus will be prepared by the guide and examination will be conducted by the COE)	4*	4	25	75	100
		*One-hour library for each course						
	TOTAL			16*	16	100	300	400
II	20MPBO2PD		Dissertation##	-	8	-	-	200
GRAND TOTAL				-	24	-	-	600

##Evaluation of the Dissertation and Viva Voce shall be made jointly by the Research Supervisor and the External Examiner.



Criterion III Research, Innovations & Extension

3.4 Research Publications and Awards

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Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPBO1CC1	Core – I	Research Methodology	4	4	100	25	75

Course Outcomes:

At the end of the course, students will be able to

1. Describe the working principles, components, staining techniques of tissues and application of microscopes.
2. Appraise theoretical aspects of important analytical techniques and instruments used in life science.
3. Design the suitable separation techniques to characterize the functional biomolecules.
4. Choose the correct approach to process and analyze the data.
5. Conclude the research by using primary and secondary data and document the same.

Unit I: Microscopic techniques

12 Hours

Microscopy – Principle and applications of bright field, dark field, phase contrast, fluorescent microscopy, Electron Microscopy (SEM & TEM) and Confocal microscopy. Staining techniques – simple stain, negative stain, #Gram stain# and acid-fast stain. Freeze-etch and freeze fracture methods for EM, image processing methods in microscopy.

Unit II: Analytical methods

12 Hours

Electrochemical techniques: Principles, measurement of pH and types of electrodes. #Preparation of biological buffers#. Spectroscopic techniques: Principle, types and application. UV and Visible, Infrared, Fluorescence and Raman spectroscopy. Nuclear magnetic resonance, Electron spin resonance, Surface Plasmon resonance and Atomic absorption spectroscopy. Radio labeling techniques: Properties of different types of radioisotopes, detection, measurements of radioactivity and applications. Geiger Muller and scintillation counter and autoradiography.

Unit III: Separation techniques

12 Hours

Chromatography: Principle, types and applications (#Paper, Thin layer#, Column, HPLC, HPTLC, UHPLC, GC and LC-MS). Centrifugation: Principles, types, different types of rotors and applications. Molecular techniques: DNA and RNA isolation and purification. Polymerase Chain Reaction (PCR) and its types. Electrophoretic techniques: Principles, types and applications (Agarose gel, SDS-PAGE, 2D and 3D gel electrophoresis). Blotting techniques (Southern, Northern and Western blotting).

Unit IV: Statistical methods

12 Hours

Population and sample – data collection, sampling methods and #diagrammatic representation of data#. Measures of central tendency (mean, median and mode). Measures of dispersion (range and standard deviation). Correlation and regression analysis. Probability distributions: binomial, Poisson and normal. Types of error. Statistical inference: F-test, t-test and chi-square test. Analysis of variance (one way and two-way), Duncan multiple ranges test and multi variant analysis. Discriminate analysis using SPSS and SAS software's.

Unit V: Documentation of Research

12 Hours

Research, meaning, objective, types (qualitative, quantitative and applied research). Role of a researcher, supervisor/guides. Research problem, design, sample survey, measurement and scaling, data collection and preparation. Literature and reference collection. #Role of libraries and internet in research#. Browsing tools, virtual libraries, e-journals and e-books. Interpretation and report writing (Grammarly software). Components of dissertation and thesis writing. Preparation of short communication, research and review articles. Endnote and Mendeley software in Bibliography preparation. Plagiarism and Research ethics.

#.....# Self Study portion



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3.4 Research Publications and Awards

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Text Books:

1. Bajpai PK, Biological Instrumentation and Methodology, Revised Edition, Chand S & Company PvtLtd, New Delhi, India, 2010.
2. Mustafa A, Research Methodology, 1st Edition, AITBS Publishers, New Delhi, India, 2010.
3. Kothari CR and Garg G. Research Methodology Methods and Techniques. 4th Edition. New Age International Publishers PvtLtd, New Delhi, India, 2019.

