SHIVAJI UNIVERSITY, KOLHAPUR - 416004,
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शिवाजी विद्यापीठ, कोल्हापूर - ४१६००४, महाराष्ट्र
दूरध्वनी - ईपीएबीएक्स - २६०९०००, अभ्यासमंडळे विभाग दुरध्वनी विभाग ०२३१–२६०९०९४

Estd. 1962
"A++" Accredited by
NAAC(2021)
With CGPA 3.52

जा.क्र.शिवाजी वि./अमं/732 दिनांक. 09/10/ 2023

प्रति,

मा. अध्यक्ष व सदस्य,
सर्व अभ्यास/अस्थायी मंडळे (सायन्स)
शिवाजी विद्यापीठ, कोल्हापूर

विषय :– शैक्षणिक वर्षे 2023–24 पासून एम.एस्सी. अभ्यासक्रमाच्या आराखडया (Structure) बाबत.

महोदय/महोदया,

उपरोक्त विषयास अनुसरून आदेशान्वये कळविण्यात येते की, राष्ट्रीय शैक्षणिक धोरण, 2020 ची राज्यातील अंमलबजावणीच्या अनुषंगाने विद्यापीठ अधिकार मंडळाच्या निर्णयानुसार शैक्षणिक वर्षे 2023–24 पासुन एम.एस्सी. अभ्यासक्रमासाठी सोबत जोडलेला कॉमन आराखडा **(Structure)** व **Formatting (Templet)** लागू करण्यात आले आहे याची नोंद घ्यावी.

सदरची बाब सर्व शिक्षक, विद्यार्थी व संबंधीतांच्या निदर्शनास आणावी.

कळावे,

आपला विश्वासू

(डॉ. एस. एम. कुबल)
उपकुलसचिव

प्रतः–

प्र.अधिष्ठाता विज्ञान व तंत्रज्ञान विद्याशाखा
मा.संचालक परीक्षा व मुल्यमापन मंडळ
परीक्षक नियुक्ती विभाग–1,2
सर्व परीक्षा विभाग (ऑन)
माहितीसाठी व पुढील योग्य त्या कार्यवाहीसाठी.

SHIVAJI UNIVERSITY, KOLHAPUR

Established: 1962

A^{++} Accredited by NAAC (2021) with CGPA 3.52

Structure and Syllabus in Accordance with

National Education Policy - 2020

with Multiple Entry and Multiple Exit

Master of Science (Mathematics)

under
Faculty of Science and Technology

(To Be Implemented From Academic Year 2023-24)

INDEX

1. Preamble

(Write in 75 – 100 words as per your subject requirement)

2. Duration

3. Eligibility for Admission

4. Medium of Instruction

5. Programme Structure

Structure in Accordance with National Education Policy - 2020
With Multiple Entry and Multiple Exit Options
M.Sc. (……..) Part – I (Level-6.0)

	Course Code	Teaching Scheme			Examination Scheme					
		Theory and Practical			University Assessment (UA)			Internal Assessment (IA)		
		Lectures + Tutorial/ (Hours / week)	Practical (Hours / week)	Credit	Maximum Marks	Minimum Marks	Exam. Hours	Maximum Marks	Minimum Marks	Exam. Hours
Semester-I										
Major Mandatory	MMT-101	4	--	4	80	32	3	20	8	1
	MMT -102	4	--	4	80	32	3	20	8	1
	MMT/ MMPR -103	2/4	4/--	4	80	32	3	20	8	1
	MMT/ MMPR -104	2/--	--/4	2	40	16	2	10	4	1
Major Elective	MET/ MEPR-105	2/4	4/--	4	80	32	3	20	8	1
Research Methodology	RM-106	4	--	4	80	32	3	20	8	1
Total				22	440			110		
Semester-II										
Major Mandatory	MMT-201	4	--	4	80	32	3	20	8	1
	MMT -202	4	--	4	80	32	3	20	8	1
	MMT/ MMPR -203	2/4	4/--	4	80	32	3	20	8	1
	MMT/ MMPR -204	2/--	--/4	2	40	16	2	10	4	1
Major Elective	MET/ MEPR-205	2/4	4/--	4	80	32	3	20	8	1
OJT/FP	OJT-206			4	*					
Total				22	440			110		
Total (Sem I + Sem II)				44						

