| SBAS | | | YEAR 2018-2020 (SCHEME OF STUDIES) | | | | | | | | | | | | M.SC. MATHEMATICS | |

ODD SEMESTER

YEAR	SN	COURSE CODE	NATURE OF COURSE	COURSE TITLE	L	T	P	C
FIRST	1	BSMA701	CC	LINEAR ALGEBRA	4	0	0	4
	2	BSMA703	CC	REAL ANALYSIS	4	0	0	4
	3	BSMA705	CC	PROBABILITY AND STATISTICS	4	0	0	4
	4	BSMA707	CC	INTEGRAL EQUATIONS AND CALCULUS OF VARIATIONS	4	0	0	4
	5	BSMA709	CC	MATHEMATICAL MODELLING	4	0	0	4
	6	BSMA711	SEC	SEMINAR-I	0	0	0	2
				TOTAL	20	0	0	22

EVEN SEMESTER

SN	COURSE CODE	NATURE OF COURSE	COURSE TITLE	L	T	P	C
1	BSMA702	CC	ABSTRACT ALGEBRA-I	4	0	0	4
2	BSMA704	CC	TOPOLOGY	4	0	0	4
3	BSMA706	CC	COMPLEX ANALYSIS	4	0	0	4
4	BSMA708	CC	ADVANCED ORDINARY DIFFERENTIAL EQUATIONS	4	0	0	4
5	BSMA710	CC	NUMERICAL ANALYSIS	4	0	0	4
6	BSMA712	SEC	SEMINAR-II	0	0	0	2
			TOTAL	20	0	0	22

Course Type	Nomenclature
CC	Core Course
SEC	Skill Enhancement Course
AECC	Ability Enhancement Compulsory Course
GEC	Generic Elective Course
DSE	Discipline Specific Course

SECOND YEAR — ODD SEMESTER

YEAR	SN	COURSE CODE	NATURE OF COURSE	COURSE TITLE	L	T	P	C
SECOND	1	BSMA801	CC	ABSTRACT ALGEBRA-II	4	0	0	4
	2	BSMA803	CC	MEASURE AND INTEGRATION	4	0	0	4
	3	BSMA805	CC	ADVANCED PARTIAL DIFFERENTIAL EQUATIONS	4	0	0	4
	4	BSMA807	CC	OPERATIONAL RESEARCH	4	0	0	4
	5	BSMA809	CC	FLUID DYNAMICS	4	0	0	4
	6	BSMA811	CC	ADVANCED MATLAB PROGRAMMING	2	0	0	2
	7	BSMA851	CC	ADVANCED MATLAB PROGRAMMING LAB	0	0	2	1
				TOTAL	22	0	2	23

SECOND YEAR — EVEN SEMESTER

SN	COURSE CODE	NATURE OF COURSE	COURSE TITLE	L	T	P	C
1	BSMA802	CC	FUNCTIONAL ANALYSIS	4	0	0	4
2	BSMA804	CC	MATHEMATICAL PROGRAMMING	4	0	0	4
3		DSE	ELECTIVE	4	0	0	4
4		DSE	ELECTIVE	4	0	0	4
5	BSMA852	SEC	DISSERTATION	0	0	0	6
			TOTAL	16	0	0	22

ELECTIVES

	COURSE CODE	COURSE TITLE	L	T	P	C		COURSE CODE	COURSE TITLE	L	T	P	C
1	BSMA806	FUZZY SETS AND APPLICATIONS	4	0	0	4	7	BSMA818	DISCRETE MATHEMATICS	4	0	0	4
2	BSMA808	APPLIED STOCHASTIC PROCESSES	4	0	0	4	8	BSMA820	MATHEMATICAL THEORY OF	4	0	0	4
3	BSMA810	THEORY OF RELATIVITY	4	0	0	4	9	BSMA822	NORMED LINEAR SPACES	4	0	0	4
4	BSMA812	MATHEMATICAL BIOLOGY	4	0	0	4	10	BSMA824	THEORY OF ELASTICITY	4	0	0	4
5	BSMA814	DIFFERENTIAL GEOMETRY	4	0	0	4	11	BSMA826	CLASSICAL MECHANICS	4	0	0	4
6	BSMA816	CRYPTOGRAPHY	4	0	0	4	12	BSMA828	NUMBER THEORY	4	0	0	4

TOTAL HOURS: LECT [L]+PRAC [P]+TUT [T]	80
TOTAL CREDITS [C]	89

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M.Sc. Maths							Year 2019-2021 (Scheme of Studies as per CBCS)		

ODD SEMESTER

Year	SN	Course Code	NATURE OF COURSE	Course Title	C
First	1	BSMA701A	CC	Linear Algebra	4
	2	BSMA703A	CC	Real Analysis	4
	3	BSMA705A	CC	Probability and Statistics	5
	4	BSMA707A	CC	Integral Equations and Calculus of Variations	4
	5	BSMA811A	CC	Advanced MATLAB Programming	3
			TOTAL		**20**
Second	1	BSMA801A	CC	Abstract Algebra-II	4
	2	BSMA803A	CC	Measure and Integration	4
	3	BSMA805A	CC	Advanced Partial Differential Equations	4
	4		DSE	Discipline Elective - I	5
	5		DSE	Discipline Elective - II	5
			TOTAL		**22**

