

**School of Mathematics and Statistics  
University of Hyderabad**

**Course Structure for each Academic Programme**

**1 B.Sc. in Mathematical Sciences (with Mathematics Stream)**

Total number of course credits offered by the School= 60

**B.Sc. I to IV Semesters**

S.No	Course Name	Course Code	Credits	Semester
1.	Math-I	MM-103	3	I
2.	Math-II	MM-152	3	II
3.	Math-III A	MM-202	3	III
4.	Math-III B	MM-203	3	III
5.	Math-IV A	MM-253	4	IV
6.	Math-IV B	MM-254	4	IV

**B.Sc. V Sem**

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-I	MA 301	4
2.	Linear Algebra	MA 302	4
3.	Algebra-I	MA 303	4
4.	Elements of Probability and Statistics	MA 304	4
5.	Numerical Methods and Programming	MA 305	4

**B.Sc. VI Sem**

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-II	MA 356	4
2.	Measure and Integration	MA 358	4
3.	Topology-I	MA 359	4
4.	Algebra-II	MA 360	4
5.	Ordinary Differential Equations - I	MA 357	4

## 2 B.Sc in Mathematical Sciences (with Statistics)

Total number of course credits offered by the School = 60

### B.Sc. I to IV Semesters

S.No	Course Name	Course Code	Credits	Semester
1.	Math-I	MM-103	3	I
2.	Math-II	MM-152	3	II
3.	Math-III A	MM-202	3	III
4.	Math-III B	MM-203	3	III
5.	Math-IV A	MM-253	4	IV
6.	Math-IV B	MM-254	4	IV

### B.Sc. (Semester V)

S.No	Course Name	Course Code	Credits
1.	Real Analysis-I	ST-301	4
2.	Algebra-I	ST-303	4
3.	Linear Algebra and Matrix Theory	ST-302	4
4.	Statistical Methods	ST-305	4
5.	Elements of Probability & Statistics	ST-304	4

### B.Sc. (Semester VI)

S.No	Course Name	Course Code	Credits
1.	Probability and Measure Theory	ST-351	4
2.	Linear Models	ST-353	4
3.	Theory of Sampling	ST-354	4
4.	Theory of Inference-I	ST-352	4
5.	Analyzing Large Data with R	ST-355	4

### 3 I.M.Sc. in Mathematical Sciences (with Mathematics Stream)

#### Credits at glance

S.No	Nature of the Course(s)	Credits
1.	Core Courses	100
2.	Electives	20
3.	Project	20

Total number of credits = 140

#### I.M.Sc. I to IV Semesters

S.No	Course Name	Course Code	Credits	Semester
1.	Math-I	MM-103	3	I
2.	Math-II	MM-152	3	II
3.	Math-III A	MM-202	3	III
4.	Math-III B	MM-203	3	III
5.	Math-IV A	MM-253	4	IV
6.	Math-IV B	MM-254	4	IV

#### I.M.Sc. V Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-I	MA 301	4
2.	Linear Algebra	MA 302	4
3.	Algebra-I	MA 303	4
4.	Elements of Probability and Statistics	MA 304	4
5.	Numerical Methods and Programming	MA 305	4

#### I.M.Sc. VI Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-II	MA 356	4
2.	Measure and Integration	MA 358	4
3.	Topology-I	MA 359	4
4.	Algebra-II	MA 360	4
5.	Ordinary Differential Equations - I	MA 357	4

#### I.M.Sc. VII Sem

S.No	Name of the Course	Course Code	Credits
1.	Functional Analysis	MA 401	4
2.	Complex Analysis-I	MA 404	4
3.	Algebra-III	MA 407	4
4.	Introduction to Number Theory	MA 406	4
5.	Mathematical Methods OR Partial Differential Equations-I	MA 403 MA 402	4 4

#### **I.M.Sc. VIII Sem**

S.No	Name of the Course	Course Code	Credits
1.	Commutative Algebra	MA 489	4
2.	Elective-1		4
3.	Elective-2		4
4.	Elective-3		4
5.	Elective-4		4

Electives 1 to 4 are to be taken from the List-I.