<table>
<tr><td>• MMT – Major Mandatory Theory
• MMPR – Major Mandatory Practical
• MET – Major Elective Theory
• MEPR – Major Elective Practical
• RM - Research Methodology
• OJT/FP- On Job Training/ Field Project</td><td>• Total Marks for M.Sc.-I : 1100
• Total Credits for M.Sc.-I (Semester I & II) : 44
• Separate passing is mandatory for University and Internal Examinations</td></tr>
<tr><td colspan="2">*Evaluation scheme for OJT/FP shall be decided by concerned BOS</td></tr>
<tr><td colspan="2">• Requirement for Entry at Level 6.0: …….</td></tr>
<tr><td colspan="2">• Requirement for Exit after Level 6.0:
Students can exit after completion of Level 6.0 with Post Graduate Diploma in …….</td></tr>
<tr><td colspan="2">• Requirement for Entry at Level 6.5: ……..</td></tr>
</table>

Structure in Accordance with National Education Policy - 2020
With Multiple Entry and Multiple Exit Options
M.Sc. (……) Part – II (Level-6.5)

	Course Code	Teaching Scheme			Examination Scheme					
		Theory and Practical			University Assessment (UA)			Internal Assessment (IA)		
		Lectures + Tutorial (Per week)	Hours (Per week)	Credit	Maximum Marks	Minimum Marks	Exam. Hours	Maximum Marks	Minimum Marks	Exam. Hours
Semester-III										
Major Mandatory	MMT-301	4	--	4	80	32	3	20	8	1
	MMT -302	4	--	4	80	32	3	20	8	1
	MMT/ MMPR -303	2/4	4/--	4	80	32	3	20	8	1
	MMT/ MMPR -304	2/--	--/4	2	40	16	2	10	4	1
Major Elective	MET/ MEPR-305	2/4	4/--	4	80	32	3	20	8	1
Research Project	RP-307			4	#					
Total				22						
Semester-IV										
Major Mandatory	MMT-401	4	--	4	80	32	3	20	8	1
	MMT -402	4	--	4	80	32	3	20	8	1
	MMT/ MMPR -403	2/4	4/--	4	80	32	3	20	8	1
Major Elective	MET/ MEPR-405	2/4	4/--	4	80	32	3	20	8	1
Research Project	RP-407			6	##					
Total				22						
Total (Sem I + Sem II)				44						

<table>
<tr><td>• MMT – Major Mandatory Theory
• MMPR – Major Mandatory Practical
• MET – Major Elective Theory
• MEPR – Major Elective Practical
• RP- Research Project</td><td>• Total Marks for M.Sc.-II : 1100
• Total Credits for M.Sc.-II (Semester III & IV) : 44
• Separate passing is mandatory for University and Internal Examinations</td></tr>
<tr><td colspan="2"># Evaluation scheme for Research Project shall be decided by concerned BOS</td></tr>
<tr><td colspan="2">## Evaluation scheme for Research Project shall be decided by concerned BOS</td></tr>
<tr><td colspan="2">• Requirement for Exit after Level 6.5:
Students can exit after completion of Level 6.5 with Post Graduate in…….</td></tr>
</table>

6. Programme Outcomes (POs)

Write in bullet format. Minimum number should be four.

7. Course Codes

Note 1: *Add 'rows' wherever necessary as per course requirement and kindly apply proper course codes. The 'Paper Numbers' are considered as 'Course Numbers' in New Scheme.*

Note 2: *See the instructions below to prepare the Course Codes in NEP*

TABLE FOR STEPWISE CODE ASSIGNMENT TO PAPER

COLUMN No.	1	2	3	4	5	6	7	8
Name	PROGRAM CODE	INSTITUTE CODE	COURSE CATEGORY	NATURE OF COURSE CODE	LEVEL OF COURSE CODE	SR. NO. OF COURSE CODE	SEMESTER	COURSES
Details of coding	**MS**	**U0325**	**MM/ME/RM/OJ/FP**	**L/P/T**	**9**	**36**	**G/H/I/J**	**1/2/3/4/…**
Explanation		SUK code, Refer.	Major Mandatory (MM), Major Elective (ME), Research Methodology (RM), On Job Training (OJ), Field Projects (FP)	Lecture (L), Practical (P), Tutorial (T)	Refer *Annexure 1*.	Course Code For Physics is 36. For other courses refer *Annexure 2.*	SEM I: G SEM II: H SEM III: I SEM IV: J	- Course Number, also referred to as Paper Number, is only assigned for Major Mandatory (MM) and Major Elective (ME) courses. - No Course Numbers will be assigned for Research Methodology (RM), On Job Training (OJ), and Field Projects (FP).

COLUMN 1. Program Code Assignment

- The program code for Science Master Programs is designated as "MS"

COLUMN 2. Institute Code Assignment

- The Institute Code for Shivaji University is identified as "U0325"

- For further reference, please refer to *Annexure 1*.

