

## M.Sc Curriculum 2024 onwards

### MSc Mathematics/MSc Mathematics and Computing

| Semester 1  |                                |                            |         |
|-------------|--------------------------------|----------------------------|---------|
| Course Code | Core Courses                   | Type of Course             | Credits |
| MA4010      | Real Analysis                  | Departmental Core Theory   | 3       |
| MA4020      | Linear Algebra                 | Departmental Core Theory   | 3       |
| MA4040      | Probability Theory             | Departmental Core Theory   | 3       |
| MA4070      | Algebra I - Groups and Rings   | Departmental Core Theory   | 3       |
| MA5010      | Combinatorics and Graph Theory | Departmental Core Theory   | 3       |
| LA5180      | Communication Skills: Advanced | Liberal Arts (Soft Skills) | 1       |
|             | <b>Total</b>                   |                            | 16      |

Note. **LA5180 - Communication Skills: Advanced** is offered by the Liberal Arts Department. It is up to the LA department to decide whether to offer it in an odd or even semester.

| Semester 2    |                                       |                          |         |
|---------------|---------------------------------------|--------------------------|---------|
| Course Code   | Core Courses                          | Type of Course           | Credits |
| MA4030        | Ordinary Differential Equations       | Departmental Core Theory | 3       |
| MA4080        | Measure and Integration               | Departmental Core Theory | 3       |
| MA4090        | Multivariable Calculus                | Departmental Core Theory | 3       |
| MA5040        | Topology                              | Departmental Core Theory | 3       |
| MA4051        | Basics of programming                 | Departmental Core Theory | 3       |
|               | <b>Elective Course (3 credits)</b>    |                          |         |
| MA5070/MA4240 | Modules and Fields/Applied Statistics | Departmental Elective I* | 3       |
|               | <b>Total</b>                          |                          | 18      |

| Semester 3    |                                         |                                  |         |
|---------------|-----------------------------------------|----------------------------------|---------|
| Course Code   | Core Courses                            | Type of Course                   | Credits |
| MA4060        | Complex Analysis                        | Departmental Core Theory         | 3       |
| MA5020        | Functional Analysis                     | Departmental Core Theory         | 3       |
| MA5030        | Partial Differential Equations          | Departmental Core Theory         | 3       |
| MA5060        | Numerical Analysis                      | Departmental Core Theory         | 3       |
|               | <b>Elective Course (3 credits)</b>      |                                  |         |
| MA####        | Algebra Elective/Computational Elective | Departmental Elective II*        | 3       |
|               | Free Elective                           | Free Elective**                  | 3       |
|               | <b>Project/Elective (3 credits)</b>     |                                  |         |
| MA5315/MA#### | Project I/Departmental Elective         | Project/Departmental Elective*** | 3       |

**Note 1.**

**\*For the Departmental Electives I&II**, students must choose courses from either the Algebra stream or the Computational stream in the **second and third** semesters. Note that in the second semester if the student chooses Algebra elective, then he/she has to choose Algebra in the third semester also. The same is applicable for the computational stream. This choice determines the specialization/degree. Students will not be permitted to take this course in the fourth semester for the purpose of determining their degree.

**\*\*The Free Elective** in the MSc curriculum carries **3 credits**. It may be taken in either the **third** or **fourth semester**.

**\*\*\*In the third semester**, students must choose either **Project I (MA5315)** of 3 credits or a **departmental elective** of equivalent credits.

| Semester 4    |                                     |                                    |         |
|---------------|-------------------------------------|------------------------------------|---------|
| Course Code   | Electives                           | Type of Course                     | Credits |
| MA####        | Departmental Electives              | Departmental Elective III          | 3       |
| MA####        | Departmental Electives              | Departmental Elective IV           | 3       |
|               | Free Elective                       | Free Elective****                  | 3       |
|               | <b>Project/Elective (6 credits)</b> |                                    |         |
| MA5415/MA#### | Project II/Departmental Elective    | Project/Departmental Elective***** | 3       |
| MA5425/MA#### | Project III/Departmental Elective   | Project/Departmental Elective***** | 3       |

## Note 2.

\*\*\*\***The Free Elective** in the MSc curriculum carries **3 credits**. It may be taken in either the **third** or **fourth semester**.

\*\*\*\*\* Students must choose **Project II (MA5415)** of 3 credits or a departmental elective worth 3 credits.

\*\*\*\*\* Students must choose **Project III (MA5425)** of 3 credits or a departmental elective worth 3 credits.

## Note 3.

(i) The total credit requirement across the **third and fourth semesters** is **33 credits**. These may be distributed as **18 + 15** or **21 + 12**, depending on the semester in which the **free elective** is taken.

(ii) A student who opts for **both Project II and Project III (totaling 6 credits)** in the **fourth semester** is required to submit a **Master's thesis**.

## Note 4.

Registering for a departmental elective in place of a project **does not determine** the specialization (degree) awarded.

## Note 5.

To be awarded the **M.Sc. Mathematics** or **M.Sc. Mathematics and Computing** degree, a student must successfully complete **four departmental electives** from the corresponding elective basket. For example, a student seeking the **M.Sc. Mathematics** degree must complete four electives from the **Mathematics** basket, whereas a student seeking the **M.Sc. Mathematics and Computing** degree must complete four electives from the **Computational** basket.