

Ramkrishna University, Jabalpur  
Department of Mathematics & Computer Science

SYLLABUS OF Ph.D. COURSE WORK IN THE SUBJECT MATHEMATICS  
(SESSION 2018-19 AND ONWARDS)

Syllabus opted by the Board of Studies in Mathematics, R.D. University in the meeting held on 10-07-18

Ph.D. Course work (**Mathematics**) shall consist of the following :-

The credits of the Ph.D. Course work (16 credits) will be as under :-

I.	<b>Research Methodology</b>	(4 credits)	100 marks
II.	<b>Review of Published Research in the relevant field</b>	(3 credits)	100 marks
III.	<b>Computer Applications</b>	(3 credits)	100 marks
	(i) Theory paper		50 marks
	(ii) Practical's		30 marks
	(iii) Viva voce		20 marks
IV.	<b>One Advance subjects in the relevant field</b>	(3 credits)	100 marks
	<b>Choose any one paper out of the following optional papers</b>		
	Paper-I : Homotopy and Singular Homology theory		
	Paper-II : Rational Finite Elements		
	Paper-III : Spline Approximation theory		
	Paper-IV : Theory of Distribution		
	Paper-V : Fuzzy Topology		
	Paper-VI : Mathematical Cryptography		
V.	<b>Comprehensive Viva-voce</b>	(3 credits)	100 marks
	(i) Power Point presentation of the synopsis		50 marks
	(ii) Viva-voce		50 marks

**Total marks**

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**500 marks**  
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M. Mani  
10-07-2018

M. Dhruv  
10/7/18

S. S. S.  
10/7/18

J. J. J.  
10/07/18

M. M. M.  
10/7/18

B. B. B.  
10/7/18

# SIX MONTHS COURSE WORK

## **Research Methodology**

**Maximum marks = 100  
(04 Credits)**

### **Unit-I :**

Introduction to research methodology: Meaning, Objectives and types of research, Motivation in research, Research approaches and Research methods verses methodology, Significance of research, Criteria of good research, Research design, Components.

### **Unit-II :**

Research problem : What is research problem? Identification and Selection of Research problem. Formulation of Research objectives. Domain and boundaries of research problem. Research problem analysis. Variables and parameters, Technique selection.

### **Unit-III :**

Writing of research paper: Research and scientific method, Survey method, Experimental method, Research process, Research paper preparation, Synopsis writing, Writing a research project, Research support agencies, Preparation of project report, Writing a dissertation, Writing thesis, Writing of review articles, Plagiarism prevention.

### **Unit-IV :**

Research presentation: Presentation of project proposal, Presentation of project report, Presentation at research degree meeting. A poster presentation of research paper, Direct (Oral) presentation of research. Presentation of Talk, Presentation and Delivering of Plenary Lecture, Virtual/ Tele presentation.

### **Unit-V :**

**Testing of Hypothesis:** Definition, elements of testing of hypothesis – simple and compound hypothesis, null and alternate hypothesis, degrees of freedom, level of significance, errors of two kinds, Parametric test-t, F, Z Chi-square etc. and non-parametric tests- Run, median, Mann Whitney etc. for testing of hypothesis, Limitations of tests of hypothesis.

### **Reference books :**

1. C.R. Kothari, Research Methodology, New Age International publishers (2004).
2. Catherine Dawson, Practice Research Methods, UBS Publishers Distributors, New Delhi (2002).
3. Ranjit Kumar, Research Methodology – A Step by step guide for Bengineers (2nd Ed.). Singapore, Pearson Education (2005).
4. Michael Davis, Ethics and the University, Routledge (1999).
5. Montgomery, Douglas C. (2007), 5/e, Design and Analysis of Experiments, (Wiley India).
6. Montgomery, Douglas C. & Runger, George C. (2007), 3/e, Applied Statistics & Probability for Engineers (Wiley India).

MP  
M. Anurbe #50  
10/7/18  
2  
Jash  
10/07/18  
Manday  
10/7/18  
10/7/18  
B. B. B.