COLUMN 3. Course Category Assignment

- As per guidelines of NEP 2020 the Course Category is assigned based on the nature of the course and is categorized into the following:

  - Major Mandatory (MM)

  - Major Elective (ME)

  - Research Methodology (RM)

  - On Job Training (OJ)

  - Field Projects (FP)

- Choose any one which is applicable for your course

COLUMN 4. Course Code Assignment

- Depending on the nature of the course, the following codes are used:

  - Lecture (L)

  - Practical (P)

  - Tutorial (T)

- Choose any one which is applicable for your course

COLUMN 5. Course Code Level

- The level of the course code for all master programs is set to 9.

- For further reference, please see *Annexure 2*. For further information please refer: Guidelines for Multiple Entry and Exit in Academic Programmes offered in Higher Education Institutions (https://www.education.gov.in/sites/upload_files/mhrd/files/upload_document/abc_doc.pdf)

COLUMN 6. Serial Number of Course Code

- The serial number of course code is added based on the Science Faculty's course code list provided by BOS, Shivaji University, Kolhapur.

- For the complete list of course codes for Science Faculty, please refer to *Annexure 2*.

- Choose appropriate serial number which is applicable for your course

COLUMN 7. Semester Code Assignment

- The Semester Code is assigned as follows:

  - SEM I: G

  - SEM II: H

  - SEM III: I

  - SEM IV: J

- Choose appropriate semester code which is applicable for your course

COLUMN 8. Course Number Assignment

- Course Number, also referred to as Paper Number, is only assigned for Major Mandatory (MM) and Major Elective (ME) courses.

- No Course Numbers will be assigned for Research Methodology (RM), On Job Training (OJ), and Field Projects (FP).

For example: first MM/ME course will have course number 1, second MM/ME course will have course number 2 likewise.

*Note: This SOP is intended to streamline and maintain consistency in the paper code assignment process for Science Master programs at Shivaji University.

Examples for reference:

The course code for M.Sc. Physics Semester 1 course is as follows:

MS	**U0325**	**MM**	**L**	**9**	**36**	**G**	**1**
1	2	3	4	5	6	7	8

M.Sc. Semester - I		
Sr. No.	**Major Mandatory**	
1	Mathematical Physics (4 credit**)**	**MSU0325MML936G1**
2	Classical Mechanics (4 credit)	**MSU0325MML936G2**
3	Practical Lab - I (4 credit)	**MSU0325MMP936G1**
4	Practical Lab - II (2 credit)	**MSU0325MMP936G2**
5	Research Methodology (4 credit)	**MSU0325RML936G**
6	**Major Elective**	
	Solid State Physics-1	**MSU0325MEL936G1**
	Space Physics-1	**MSU0325MEL936G2**
	Theoretical Physics-1	**MSU0325MEL936G3**
	Modern Optics – 1	**MSU0325MEL936G4**
	Energy Science – 1	**MSU0325MEL936G5**
	Material Science- 1	**MSU0325MEL936G6**
M.Sc. Semester - II		
	Major Mandatory	
1	Quantum Mechanics (4 credit**)**	**MSU0325MML936H1**
2	Condensed Matter Physics (4 credit**)**	**MSU0325MML936H2**
3	Practical Lab - III (4 credit)	**MSU0325MMP936H1**
4	Practical Lab - IV (2 credit)	**MSU0325MMP936H2**
5	Field Project (4 credit)	**MSU0325FPP936H**
6	**Major Elective**	
	Solid State Physics-2	**MSU0325MEL936H1**
	Space Physics-2	**MSU0325MEL936H2**
	Theoretical Physics-2	**MSU0325MEL936H3**
	Modern Optics - 2	**MSU0325MEL936H4**
	Energy Science - 2	**MSU0325MEL936H5**
	Material Science- 2	**MSU0325MEL936H6**

Annexure 1

Table-I

Qualification Type and Credit Requirements		
Levels	**Qualification title**	**Credit requirements**
Level 5	Undergraduate Certificate (in the field of learning/discipline) for those who exit after the first year (two semesters) of the undergraduate programme. (Programme duration: first year or two semesters of the undergraduate programme)	36–40
Level 6	Undergraduate Diploma (in the field of learning/discipline) for those who exit after two years (four semesters) of the undergraduate programme (Programme duration: First two years or four semesters of the undergraduate programme)	72–80
Level 7	Bachelor' Degree (Programme duration: Three years or six semesters).	108–120
Level 8	Bachelor' Degree (Honours/Research) (Programme duration: Four years or eight semesters).	144–160
Level 8	Post-Graduate Diploma for those who exit after the successful completion of the first year or two semesters of the two-year Master's degree programme). (Programme duration: One year or two semesters)	36–40
Level 9	Master's Degree (Programme duration: Two years or four semesters after obtaining a Bachelor's degree).	72–80
Level 9	Master's Degree (Programme duration: One year or two semesters after obtaining a four-year Bachelor's Degree (Honours/Research).	36–40
Level 10	Doctoral Degree	Minimum prescribed credits for course work and a thesis with published work