EVEN SEMESTER

SN	Course Code	NATURE OF COURSE	Course Title	C
1	BSMA702A	CC	Abstract Algebra-I	4
2	BSMA704A	CC	Topology	4
3	BSMA706A	CC	Complex Analysis	4
4	BSMA708A	CC	Advanced Ordinary Differential Equations	4
5	BSMA710A	CC	Numerical Analysis	5
6	BSMA714A	SEC	LaTeX Lab	1
		TOTAL		**22**
1	BSMA802A	CC	Functional Analysis	4
2	BSMA804A	CC	Mathematical Programming	4
3		DSE	Discipline Elective - III	4
4		DSE	Discipline Elective - IV	4
5	BSMA852A	SEC	Dissertation	6
		TOTAL		**22**

Course Type	Nomenclature
CC	Core Course
SEC	Skill Enhancement Course
AECC	Ability Enhancement Compulsory Course
GEC	Generic Elective Course
DSE	Discipline Specific Course

Discipline Elective I - II (Choose any two)

	Course Code	Course Title	C
1	BSMA821A	Mathematical Modelling	4
2	BSMA823A	Operational Research	4
3	BSMA825A	Basics of Statistical Inference	4
4	BSMA827A	Stochastic Processes and Queuing Theory	4
5		Network Security & Cryptography	4
6		Artificial Intelligence	4
1	BSMA871A	Mathematical Modelling Lab	1
2	BSMA873A	Operational Research Lab	1
3	BSMA875A	Basics of Statistical Inference Lab	1
4	BSMA877A	Stochastic Processes and Queuing Theory	1
5		Network Security & Cryptography Lab	1
6		Artificial Intelligence Lab	1

Discipline Electives III - IV (Choose any two courses from one group)

		Group A	
1	BSMA828A	Number Theory	4
2	BSMA830A	Advanced Measure Theory	4
3	BSMA832A	Theory of Bounded Operators	4
4	BSMA834A	Harmonic Analysis	4
		Group B	
1	BSMA806A	Fuzzy Sets and Applications	4
2	BSMA809A	Fluid Dynamics	4
3	BSMA812A	Mathematical Biology	4
4	BSMA818A	Discrete Mathematics	4

Total Credits [C]	86

Total Credits [C]	86

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BSMA852   Dissertation   (Credits 6)

Dissertation based on Research project: Suitable Topics in Mathematical Sciences
Presentation & Viva-voce

1. Students will be divided among faculty members for the supervision of the research work.

2. In the first week of Semester III, each faculty member will assign a suitable research topic to the students from the selected topics in the areas of Mathematical Sciences.

3. The student will work on the assigned research topic during semesters III and IV in regular consultation with his/her assigned teacher.

4. The student will write a dissertation based on the research work carried out during Semesters III and IV and prepare two copies to be submitted to the office of the Dean of School duly signed by the student and the supervisor in the sixth week of IV semester or a date decided by the Dean of School.

5. Before preparing power point presentation and submission of dissertation, each student has to deliver a seminar talk on his/ her research project work on a date fixed by Dean of School necessary suggestions has to be incorporated in the final draft of dissertation.

6. The student will make a power point presentation based on the work carried out and mentioned in the dissertation to the board of examiners appointed by the University.

BSMA852A	DISSERTATION	L	T	P	C
Version 1.0		0	0	0	6
Pre-requisites/Exposure	--				
Co-requisites	--				

Course Objectives

1. Demonstrate advanced critical research skills in relation to career development or work-related learning studies.

2. Acquire the skills to publish the data in reputed journals, conference proceeding and workshops.

3. Demonstrate an ability to present and defend their research work to a panel of experts.

Course Outcomes

On completion of this course, the students will be able to

CO1   Know the concept, scope of research.

CO2   Enable the students to gain knowledge on particular areas of research.

CO3   Understand the scientific methods to study region.

CO4   Analyse the practical knowledge of research and apply the subject matter knowledge in the field.

CO5   Learn the art of reporting.
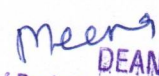
CO6   Able to educate the technical skill of writing.

Catalog Description

The objective of research project is to enable the student with hands-on experiences with learning to lead a research work. Research gives them experience based and active learning. It engages students with contexts, including the social and civic. The mentoring and collaboration dimensions of postgraduate research can foster ownership for commitment to high standards and accountability. While the research process in a discipline may be well-established, research always requires creativity, as well as patience and resolve in grappling with what sometimes feels ambiguous to all participants, including the faculty mentor. These features create opportunities for students to explore their own learning styles as well as develop exposure to those of others.