#### **I.M.Sc. IX Sem**

S.No	Name of the Course	Course Code	Credits
1.	Analysis	MA 503	5
2.	Algebra	MA501	5
3.	Problem Solving	MA 504	5
4.	Reading Course		5

#### **I.M.Sc. X Sem**

S.No	Name of the Course	Course Code	Credits
1.	Project Work		20

#### **List-I**

S.No	Course name	Course Code	Credits
1.	Topology-II	MA 482	4
2.	Nonlinear Programming	MA 486	4
3.	Mathematical Logic	MA 490	4
4.	Functional Differential Equations	MA 471	4
5.	Dynamical equations on Time Scales	MA 472	4
6.	Graph theory and algorithms	MA 491	4
7.	Lie algebras	MA 479	4
8.	Algebraic Geometry	MA 493	4
9.	Algebraic Number Theory	MA 484	4
10.	Fluid Dynamics	MA 487	4
11.	Classical Mechanics	MA 488	4

## 4 I.M.Sc. in Mathematical Sciences (with Applied Mathematics Stream)

### Credits at glance

S.No	Nature of the Course(s)	Credits
1.	Core Courses	108
2.	Electives	12
3.	Project	20

Total number of credits = 140

### I.M.Sc. I to IV Semesters

S.No	Course Name	Course Code	Credits	Semester
1.	Math-I	MM-103	3	I
2.	Math-II	MM-152	3	II
3.	Math-III A	MM-202	3	III
4.	Math-III B	MM-203	3	III
5.	Math-IV A	MM-253	4	IV
6.	Math-IV B	MM-254	4	IV

### I.M.Sc. V Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-I	MA 301	4
2.	Linear Algebra	MA 302	4
3.	Algebra-I	MA 303	4
4.	Elements of Probability and Statistics	MA 304	4
5.	Numerical Methods and Programming	MA 305	4

### I.M.Sc. VI Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-II	MA 356	4
2.	Measure and Integration	MA 358	4
3.	Topology-I	MA 359	4
4.	Algebra-II	MA 360	4
5.	Ordinary Differential Equations - I	MA 357	4

**I.M.Sc. VII Sem**

S.No	Name of the Course	Course Code	Credits
1.	Functional Analysis	MA 401	4
2.	Complex Analysis-I	MA 404	4
3.	Numerical Analysis	MA 405	4
4.	Mathematical Methods	MA 403	4
5.	Partial Differential Equations-I	MA 402	4

**I.M.Sc. VIII Sem**

S.No	Name of the Course	Course Code	Credits
1.	Fluid Dynamics	MA 487	4
2.	Classical Mechanics	MA 488	4
3.	Elective-1		4
4.	Elective-2		4
5.	Elective-3		4

Electives 1 to 3 are to be taken from the List-II.

**I.M.Sc. IX Sem**

S.No	Name of the Course	Course Code	Credits
1.	Analysis	MA 503	5
2.	Advanced Partial Differential Equations	MA 502	5
3.	Problem Solving	MA 504	5
4.	Reading Course		5

**I.M.Sc. X Sem**

S.No	Name of the Course	Course Code	Credits
1.	Project Work		20

**List-II**

S.No	Course name	Course Code	Credits
1.	Topology-II	MA 482	4
2.	Nonlinear Programming	MA 486	4
3.	Mathematical Logic	MA 490	4
4.	Functional Differential Equations	MA 471	4
5.	Dynamical equations on Time Scales	MA 472	4
6.	Graph theory and algorithms	MA 491	4
7.	Lie algebras	MA 479	4

## 5 I.M.Sc. in Mathematical Sciences (with Statistics Stream)

### Credits at glance

S.No	Nature of the Course(s)	Credits
1.	Core Courses	80
2.	Electives	40
3.	Project	20

Total number of credits = 140

### I.M.Sc. I to IV Semesters

S.No	Course Name	Course Code	Credits	Semester
1.	Math-I	MM-103	3	I
2.	Math-II	MM-152	3	II
3.	Math-III A	MM-202	3	III
4.	Math-III B	MM-203	3	III
5.	Math-IV A	MM-253	4	IV
6.	Math-IV B	MM-254	4	IV

### I.M.Sc. (Semester V)

S.No	Course Name	Course Code	Credits
1.	Real Analysis-I	ST-301	4
2.	Algebra-I	ST-303	4
3.	Linear Algebra and Matrix Theory	ST-302	4
4.	Statistical Methods	ST-305	4
5.	Elements of Probability & Statistics	ST-304	4

### I.M.Sc. (Semester VI)

S.No	Course Name	Course Code	Credits
1.	Probability and Measure Theory	ST-351	4
2.	Linear Models	ST-353	4
3.	Theory of Sampling	ST-354	4
4.	Theory of Inference-I	ST-352	4
5.	Analyzing Large Data with R	ST-355	4

### I.M.Sc. (Semester VII)

S.No	Course Name	Course Code	Credits
1.	Multivariate Analysis	IM-401	4
2.	Design and Analysis of Experiments	IM-403	4
3.	Regression Theory and Analysis	IM-404	4
4.	Theory of Inference-II	IM-402	4
5.	Stochastic Processes	IM-405	4

**I.M.Sc. (Semester VIII)**

S.No	Course Name	Course Code	Credits
1.	Elective-1		4
2.	Elective-2		4
3.	Elective-3		4
4.	Elective-4		4
5.	Elective-5		4

Electives 1 to 5 are to be chosen from List A.

