M. Phil. MATHEMATICS SYLLABUS

(Applicable for students admitted in June 2018 and onwards)

I SEMESTER			
DSC 1	RESEARCH AND EDUCATIONAL METHODOLOGY		18MCMA11
Hrs/Week: 4	Hrs/ Sem: 60	Hrs/Unit: 12	Credits: 4

Course Objectives

- ➢ Provide the overview of research methodology.
- ➢ Develop their skills in Latex and MATLAB.
- ➢ Introduce the required mathematical research foundations of the Banach Algebra.
- ➢ Improve their skills in Teaching methodology

UNIT I: Research Methodology:What is Research - Literature Collection - Research Report - Research Report (Formatting and Typing).

UNIT II: LATEX: Drawing with Latex - Presentation Material – Letters- **MATLAB:** Graphics – Basics 2D Plots – Using subplot for Multi Graphs – 3D Plots.

UNIT III: Banach Algebras : Introduction – Complex homomorphism – Basic Propertiesof spectra – Gelfand Mazur Theorem.

UNIT IV: Commutative Banach Algebras: Ideals and homomorphisms – Wiener's lemma – Gelfand transforms - Involutions – Gelfand Naimark Theorem

UNIT V: **Methodology of Teaching**: Teaching – Objectives of Teaching, Phases of Teaching – Teaching Methods: Lecture Method, Discussion Method, Discovery Learning. Inquiry, Problem Solving Method, Project Method, Seminar – Integrating ICT in Teaching: Individualized Instruction, Ways for Effective Presentation with Power Point – Documentation – Evaluation : Formative, Summative and Continuous and Comprehensive Evaluation – Later Adolescent Psychology: Meaning, Physical, Cognitive, Emotional, Social and Moral Development – Teaching Later Adolescents.

TEXT BOOKS:

1. Research Methodology for Biological Sciences by N. Gurumani - MJP Publishers.

   UNIT I- Chapters 1,2,4,7

2. Guide to LATEX by Helmut Kopka and Patrick W. Daly, Fourth Edition, Addison –Wesley, Pearson Education, 2004.

   UNIT II- Chapters 16, 17, 18

3. Getting Started with MATLAB – A quick introduction for Scientist and Engineers by Rudra Pratap, Oxford University Press 2003.

   UNIT II- Chapters 6 (6.1 – 6.3)

4. Functional Analysis (Second Edition) by Walter Rudin- Tata McGraw-Hill Publishing Company Ltd, New Delhi.

UNIT III: Chapter 10 (10.1 to 10.20)
UNIT IV: Chapter 11 (11.1 to 11.20)

References: (For UNIT – V)

1. Sampath.K., Panneerselvam. Aand Santhanam. S., (1984), Introduction to educational technology. (2nd revised). New Delhi: Sterling Publishers.
2. Sharma.S.R.(2003). Effective classroom teaching modern methods, tools and techniques. Jaipur:Mangal Deep.
3. Vedanayagam, E.G. (1989). Teaching technology for college teachers, New York : Sterling Publishers.

Course Learning Outcomes:
> ➤ After successful completion of this course, students will be able to understand research methods and typeset mathematical document in Latex and MATLAB
> ➤ Possess the basic knowledge about Banach Algebra and Spectral theory
> ➤ Acquire detailed knowledge about Teaching Methods, Integrating ICT in Teaching and Ways for Effective Presentation with Power Point, Documentation and Evaluation.