Books for Reference:

1. Gurumani N, Research Methodology for Biological Sciences, Revised Edition, MJP PublishersPvt Ltd, Chennai, India, 2011.
2. Shefali P. Research Methodology. 1st Edition. APH Publishing CorporationPvt Ltd, New Delhi, India, 2017.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code		Title of the Paper					Hours		Credits
I	20MPBO1CC1		Research Methodology					4		4
Course Outcomes (COs)	Programme Outcomes(POs)					Programme Specific Outcomes(PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓		✓			✓	✓	✓		
CO2	✓		✓			✓		✓		✓
CO3	✓		✓			✓		✓		✓
CO4	✓			✓	✓	✓		✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓		✓	✓	✓
Number of Matches = 31, Relationship: Moderate										

Prepared by:

1. Dr. H. Syed Jahangir

Checked by:

1. Dr. A. Asalam

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very High



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3.4 Research Publications and Awards

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M.Phil. BIOTECHNOLOGY

SEM	SUB CODE	COURSE	SUBJECT TITLE	HRS / WEEK	CREDIT	CIA Mark	ESE MARK	TOTAL MARK
I	20MPBT1CC1	Core - I	Research Methodology	4*	4	25	75	100
	20MPBT1CC2	Core- II	Advancements in Biotechnology	4*	4	25	75	100
	20MPBT1CC3	Core - III	Teaching & Learning Skills (Common Paper)	4*	4	25	75	100
	20MPBT1CC4	Core - IV (Elective)	Paper on Topic of Research (The syllabus will be prepared by the guide and examination will be conducted by the COE)	4*	4	25	75	100
	*One hour Library for each course							
TOTAL				16*	16	100	300	400
II	20MPBT2PD		Dissertation ^{###}	-	8	-	-	200
GRAND TOTAL				-	24	-	-	600

^{###} Evaluation of the Dissertation and Viva Voce shall be made jointly by the Research Supervisor and the External Examiner.

*One hour Library for each course



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3.4 Research Publications and Awards

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Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPBT1CC1	Core – I	RESEARCH METHODOLOGY	4	4	100	25	75

Course Outcomes

At the end of the course, scholars will be able to:

1. Identify the various sources of information for literature review and data collection.
2. Summarize the principles of research instruments of biotechnology field.
3. Describe biotechnological practical application of laboratory equipments critically and systematically.
4. Appraise the components of scholarly writing and evaluate its quality.
5. Formulate the statistical concepts and applying them in data collection, analysis and interpretation.

12 hours

Unit-I: Selection of a research problem- experimental approach and research design, library and research documentation- literature review- Thesis writing- components of a thesis, preparation of research documents (abstracts, papers etc).#Thrust areas and research priorities in biotechnology at National and International levels#. Planning of research: Research proposals, time scheduling of research, available sources and generation of funds and facilities.

12 hours

Unit- II: Principles and applications of confocal microscope.Separation Techniques - Principles and application of thin layer chromatography,gel exclusion chromatography, ion exchange chromatography, affinity chromatography, Gas chromatography, high performance liquid chromatography and reverse phase chromatography. #Principles and applications of UV-Vis-FTIR-NMR-Mass spectroscopy, X – Ray Diffraction (XRD)#.

12 hours

Unit –III: Principles and applications of SDS- PAGE, 2D- gel electrophoresis, MALDI-TOF, gel documentation, Immunoelectrophoresis, Immunodiffusion, Immunoprecipitation – agglutination techniques. #Southern, Northern and Western blotting techniques, Molecular techniques - PCR, RFLP, RAPD, AFLP, DNA finger printing and DNA sequencing#.

12 hours

Unit – IV: Introduction to IPR, Types of IP - Patents, Trademarks, Copyright and Related Rights, Industrial Design, Traditional Knowledge and Geographical Indications. Importance of IPR – patentable and non patentables, patenting life, legal protection of Biotechnological inventions. Objectives of the patent system - Basic, principles and general requirements of patent law.Biotechnological inventions and patent law - Legal development - Patentable subjects and protection in Biotechnology.#Introduction to ethics and bioethics#. Ethical limits of Animal use.