**I.M.Sc. (Semester IX)**

S.No.	Course Name	Course Code	Credits
1.	Elective-1		5
2.	Elective-2		5
3.	Elective-3		5
4.	Elective-4		5

Electives 1 to 4 are to be chosen from List B.

**I.M.Sc. (Semester X)**

Course Name	Course Code	Credits
Project	-	20

**List A**

S.No	Course Name	Course Code	Credits
1.	Generalized Linear Models	IM-451	4
2.	Non-Parametric Statistical Inference	IM-452	4
3.	Reliability and Survival Analysis	IM 453	4
4.	Time Series	IM-454	4
5.	Non-Linear Programming	IM-455	4
6.	First course on Operations Research	IM-456	4
7.	Mathematical Logic	IM-457	4
8.	Machine Learning Using R	IM 458	4



**List B**

S.No	Course Name	Course Code	Credits
1.	Analysis	IM 525	5
2.	Advanced methods for statistical research (Probability and Inference)	IM-521	5
3.	Linear Models and Multivariate Analysis	IM-522	5
4.	Resampling Techniques	IM-523	5
5.	Research Methods in Statistics	IM-524	5
6.	Reading Course	-	5

## 6 M.Sc. in Mathematics

### Credits at glance

S.No	Nature of the Course(s)	Credits
1.	Foundation Courses	6
2.	Core Courses	56
3.	Electives	20

Total number of credits = 82

### M.Sc. I Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-I	MM 401	4
2.	Linear Algebra	MM 402	4
3.	Algebra-I	MM 403	4
4.	Elements of Probability and Statistics	FN 134	3
5.	Numerical Methods and Programming	MM 405	4

### M.Sc. II Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-II	MM 451	4
2.	Measure and Integration	MM 452	4
3.	Topology-I	MM 453	4
4.	Algebra-II	MM 454	4
5.	Ordinary Differential Equations - I	MM 455	4
6.	Foundation Course		3

### M.Sc. III Sem

S.No	Name of the Courses	Course Code	Credits
1.	Functional Analysis	MM 501	4
2.	Complex Analysis-I	MM 504	4
3..	Algebra-III	MM 505	4
4..	Introduction to Number Theory	MM 506	4
5.	Mathematical Methods OR Partial Differential Equations-I	MM 503  MM 502	4  4

**M.Sc. IV Sem**

S.No	Name of the Course	Course Code	Credits
1.	Commutative Algebra	MM-551	4
2.	Elective-1		4
3.	Elective-2		4
4.	Elective-3		4
5.	Elective-4		4

Electives-1 to 4 are to be chosen from List-III

**List-III**

S.No	Course name	Course Code	Credits
1.	Topology-II	MM - 577	4
2.	Nonlinear Programming	MM 590	4
3.	Mathematical Logic	MM 592	4
4.	Functional Differential Equations	MM 596	4
5.	Dynamical equations on Time Scales	MM 597	4
6.	Graph theory and algorithms	MM 581	4
7.	Lie algebras	MM 573	4
8.	Algebraic Geometry	MM 578	4
9.	Algebraic Number Theory	MM 585	4
10.	Fluid Dynamics	MM 569	4
11.	Classical Mechanics	MM 570	4

## 7 M.Sc. in Applied Mathematics

### Credits at glance

S.No	Nature of the Course(s)	Credits
1.	Foundation Courses	6
2.	Core Courses	64
3.	Electives	12

Total number of credits = 82

### M.Sc. I Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-I	MM 401	4
2.	Linear Algebra	MM 402	4
3.	Algebra-I	MM 403	4
4.	Elements of Probability and Statistics	FN 134	3
5.	Numerical Methods and Programming	MM 405	4

### M.Sc. II Sem

S.No	Name of the Course	Course Code	Credits
1.	Real Analysis-II	MM 451	4
2.	Measure and Integration	MM 452	4
3.	Topology-I	MM 453	4
4.	Algebra-II	MM 454	4
5.	Ordinary Differential Equations - I	MM 455	4
6.	Foundation Course		3

