Semester- IV

M.Sc. (Mathematics) Semester-IV

Dissertation/Project/Internship

COURSE TITLE: Dissertation/Project

COURSE CODE: MHMSC-S4D1-24CR25 [CREDITS – 24]

Course learning outcome
Upon successful completion of this course, students will be able to: 1. Demonstrate the ability to independently identify a research problem within the field of mathematics, conduct a thorough literature review, and apply appropriate mathematical methods and techniques to explore and solve the problem. 2. Employ advanced mathematical concepts, models, and computational tools (such as optimization, statistical analysis, differential equations, or algebraic structures) to address complex problems in mathematics or related interdisciplinary fields. 3. Formulate and solve mathematical models that represent real-world problems, analyze the results, and critically evaluate the effectiveness of different methodologies in the context of the project or dissertation. 4. Collect, analyze, and interpret quantitative or qualitative data from various sources (e.g., simulations, experimental data, real-world applications) using appropriate mathematical or statistical techniques, and draw conclusions that are both mathematically sound and contextually relevant. 5. Write a comprehensive, well-structured dissertation or project report that clearly explains the mathematical concepts, methodologies, results, and conclusions. Communicate complex ideas in a manner that is accessible to both mathematical and non-mathematical audiences. 6. Prepare and deliver a formal oral presentation of the research project/dissertation, showcasing the ability to communicate mathematical ideas clearly and confidently, respond to questions, and defend the validity and implications of the work. 7. Demonstrate Ethical Research Practices: Adhere to ethical standards in conducting research, ensuring integrity in data collection, analysis, and reporting. Respect intellectual property rights and cite sources accurately, following best practices for academic integrity. 8. Engage in Professional and Interdisciplinary Collaboration: For students involved in internships or collaborative projects, demonstrate the ability to work effectively in interdisciplinary teams, contributing mathematical expertise to solve practical problems in areas like finance, engineering, technology, or economics. 9. Demonstrate effective time management and organizational skills by planning, executing, and completing the research project or internship within the prescribed timeframe. Regularly report progress and adjust the research direction based on feedback and outcomes. 10. Reflect critically on the learning experience, identifying areas of personal and professional growth, and outlining plans for further development, whether through academic pursuits, professional opportunities, or continued self-directed learning in mathematics. 11. Self-directed Learning and Professional Growth: Engage in continuous learning throughout the course, taking the initiative to explore advanced topics, tools, and methodologies in mathematics, while enhancing one's skills and preparing for professional career opportunities or further academic research.

Suggested Assessment Methods:

- **Dissertation/Project Report**
- **Oral Defence/Presentation**
- **Supervisor/Internship Mentor Evaluation**
- **Progress Reports**
- **Final Project Outcome**

~*****~