12 hours

Unit –V: Principles and practice of statistical methods in biotechnological research; collection and tabulation of data; graphical and diagrammatic representation of data; basic statistics; Simple Correlation and regression analyses; significance tests: Chi- square test, student's t-test, ANOVA, Duncan's Multiple Range Test. #Bioinformatics: BLAST N and P, Gene discovery using EST#. Genbank Database- NCBI, EMBL and DDBJ. Protein sequence Database- Swiss Prot and PDB.

Self-study portion



Criterion III Research, Innovations & Extension

3.4 Research Publications and Awards

3.4.1 The Institution ensures implementation of its stated Code of Ethics for research

Text Books:

1. J. Anderson, D. Durston and M. Poole, Thesis and Assignment writing. New Age International Pvt. Ltd, New Delhi, 2010.
2. David Freifelder and W.H. Freeman. Physical Biochemistry: Applications to Biochemistry and Molecular Biology - 2nd Edition and Co Ltd, 2012.
3. Gurdeep R. Chatwal, Sham K. Anand, Instrumental methods of chemical analysis 2nd Edition; Himalaya Publishing House, 2007.
4. Jerrold H. Zar, Biostatistical Analysis (7th edition), Prentice Hall publishers, 2014.

Books for Reference:

1. Veer Bala Rastogi, Fundamentals of Biostatistics, Ane Books India, New Delhi, 2006.
2. L. Veera Kumar, Bioinstrumentation, MJP Publishers, Chennai, 2006.

Web Source

1. <https://nptel.ac.in/courses/109105115/>

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code		Title of the Paper				Hours		Credits	
I	20MPBT1CC1		RESEARCH METHODOLOGY				4		4	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO4	✓					✓	✓	✓	✓	✓
CO5	✓	✓	✓			✓	✓	✓	✓	✓
Number of Matches = 44, Relationship : High										

Prepared by:

1. Dr. J. Sebastin Raj

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Checked by:

1. Dr. Y. ArsiaTarnam

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high



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3.4 Research Publications and Awards

3.4.1 The Institution ensures implementation of its stated Code of Ethics for research

M.PHIL. COMMERCE

SEM	SUB CODE	COURSE	SUBJECT TITLE	HRS / WEEK	CREDIT	CIA Mark	ESE MARK	TOTAL MARK
I	20MPCO1CC1	Core - I	RESEARCH METHODOLOGY	4*	4	25	75	100
	20MPCO1CC2	Core - II	FUNCTIONAL AREAS OF MANAGEMENT	4*	4	25	75	100
	20MPCO1CC3	Core - III	TEACHING & LEARNING SKILLS	4*	4	25	75	100
	20MPCO1CC4	Core - IV (Elective)	PAPER ON TOPIC OF RESEARCH (The syllabus will be prepared by the Guide and Examination will be conducted by the COE)	4*	4	25	75	100
	*One Hour Library for Each Course							
	TOTAL			16*	16	100	300	400
II	20MPCO2PD		Dissertation ##	-	8	-	-	200
GRAND TOTAL				-	24	-	-	600

Evaluation of the Dissertation and Viva Voce shall be made jointly by the Research Supervisor and the External Examiner.



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3.4 Research Publications and Awards

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Semester	Code	Course	Title of the Course	Hours	Credits	Max. marks	Internal marks	External marks
I	20MPCO1CC1	Core – I	RESEARCH METHODOLOGY	4	4	100	25	75

Course Outcomes

On completion of this course, the scholars will get ability to

- CO1 apply various research methods in the field of commerce, economics and society and also design and develop the research methodologies in solving the problems exist in business
- CO2 inculcate skills in the application of appropriate sampling techniques for collecting the data for their research work and to draft questionnaire for collecting, analysing and managing the information to find out the solution to the real world business related research problems
- CO3 develop intellectual creativity in the application of statistical tools like ANOVA, Regression, Correlation etc., for analysing data and demonstrate their skills in interpreting the data, which will enable them to get employment in modern areas of business management with social concern
- CO4 apply statistical techniques like Chi-Square test, T – test, Z – Test, F – Test etc., for testing the hypotheses to fulfil the research objectives and test them with advanced research softwares like SPSS, AMOS, etc.,
- CO5 exhibit their skills in preparing and presenting the research report along with their innovative suggestions and draw a meaningful conclusion for research problems which will result in the improvement of the business operation.