### M.Sc. III Sem

S.No	Name of the Courses	Course Code	Credits
1.	Functional Analysis	AM 501	4
2.	Complex Analysis-I	AM 504	4
3.	Numerical Analysis	AM 505	4
4.	Mathematical Methods	AM 503	4
5.	Partial Differential Equations-I	AM 502	4

### M.Sc. IV Sem

S.No	Name of the Course	Course Code	Credits
1.	Fluid Dynamics	AM 569	4
2.	Classical Mechanics	AM 570	4
3.	Elective-1		4
4.	Elective-2		4
5.	Elective-3		4

Electives-1 to 3 are to be chosen from List-IV

**List-IV**

S.No	Course name	Course Code	Credits
1.	Topology-II	AM 577	4
2.	Nonlinear Programming	AM 590	4
3.	Mathematical Logic	AM 592	4
4.	Functional Differential Equations	AM 596	4
5.	Dynamical equations on Time Scales	AM 597	4
6.	Graph theory and algorithms	AM 581	4
7.	Lie algebras	AM 573	4

## 8 M.Sc. in Statistics-OR

### Credits at glance

S.No	Nature of the Course(s)	Credits
1.	Foundation Courses	6
2.	Core Courses	56
3.	Electives	12
4.	Project	8

Total number of credits = 82

### M.Sc. Statistics-OR (Semester I)

S.No	Course Name	Course Code	Credits
1.	Real Analysis-I	ST-401	4
2.	Algebra-I	FN-135	3
3.	Linear Algebra and Matrix Theory	ST-402	4
4.	Statistical Methods	ST-407	4
5.	Elements of Probability & Statistics	ST-405	4

### M.Sc. Statistics-OR (Semester II)

S.No	Course Name	Course Code	Credits
1.	Probability and Measure Theory	ST-452	4
2.	Linear Models	ST-454	4
3.	Theory of Sampling	ST-455	4
4.	Theory of Inference-I	ST-453	4
5.	Analyzing Large Data with R	ST-457	4
6.	Foundation Course		3

### M.Sc. Statistics-OR (Semester III)

S.No	Course Name	Course Code	Credits
1.	Multivariate Analysis	ST-501	4
2.	Design and Analysis of Experiments	ST-503	4
3.	Regression Theory and Analysis	ST-504	4
4.	Theory of Inference-II	ST-502	4
5.	Stochastic Processes	ST-505	4

### M.Sc. Statistics-OR (Semester IV)

S.No.	Course Name	Course Code	Credits
1.	Elective-1	-	4
2.	Elective-2	-	4
3.	Elective-3	-	4
4.	Project	-	8

Electives-1 to 3 are to be chosen from List C.

**List C**

S.No	Course Name	Course Code	Credits
1.	Generalized Linear Models	ST-552	4
2.	Non-Parametric Statistical Inference	ST-586	4
3.	Reliability and Survival Analysis	ST-578	4
4.	Time Series	ST-571	4
5.	Non-Linear Programming	ST-551	4
6.	First course on Operations Research	ST-577	4
7.	Mathematical Logic	ST-592	4
8.	Machine Learning Using R	ST 573	4

## 9 Ph.D in Mathematics/Applied Mathematics

### Ph.D. Mathematics/Applied Mathematics I and II Semesters

S.No	Course Name	Course Code	Credits
1.	Research Medology	MM 808/ AM 808	4
2.	Research and Publication Ethics	MM 831/ AM 831	2
3.	2 courses from the List V		8 -10

#### List V

S.No	Name of the course	Course Code	Credits
1.	Analysis	AM 803/ MM 803	5
2.	Algebra (for Mathematics only)	MM 801	5
3.	Advanced Partial Differential Equations (for Applied Mathematics only)	AM 802	5
4.	Reading Course		5 or 4

## 10 Ph.D in Statistics-OR

### Ph.D. Statistics I and II Semesters

S.No	Course Name	Course Code	Credits
1.	Research Medology	ST 808	4
2.	Research and Publication Ethics	ST 831	2
3.	2 courses from the List D		8 -10

#### List D

S.No.	Course Name	Course Code	Credits
1.	Analysis	ST 803	5
2.	Linear Models and Multivariate Analysis	ST 806	5
3.	Resampling Techniques	ST 812	5
4.	Reading Course		4 or 5
5.	Advanced methods for statistical research (Probability and Inference)	IM-521	5
6.	Research Methods in Statistics	IM-524	5