



**Program : Master of Science**  
**Stream : Mathematics**  
**Year : 2024 Onwards**

**IIT PALAKKAD**

The M.Sc Mathematics program envisions training students to pursue careers in both academia and industry. Besides providing a firm mathematical foundation, the curriculum also provides excellent opportunities for students to gain exposure to and specialize in pure/applied mathematics, data science, theoretical computer science among many other allied subjects.

The curriculum offers 14 program core courses and several elective courses, the latter to be selected from a vast number of options which are being constantly upgraded keeping pace with the challenging developments in research and ever demanding requirements of the industry. Another attractive feature of this program is that the students have an opportunity to do a project in lieu of some elective courses to get exposed to research or acquire a deeper knowledge, and hands-on experience in a specific area.

The department strives to have a vibrant academic ambience through several academic initiatives like long-term and short-term visitors and student seminars. Apart from preparing students for academic pursuits, the Institute also has a placement cell to facilitate industry opportunities.

This curriculum is in accordance with the new regulations for Postgraduate programs at IIT-Palakkad passed by its Senate in 2024, for implementation of a choice based credit system. While this system allows flexibility for students to take courses in an order different from an intended one ('template curriculum' suggested later below), certain constraints have to be satisfied. Firstly, credit requirements in various course categories as laid down in the table next, needs to be followed.

#### **Credit requirements :**

Category of the course	Credits
Program Major Core (PMC)	44
Program Major Electives (PME)/Project Based Courses	12*
Open Electives (OE) /Humanities and Social Sciences Elective (HSE)	6
Communication Skills	1
Technical Writing	1
<b>Total</b>	<b>64</b>

\* Only a maximum of 09 credits for Project Based Courses in this category. Up to 06 credits in addition for project work(s) may be earned in the OE category; 03 credits of this, may be obtained 'post-facto', by way of 'Early Bird Project' – see the MSc regulations for further details about this.

The list of PMC's, that is, core courses of the MSc Mathematics program along-with their credits is as laid in the following table:

S N o.	Course Code	Course Name	Credits
1	MA5001	Linear Algebra	4
2	MA5003	Real Analysis	4
3	MA5005	Groups and Rings	3
4	MA5007	Probability and Statistics	3
5	MA5009	Ordinary Differential Equations	3
6	MA5014	Fundamentals of Mathematics	2
7	MA5002	Multivariable Calculus	3
8	MA5004	Measure Theory	3
9	MA5006	Fields and Modules	3
10	MA5010	Complex Analysis	3
11	MA5015	Numerical Analysis with Programming	4
12	MA5008	Topology	3
13	MA6005	Functional Analysis	3
14	MA6007	Partial Differential Equations	3

To guide students towards arriving at a feasible ordering of courses, a course plan (referred to as a ‘template curriculum’) is proposed below. Though it is not mandatory to follow this plan, students need to ensure that the credit requirements as mentioned in the tables above are satisfied. As was indicated above: while the choice-based system allows students to take courses in an order different from that mentioned next, *the constraint that prerequisites for each course have to be cleared in advance to be able to take it, necessitates a judicious choice to complete the program within the expected time frame.*

Suggested template curriculum/course-plan:

### Semester I

No.	Code	Course Title	L	T	P	C	Category
1	MA5001	Linear Algebra	4	0	0	4	PMC
2	MA5003	Real Analysis	4	0	0	4	PMC
3	MA5005	Groups and Rings	3	0	0	3	PMC
4	MA5007	Probability and Statistics	3	0	0	3	PMC

5	MA5009	Ordinary Differential Equations	3	0	0	3	PMC
6	MA5014	Fundamentals of Mathematics	2	0	0	2	PMC
7	GN5005	Communication Skills	1	0	0	1	ICC
		Semester Total	20	0	0	20	

### Semester II

No.	Code	Course Title	L	T	P	C	Category
1	MA5002	Multivariable Calculus	3	0	0	3	PMC
2	MA5004	Measure Theory	3	0	0	3	PMC
3	MA5006	Fields and Modules	3	0	0	3	PMC
4	MA5010	Complex Analysis	3	0	0	3	PMC
5	MA5015	Numerical Analysis with Programming	2	1	2	4	PMC
6	ID5002	Technical Writing	1	0	0	1	ICC
		Semester Total	16	0	0	17	

### Semester III

No.	Code	Course Title	L	T	P	C	Category
1	MA5008	Topology	3	0	0	3	PMC
2	MA6005	Functional Analysis	3	0	0	3	PMC
3	MA6007	Partial Differential equations	3	0	0	3	PMC
4	XXXXXX	Elective 1/Early Bird Project	3	0	0	3	OE
5	XXXXXX	Elective 2/Project-1**	3	0	0	3	PME
		Semester Total	15	0	0	15	

### Semester IV

No.	Code	Course Title	L	T	P	C	Category
1	XXXXXX	Elective 3	3	0	0	3	PME
2	XXXXXX	Elective 4	3	0	0	3	OE
3	XXXXXX	Elective 5/Project-2**	3	0	0	3	PME
4	XXXXXX	Elective 6/Project-3**	3	0	0	3	PME
		Semester Total	14	0	0	12	

\*\* Doing a project in place of one or more (lecture-based) electives, requires *prior* approval by a committee in the department. This includes all projects, including those intended to be claimed under the OE category, except for 'Early Bird Project' and OELP.

A list of currently approved PMEs is available at [PSEs\\_List.pdf](#) (Please note that this list changes from time to time).