UNIT I

Research : Definition – Objectives – Types: Pure, applied – Methods: Case Study, Survey – Research Problem Identification and Selection – Review of Literature – Importance - Sources – Research Design – Meaning, Steps and Significance - Ethics in Research.

UNIT II

Sampling : Meaning – Steps - Criteria – Methods – Sampling Error – Data Collection – Secondary Data – Sources - Primary Data – Techniques – Observation – Interview – Essentials - Types - Limitations – Focused Groups - Questionnaire & Schedule – Designing – Reliability & Validity.

UNIT III

Pre-Testing – Pilot Study - Data Processing: Meaning, Steps — Analysis of Data – Interpretation - Tools of Analysis – Correlation – Partial and Multiple – Regression – Partial and Multiple – ANOVA – One Way and Two Way. (Problem & Theory)



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UNIT IV

Hypothesis – Concept, Steps, Sources – Testing of Hypotheses – Chi-square Test, ‘t’ Test, ‘z’ Test and ‘f’ Test – Limitations – Scaling Techniques. (Problem & Theory)

UNIT V Report Writing – Meaning – Contents - Format – Essentials – Steps in Report Preparation
Types of Report – Target Group.

(Theory 60 % and Problem 40 %)

References

1. Methodology of Research In Social Sciences - Dr. O.R. Krishnaswamy & Dr. M.Ranganatham - Himalaya Publishing House – 2018.
2. Research Methodology: C.R. Kothari & Gaurav Garg – New Age International Publications, New Delhi - 2018
3. Research Methodology – P.Ravilochanan – Margham Publications, Chennai - 2019

Semester	Code		Title of the Paper					Hours		Credits
I	20MPC01CC1		RESEARCH METHODOLOGY					4		4
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
	CO1	✓	✓		✓	✓	✓	✓		✓

Online References

1. http://edutechwiki.unige.ch/en/Research_methodology_resources
2. <https://www.examrace.com/NTA-UGC-NET/NTA-UGC-NET-Study-Material/Library-Science/Research-Methodology/>

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes :



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Criterion III Research, Innovations & Extension

3.4 Research Publications and Awards

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M.PHIL. - MANAGEMENT STUDIES

Semester	Subject code	Course	Subject Title	Hours/ Week	Credit	CIA Marks	ESE Marks	Marks
I	20MPMS1CC1	Core -I	Research Methodology	4*	4	25	75	100
	20MPMS1CC2	Core - II	Advanced Strategic Management	4*	4	25	75	100
	20MPMS1CC3	Core - III	Teaching and Learning Skills	4*	4	25	75	100
	20MPMS1CC4	Core - IV	Guide Paper (Based on Research Topic)	4*	4	25	75	100
	TOTAL			16	16	100	300	400
II	20MPMS2PD		Dissertation**	-	8	-	-	200
GRAND TOTAL				-	24	-	-	600

*One hour Library for each course

**Evaluation of the Dissertation and Viva Voce shall be made jointly by the Research Supervisor and the External Examiner



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3.4 Research Publications and Awards

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SEMESTER I: CORE I RESEARCH METHODOLOGY

Course Code: 20MPMS1CC1

Hours/week: 4

Credit : 4

Max.Marks:100

Internal Marks: 25

External Marks: 75

UNIT - I

(12 Hours)

Research – Meaning – Purpose – Types of Research – Research Process – significance of Research – Research in Management – Steps in Research – Identification – Selection and Formation of Research Problem – Research Design – Types of Design – Hypothesis – Types, Formation and Generation – #Review of Literature Nature and Purpose, Ethics in Research#.

