

UNIVERSITY OF KASHMIR, SRINAGAR

8th SEMESTER (FYUGP HONOURS WITH RESEARCH) MAJOR MATHEMATICS PROJECT WITH DISSERTATION (2026 Batch onwards)

COURSE CODE:MMT8J26RP

CREDITS: 4 + 8 = 12

MAX. MARKS: 300

Marks Breakup:

Research Methodology:	100 Marks
Dissertation Write Up:	150 Marks
Presentation:	25 Marks
Viva voce and defense:	25 Marks

A group of **5–8 students** shall undertake the dissertation work under the supervision of a faculty member of the College/Institute. A supervisor may guide **more than one group**, subject to feasibility and departmental norms. At the initial stage, the supervisor shall assist the students in the preparation and submission of a **synopsis** outlining the proposed research plan for approval by the competent authority.

The **Research Methodology Course (MMT826J2)** along with **Project Work (MMT8J26RP)** shall collectively carry **12 credits**, and the students are required to ensure completion of the prescribed credits. The syllabus for the Research Methodology course is enclosed herewith.

The final project report must reflect the **original and independent work of each group of students**. The research undertaken should address a **relevant contemporary issue** and aim to contribute meaningfully to the existing body of knowledge.

Structure of the Dissertation Report

1. Introduction

- Provide an overview of the research topic along with necessary background.
- Discuss the significance and relevance of the chosen area of study.
- Clearly state the aims and objectives of the research.

2. Literature Review

- Review and synthesize earlier studies related to the topic.
- Summarize major findings from existing research.
- Organize the literature either thematically or in chronological order.
- Identify gaps in the existing body of knowledge.
- Ensure proper referencing and citation throughout.

3. Research Methodology

- Formulate the problem precisely with definitions, assumptions, and notation.
- Identify and apply appropriate mathematical tools/techniques (analytical, algebraic, numerical, or computational).
- Develop results through rigorous proofs, derivations, or algorithms in a logical sequence.
- Include examples or simulations where necessary to illustrate and validate the results.

4. Results / Findings

- Present the outcomes of the study in a clear and objective manner.
- Use tables, figures, and charts for effective data presentation (if any).
- Ensure alignment of results with the stated objectives.

5. Discussion

- Analyze and interpret the findings in relation to the objectives.
- Discuss implications and possible explanations of the results.
- Compare findings with previous studies to highlight similarities or differences.

6. Conclusion and Recommendations

- Provide a concise summary of the entire study.
- Draw logical conclusions based on the findings.
- Offer practical recommendations where applicable.
- Suggest directions for further research considering limitations.

7. References

1. Provide a complete list of all cited sources.
2. Follow a consistent citation style (such as AMS or equivalent).
3. Include books, journal articles, and authentic online resources.

UNIVERSITY OF KASHMIR, SRINAGAR
8th SEMESTER (FYUGP HONOURS WITH RESEARCH) MAJOR
Course Title: Research Methodology in Mathematics (Undergraduate Level)
(Batch 2026 onwards)

Credits: 4

Max. Marks: 100

Course Objectives

- To introduce students to the **basics of mathematical research and problem formulation.**
 - To develop skills in **logical reasoning and proof techniques.**
 - To familiarize students with **basic computational tools and mathematical writing.**
 - To inculcate **academic ethics and effective research communication.**
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UNIT I: Introduction to Research

- Research types (pure/applied), problem identification
- Basics of abstraction and mathematical thinking
- Literature sources (books, journals, online databases)
- Research ethics and plagiarism

UNIT II: Mathematical Techniques

- Methods of proof: direct, contradiction, induction
- Problem-solving strategies (heuristics)
- Basic mathematical modeling
- Approximation and error concepts

UNIT III: Computational Tools & Writing

- Introduction to LaTeX (basic document preparation)
- Basics of programming (C/Python) for computations
- Use of software (MATLAB/GeoGebra)
- Structure of a mathematical report and referencing

UNIT IV: Project & Communication

- Synopsis writing and project planning
- Presentation of results (tables, graphs)
- Writing conclusions and interpretations
- Seminar presentation and viva voce skills

Recommended References

1. Kothari, C.R. – *Research Methodology: Methods and Techniques.*
 2. Higham, N.J. – *Handbook of Writing for the Mathematical Sciences.*
 3. Lamport, L. – *LaTeX: A Document Preparation System.*
 4. Polya, G. – *How to Solve It.*
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