Annexure 2

M.Sc Course Code List

Code No.	Branch Name	Code. No.	Branch Name
1	Agrochemical and Pest Management	20	Geoinformatics
2	Alcohol Technology	21	Geology
3	Analytical Chemistry	22	Industrial Chemistry
4	Applied Chemistry	23	Information Technology
5	Applied Statistics and Informatics	24	Inorganic Chemistry
6	Biochemistry	25	Mathematics
7	Biotechnology	26	Mathematics (Distance)
8	Botany	27	Mathematics (Online Mode)
9	Computer Science	28	Mathematics with Computer Science
10	Computer Science (Online Mode)	29	MCA Science 2 Year Course
11	Data Science	30	Medical Information Management
12	Electronics	31	Microbiology
13	Embedded Technology	32	Nanoscience and Technology
14	Environmental Biotechnology	33	Organic Chemistry
15	Environmental Science	34	Pharmaceutical Microbiology
16	Food Science & Nutrition	35	Physical Chemistry
17	Food Science & Technology	36	Physics
18	General Microbiology	37	Statistics
19	Geography	38	Sugar Technology
		39	Zoology

8. Syllabus

Follow the following sample template for syllabus of each course

M. Sc. Mathematics (Part I) (Level-6.0) (Semester II)
(NEP-2020)
(Introduced from Academic Year 2023-24)

Title of Course: Topology
Course Code:
Total Credits: 04
Course Outcomes: Upon successful completion of this course, the student will be able to:
1. built foundations for future study in analysis, in geometry, and in algebraic topology.
2. introduce the fundamental concepts in topological spaces.
3. acquire demonstrable knowledge of topological spaces, product spaces, and continuous functions on topological spaces.
4. identify compact and connected sets in topological spaces.
5. use Separation and countability axioms, Urysohn lemma, Urysohn metrization.

Unit I: Topological Spaces, Basis and Subbasis for a Topology, The Order Topology, The Product Topology on $X \times Y$, The Subspace Topology. **15 Lectures**

Unit II: Closed Sets , Closure and Interior of a Set, Limit Points, Hausdorff Spaces, Continuity of Functions, Homeomorphisms, The Product Topology, The Metric Topology. **15 Lectures**

Unit III: Connected Spaces, Connected Subspaces of the Real Line, Components and Local Connectedness, Compact Spaces, Compact Subspaces of the Real Line. **15 Lectures**

Unit IV: The Countability Axioms, The Separation Axioms, Normal Spaces, The Urysohn Lemma, The Urysohn Metrization Theorem (Only statement and its importance), The Tietze Extension Theorem (Only statement and its importance). **15 Lectures**

Seminars, Tutorials, Problem solving session and group discussions on above four units

Recommended Book:

1. J. R. Munkers, Topology, Second Edition, Pearson Education (Singapore), 2000.

Reference Books:

1. W. J. Pervin, Foundations of General Topology, Academic Press, New York, 1964.
2. J. L. Kelley, General Topology, Springer-Verlag, New York, 1955.
3. S. Willard, General Topology, Addison-Wesley Publishing Company, 1970.
4. K. D. Joshi, Introduction to General Topology, New Age International, 1983.
   G. F. Simmons, Introduction to Topology and Modern Analysis, McGraw Hill Book Company, New Delhi, 1963.

9. Scheme of Teaching

10. Examination Pattern

Provide the examination pattern separately for each of the following

Theory:

Practical:

On Job Training:

Field Project:

Research Methodology:

11. Nature of Question Paper and Scheme of Marking

Provide the Nature of Question Paper and Scheme of Marking separately for each of the following

Theory:

Practical:

12. Equivalence of courses

M. Sc. Part I (Semester I and II)

Old Course				Equivalent Course		
Sem No.	**Course Code**	**Title of Old Course**	**Credit**	**Course Code**	**Title of New Course**	**Credit**
I						
I						
I						
I						
I						
I						
II						
II						
II						
II						
II						
II						