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DEAN
School of Basic & Applied Sciences (SBAS)
K.R. Mangalam University
Sohna road, Gurugram
Haryana 122103

Guidelines

1. Students will be divided among faculty members of the school for the supervision of the research work.

2. In the first week of Semester III, each faculty member will assign a suitable research topic to the students from the selected topics in the areas of mathematical sciences.

3. The student will work on the assigned research topic during semesters III and IV in regular consultation with his/her assigned faculty member.

4. The student will write a dissertation based on the research work carried out during Semesters III and IV and prepare two copies to be submitted to the office of the Dean of School duly signed by the student and the supervisor in the sixth week of IV semester or a date decided by the Dean of the School.

5. Before preparing power point presentation and submission of dissertation, each student has to deliver a seminar talk on his/ her research project work on a date fixed by HOD, necessary suggestions have to be incorporated in the final draft of dissertation.

6. The student will make a power point presentation based on the work carried out and mentioned in the dissertation to the board of examiners appointed by the University.

Modes of Evaluation: Quiz/Assignment/ presentation/ extempore/ Written Examination
Examination Scheme:

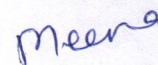| Components	Internal (Interaction of Student with Supervisor)	External			Total
		Relevance of topic (20)	Presentation (20)	viva (10)	100
Weightage (%)	50	20	20	10	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping between COs and POs		
	Course Outcomes (COs)	**Mapped Program Outcomes**
CO1	Know the concept, scope of research.	PO6
CO2	Enable the students to gain knowledge on particular areas of research.	PO1

CO3	Understand the scientific methods to study region.	**PO8**
CO4	Analyse the practical knowledge of research and apply the subject matter knowledge in the field	**PO3**
CO5	Learn the art of reporting.	**PO9**
CO6	Able to educate the technical skill of writing.	**PO4**

Course Code	Course Title	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2	PSO3	PSO4	PSO5
BSMA 852A	Dissertation	3		3	2		3		3	3			3	3		

Column descriptions:
- PO1: Encourage critical thinking to conduct scientific investigations in a biased manner without prejudiced assumptions
- PO2: Assist students in analyzing questions, formulating hypotheses, evaluating and validating findings, and drawing logical conclusions
- PO3: Prepare students for pursuing research or careers and to design methods to conduct investigations of complex societal and environmental issues.
- PO4: Continue to acquire relevant knowledge and skills to evaluate the concepts and scientific developments to take up any challenge.
- PO5: Enhance knowledge mobilization through increased application of mathematics.
- PO6: Able to use the advance knowledge in consultancy to solve real life problems.
- PO7: Learn the subject with curiosity to understand new scientific developments.
- PO8: Understand international perspective about mathematics.
- PO9: Capability to use appropriate software's to solve mathematical equations.
- PO10: Develop the protocols as per laboratory standards to accomplish the objectives.
- PSO1: Develop aptitude to formulate concepts based on fundamental axioms of mathematics.
- PSO2: Innovate, invent and solve complex mathematical problems using the knowledge of pure and applied mathematics.
- PSO3: Understand demands of the growing field of Mathematics by lifelong learning.
- PSO4: Develop problem-solving skills, critical thinking, and interest through assignments and project work
- PSO5: Prepare students for competitive examinations such as NET, GATE, and many others.

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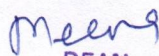K.R. Mangalam University
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K.R. Mangalam University
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Haryana 122103

1=weakly mapped
2= moderately mapped
3=strongly mapped

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO1 1	PSO 1	PSO 2	PS O3	PSO 4	PSO 5
CO1	2											3	2	1	1	2
CO2								2				3	2	1	1	2
CO3		3										3	2	1	1	2
CO4				2								3	2	1	1	2
CO5			3									3	2	1	1	2
CO6	3											3	2	1	1	2

Programme and Course Mapping

1=lightly mapped   2= moderately mapped   3=strongly mapped

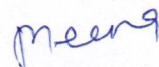|	Dissertation
Local	-
Regional	-
National	-
Global	-
Employability	Choice Based Credit System having field projects / research projects / internships (1.3.4) Courses on employability/ entrepreneurship/ skill development (1.1.3); Student centric methods, such as experiential learning, participative learning and problem-solving methodologies (2.3.1)
Entrepreneurship	Entrepreneurship; Team work/ Creativity by designing research problem
Skill Development	Disciplinary knowledge; Research related skills; scientific skills,
Professional Ethics	-
Gender	-
Human Values	-
Environment & Sustainability	-
SDG	Equal Access to TVET and Higher Education (SDG 4.3), Quality Education and skills for employability 4.4
NEP	Higher Education System through scientific temper (9.1.1) India's Higher Education System through scientific temper (9.1.1)Towards a More Holistic and

		Multidisciplinary Education opportunitiesfor cross-disciplinary and interdisciplinary thinking (11.6); strong culture of research and knowledge creation (17.6) "
POE/4th IR		Employability, Project, Hands on Experience, Entrepreneurship; Team work