SYLLABUS FOR M.A./M.SC.INMATHEMATICS

Under Choice Based Credit System (CBCS)

Effective from 2020-2021

The University of Burdwan
Burdwan-713104
West Bengal

Semester IV (Applied Stream):

Course				Lect. Hr /week	Dur. of Exam (in H)	Marks			Credit
Course code	Type	T/P	Name			I.A.	E.T	Total	
MSMA401	Core	T	Dynamical Systems, Chaos and Fractals	4	2T/4P	10	40	50	4
MSMA402	Core	T	Fluid Mechanics	4	2T/4P	10	40	50	4
MSMA403	Core	T	Introduction to Quantum Mechanics and Wavelet Analysis	4	2T/4H	10	40	50	4
MSMA404	DE	T	**Vide Appendix V**	4	2T/4H	10	40	50	4
MSMA405	DE	T	**Vide Appendix VI**	4	2T/4H	10	40	50	4
MSMA406	Project	N.A.	N.A.	4	---	---	50	50	4
					Total credit				24

Appendix V

Basket of courses for DE (Only one course has to be chosen from the basket)
MSMA404-1: Boundary Layer Theory and Magneto-hydrodynamics-II
MSMA404-2: Turbulent Flows-II
MSMA404-3: Space Sciences-II

Appendix VI

Basket of courses for DE (Only one course has to be chosen from the basket)
MSMA405-1: Advanced Optimization-II
MSMA405-2: Advanced Operations Research-II
MSMA405-3: Quantum Mechanics-II
MSMA405-4: Fuzzy Mathematics and Applications-II

Semester IV (Pure Stream):

Course				Lect. Hr /week	Dur. of Exam (in H)	Marks			Credit
Course code	Type	T/P	Name			I.A.	E.T	Total	
MSMP401	Core	T	Graph Theory, Set Theory and Logic	4	2T/4P	10	40	50	4
MSMP402	Core	T	Analysis II	4	2T/4P	10	40	50	4
MSMP403	Core	T	Topology	4	2T/4H	10	40	50	4
MSMP404	DE	T	**Vide Appendix VII**	4	2T/4H	10	40	50	4
MSMP405	DE	T	**Vide Appendix VIII**	4	2T/4H	10	40	50	4
MSMP406	Project	N.A.	N.A.	4	---	---	50	50	4
					Total credit				24

Appendix VII

Basket of courses for DE (Only one course has to be chosen from the basket)
MSMP404-1: Advanced Functional Analysis-II
MSMP404-2: Advanced Differential Geometry – II
MSMP404-3: Advanced Complex Analysis-II
MSMP404-4: Measure and Integration-II

Appendix VIII

Basket of courses for DE (Only one course has to be chosen from the basket)
MSMP405-1: Euclidean and non – Euclidean Geometries-II
MSMP405-2: Commutative Algebra-II
MSMP405-3: Advanced Operator Theory –II
MSMP405-4: Ergodic Theory-II
MSMP405-5: Algebraic Topology-II

Definition of Fuzzy multiobjective linear programming problems. A brief survey of the methodology of solving fuzzy M.O.L.P. and fuzzy goal programming. [6H]

Fuzzy group theory, ring. Definitions and basic properties. [6H]

Fuzzy topology: definition and basic properties. bitopological spaces. [6H]

Fuzzy differential equations: triangular fuzzy number as coefficients, applications. [6H]

Fuzzy graph theory: fuzzy arcs, paths, cycle. Trees, cut-vertices, fuzzy planar graph. [8H]

Text books:
2) Fuzzy sets and fuzzy logic. G.J. Klir & B Yuan (Prentice Hall of India Ltd. New Delhi 1997).

Reference books
3) Fuzzy Set Theory and its Applications. H. J. Zimmermann (Allied Publishers Ltd. New Delhi 1991).

Course: MSMA406
Project (Marks 50)

Each student is to carry out a project on a topic of his/her own choice in the field of Mathematics and its applications. The nature of the work may be a new investigation or a review of the literature or a detailed analysis of a published research paper or writing an article on a topic at advanced Post Graduate level. A regular student will be guided by a faculty of the Department (Project Supervisor) for carrying out his/her project work. Allocation of Project Supervisors will be decided in the Departmental Committee meeting. Students (other than regular) will carry out project work at their own.

Distribution of marks will be as follows: Written submission: 25 marks, Presentation: 15 marks, Viva-voce: 10 marks

Course: MSMP401
Graph Theory, Set Theory and Logic (Marks-50)
Total Lectures Hours: 50H
Group A
Graph Theory (Marks-25)

Objectives

To understand and apply the fundamental concepts of graph theory based on tools in solving practical problems.

Learning outcomes

3. A Basic Course in Algebraic Topology. W. S. Massey (Springer-Verlag, New York Inc., 1991).
4. Lecture Notes on Elementary Topology and Geometry. I. M. Singer & J. A. Thorpe, 1st edition(Springer, India 2003).

Course: MSMP406
Project (Marks 50)

Each student is to carry out a project on a topic of his/her own choice in the field of Mathematics and its applications. The nature of the work may be a new investigation or a review of the literature or a detailed analysis of a published research paper or writing an article on a topic at advanced Post Graduate level. A regular student will be guided by a faculty of the Department (Project Supervisor) for carrying out his/her project work. Allocation of Project Supervisors will be decided in the Departmental Committee meeting. Students (other than regular) will carry out project work at their own.

Distribution of marks will be as follows: Written submission: 25 marks, Presentation: 15 marks, Viva-voce: 10 marks