

**RIMT UNIVERSITY**  
**Course: Ph. D Program**

**Research Methodology & Statistics Analysis**

(All subjects)  
w.e.f January 2025

Code: RMS5011

**Time: 3 Hours**

**Max Marks: 100**

**Internal: 40**

**External: 60**

*Course Objectives*

- a) To familiarize participants with basics of research and the research process.
- b) To enable the participants in conducting research work and formulating research synopsis and report.
- c) To impart knowledge for enabling students to develop data analytics skills and meaningful interpretation of the data sets so as to solve the business/Research problem.

*Learning Outcomes of the Course*

The aim of the course is to provide participants with an introduction to research methods and report writing. Upon successful completion of the course, the students will be able to:

- a) Develop an understanding about various kinds of research, objectives of doing research, research process, research design and sampling.
- b) Have a basic knowledge on qualitative research techniques.
- c) Acquire an adequate knowledge on measurement and scaling techniques as well as the quantitative data analysis.
- d) Get a basic awareness of data analysis-and hypothesis testing procedures.

**Unit-I (For all Ph.D programmes)**

**Introduction to Research Methodology:** Meaning, nature and scope; types of research, and research process. *Problem Definition:* Research problem; necessity of defining the problem; techniques involved in defining a problem; review of literature and identification of research gaps.

**Research Design:** Meaning of research design; need for research design; features of a good design; important concepts relating to research design; and different research designs.

**Sampling Design:** Census and sample survey; steps in sampling design; criteria of selecting a sampling; characteristics of a good sample design; different types of sample designs; and random sampling design.

**Unit-II (For all Ph.D programmes)**

**Measurement and Scaling Techniques:** Sources of error in measurement; tests of sound measurement; and important scaling techniques.

**Data Collection:** Collection of primary data; observation method; interview method; collection of data through questionnaires; collection of data through schedules; latest advances in methods of data collection; collection of secondary data; the case study method.

**Data Analysis-I:** *Descriptive Statistics Analysis* covering measures of central tendency, dispersion and asymmetry; measures of relationship using regression, correlation and association (in case of attributes). *Inference Statistics Analysis* covering sampling theory, concept of standard error and problem of estimation of a sample size. standard deviation Lorenz Curve, Co-efficient of variation (CV)

### **Unit-III ( For all Ph.D programmes except (History, Political Science, Public Administration Defense and Strategic Studies)**

**Data Analysis-II:** Testing of hypotheses covering basic concepts, procedure for hypothesis testing, tests of hypotheses, tests of significance for large samples and small samples, student's t-distribution, properties, and t-distributions and the t-levels applications of the t-distribution, chi-square test and goodness of fit, F-test and Z test, analysis of variance, non-parametric test, The Mann – Whitney test, Krushal-Wallis test. *Multivariate Regression Analysis:* econometric model formulation, estimation, testing and interpretation.

### **Unit-III (For Ph.D programmes History, Political Science, Public Administration Defense and Strategic Studies)**

Domain	Suggested topic of UNIT -III of RM 5011
<b>History</b>	* Sources and methods in Historical research, coins, oral history and digital records, comparative analysis in History. Interdisciplinary approaches: Archaeology, epigraphy, numismatics, and anthropology. Critical evaluation of sources. Authenticity, reliability, and bias in Historical evidence.
<b>Law</b>	Data Analysis II- Hypothesis, Large- and Small-scale samples, t-distribution, Research tests, Multivariate Regression Analysis  Legal Research- Legal Aid Reforms, Socio-Metric Legal Research, Online Research Database, Use of Internet Communication Technology, Use of Artificial Intelligence in Legal Research.
<b>Defence Studies</b>	The unit III in the existing syllabus of Research methodology is to be replaced by the following unit III. The Following changes, we have discussed and finalized.  Unit -III  Frequencies, percentages, proportions, mean, mode, median, hypothesis formulation, hypothesis testing, null hypothesis, interpreting the t Test ANOVA, chi-square and use of SPSS.
<b>Political Science</b>	
<b>Public Administration</b>	

### **Unit-IV (For all Ph.D programmes)**

**Research Tools:** *MS-Excel*, covering broad structure, features, data /file handling, formulae /functions and brief review of utilities of the package. *Statistical/Econometric Package* covering structure of package, data and file handling utilities and analysis utilities of the package.

**Interpretation and Report Writing:** Technique of Interpretation: Different Steps in Writing Report.

### **Recommended books:**

1. Kothari, C.R., *Research Methodology: Methods and Techniques*, New Age International Publishers, New Delhi, 2010.
2. Garrett Henery E., *Statistics in Psychology and Education*, Longmans, Green, And Co., 1958.
3. Fisher, R.A, *Statistical Methods for Research Workers*, Springer-Verlag New York, Inc. 1992.
4. Gupta, S.P, *Statistical Methods*, Sultan Chand & Sons, New Delhi, 2019.
5. Allen, R.G.D., *Statistics for Economists*. London (Hutchinson), 1949.
6. Blair, Morris M. *Elementary Statistics*, Henry Holt and Co., 1944
7. Smith and Smith, *Business and Economic Statistics*, South Western publishing co., 1996.

**Components/system of the award of internal assessment in the Ph.D programme**

.S. No	Paper	L	T	P	Credit	IA (40 Marks)				EA (60)	Total Marks
						Mid Term Exam	** Mini Research Project	#Assignment/attendance	Total		
1	Research Methodology & Statistical Techniques	3	2	-	4.0	Two Mid Term Exams of 20 Marks each. Average of two is taken for final Marks		20	40	60	100
2	Core Subject – I	3	-	-	3.0		-	20	40	60	100
3	Core Subject- II	3	-	-	3.0		20	-	40	60	100
4	Research & Publications Ethics	2	-	-	2.0		-	20	40	60	100
	Total	11	2	-	12.0		-	-	160	240	400

**\*\* Maximum duration to complete the research projects based on core subject -II is two months. Evaluation of project will be through presentation.**

# Nature/ Type of assignments of related to Core Paper –I will be discipline related.

**Note: In case of English, the assignment will be in the form of a term paper of about 10 pages.**