UNIT - II

(12 Hours)

Instrumentation - Primary Types of Measurement Scales, Errors in Measurement, Validity and Reliability in Measurement, Scale classification and Scale Construction Techniques. Sampling Design: Process, Types and Determination of Sample Size.

UNIT - III

(12 Hours)

Data Collection Procedures : Sources of Data, procedures (Interviews, Observation and Questionnaires) Data Preparation, Massaging – Data Analysis and #Graphical Methods (Stem and Leaf Display, Box Plots and 2, 3 Dimensional Plots) #- Bivariate Analysis – Correlation and Simple Linear Regression Model.

UNIT - IV

(12 Hours)

Multivariate Analysis- Dependence Analysis: Multiple Regression, Discriminant Analysis, Canonical Correlation Analysis and Conjoint Analysis. Interdependence Analysis: Factor analysis, Multidimensional Scaling and Cluster Analysis –Structural Equation Modelling - Practical Session: SPSS & AMOS package.

UNIT - V

(12 Hours)

Meaning of Interpretation – Techniques – Techniques precaution in Interpretation of Report Writing – #Basics of Report Writing – Language and Format – Layout and Contents# - *Citation Patterns – Plagiarism.*

#Self-study portion.

..... Swayam Content: Research Methodology, Prof. G.S.Bajpai, National Law University, New Delhi.

Text Books:

TB 1. Joseph F Hair, Barry J. Babin, Rolph E. Anderson, William C. Black, Multivariate Data Analysis, Cengage Learning India Pvt. Ltd.; 8th Edition, 2018

TB 2. Kothari, Chakravanti Rajagopalachari. Research methodology: Methods and techniques. New Age International, 2004.

TB 3. K.N. Krishnaswamy, Appa Iyer Sivakumar & M. Mathirajan, Management Research Methodology, Pearson Education 1st Edition, 2006.

Unit – I	Chapter – 1, 2	-	T.B 2
Unit – II	Chapter – 10, 11	-	T.B 3
Unit – III	Chapter – 12,13,14, 15	-	T.B 3
Unit – IV	Chapter – 4,5,6,7,8,9	-	T.B. 1
Unit – V	Chapter – 14	-	T.B. 2



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3.4 Research Publications and Awards

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Reference Books:

1. Sekaran, Uma. Research methods for business: A skill building approach. John Wiley & Sons, 2006.
2. RanjitKumar, Research Methodology, Sage Publications, 2011.
3. Blumberg, Boris F., Donald R. Cooper, and Pamela S. Schindler. Business research methods. McGraw-hill education, 2014.

Course Outcomes: After taking this course the students will be able to

- CO1. Gain familiarity with a phenomenon to achieve insights by identifying right research problem, process and kinds of research ethically and solutions to meet the future needs, culture values and challenges.
- CO2. Develop understanding to identify right sampling technique to analyze the real time Business problems and common human issues.
- CO3. Have basic awareness to collect information from right source and testing the assumptions to attain the legal and social issues in various business problems.
- CO4. Have adequate knowledge on multivariate analysis.
- CO5. Expertise in report writing based on the research findings and identifies future direction for research.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code		Title of the Paper				Hours		Credits	
I	20MPMS1CC1		Research Methodology				4		4	
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)				
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CO2	✓	✓	✓			✓		✓		✓
CO3	✓	✓		✓		✓	✓	✓	✓	
CO4			✓	✓	✓			✓	✓	✓
CO5	✓	✓	✓	✓	✓	✓	✓	✓		✓
Number of Matches= 38, Relationship : High										

Prepared By:

Checked By

1. Dr.G. SIVANESAN

1. Dr.G.S.DAVID SAM JAYAKUMAR

Note:

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very poor	Poor	Moderate	High	Very high