

**Symbiosis School of Biological Sciences, Pune**  
**Master of Science (Biotechnology)**  
**Programme Structure 2024-26**

|                              |  |  |  |  |   |
|------------------------------|--|--|--|--|---|
| 1.                           | <b>OBJECTIVE</b>                       | 1. Provide expertise in laboratory-based techniques.<br>2. Impart skill sets to formulate and execute independent research project.<br>3. Enable students with skill sets to carve a career as a researcher in the field of biotechnology.<br>4. Empower students with an ability to translate biotechnology research skill set to provide sustainable solutions to societal issues.             |  |  |   |
| 2.                           | <b>DURATION (IN MONTHS)</b>            | 24 (Full Time)   |  |  |   |
| 3.                           | <b>INTAKE</b>                          | 50   |  |  |   |
| 4.                           | <b>RESERVATION</b>                     | <b>I. Within the sanctioned intake</b>   | <b>a) SC (In Percentage)</b>           | <b>b) ST (In Percentage)</b>                     | <b>c) Differently abled (In Percentage)</b> |
|                              |  |  | 15                                     | 7.5  | 3   |
|                              |  | <b>II. Over and above the sanctioned intake</b>  | <b>a) Kashmiri Migrants (In Seats)</b> | <b>b) International Students (In Percentage)</b> |   |
|                              |  |  | 2                                      | 20   |   |
| 5.                           | <b>ELIGIBILITY</b>                     | Graduate in Life Sciences/ Health Sciences/ Biotechnology/ any other Biological Sciences OR Graduate of Engineering in Biotechnology/ Graduate of Technology in Biotechnology from any recognized University/ Institution of National Importance and must have obtained a minimum of 50% marks or equivalent grade (45% or equivalent grade for Scheduled Caste/ Scheduled Tribes) at graduation |  |  |   |
| 6.                           | <b>SELECTION PROCEDURE</b>             | Written Test / Personal Interaction  |  |  |   |
| 7.                           | <b>MEDIUM OF INSTRUCTION</b>           | English  |  |  |   |
| 8.                           | <b>PROGRAMME PATTERN</b>               | Semester   |  |  |   |
| 9.                           | <b>COURSE &amp; SPECIALIZATION</b>     | As per Annexure A<br>Stream-A : M.Sc. Biotechnology<br>Stream-B : M.Sc. Biotechnology (By Research)<br>Stream-C : Dual Degree option to enroll with the University of Adelaide, Australia or Aston University, United Kingdom  |  |  |   |
| 10.                          | <b>FEE</b>                             |  | <b>Academic Fee p.a</b>                | <b>Institute Deposit</b>                         | <b>Total</b>                                |
| <b>M.Sc. (Biotechnology)</b> |  |  |  |  |   |
|                              | <b>Indian Students (Amount in INR)</b> |  | 250000                                 | 20000  | 270000                                      |
|                              | <b>International Students</b>          | <b>NRI/ PIO/ OCI Category (Amount in US\$)</b>   | 4700                                   | 275  | 4975  |

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|   |  |  |        |       |        |
|---|--|--|--------|-------|--------|
|   |  | <b>Foreign National Category (Amount in US\$)</b>  | 1950   | 275   | 2225   |
| <b>M.Sc. Biotechnology (By Research) 1st Year</b>   |  |  |        |       |        |
|   | <b>Indian Students (Amount in INR)</b> |  | 250000 | 20000 | 270000 |
|   | <b>International Students</b>          | <b>NRI/ PIO/ OCI Category (Amount in US\$)</b>   | 4700   | 275   | 4975   |
|   |  | <b>Foreign National Category (Amount in US\$)</b>  | 1950   | 275   | 2225   |
| <b>M.Sc. Biotechnology (By Research) 2nd Year</b>   |  |  |        |       |        |
|   | <b>Indian Students (Amount in INR)</b> |  | 480000 |       | 480000 |
|   | <b>International Students</b>          | <b>NRI/ PIO/ OCI Category (Amount in US\$)</b>   | 9400   | 0     | 9400   |
|   |  | <b>Foreign National Category (Amount in US\$)</b>  | 3900   | 0     | 3900   |
| <b>DUAL DEGREE</b>  |  |  |        |       |        |
|   | <b>Indian Students (Amount in INR)</b> |  | 500000 | 20000 | 520000 |
| <b>DUAL DEGREE 2nd Year</b>   |  |  |        |       |        |
| <b>To be paid to the University of Adelaide or Aston University based on their norms.</b> |  |  |        |       |        |
| <b>11. ASSESSMENT</b>   |  | All internal courses will have 100% component as internal evaluation at the institute level. All external courses will have 60% internal component and 40% component as external (University) examination.   |        |       |        |
| <b>12. STANDARD OF PASSING</b>  |  | The assessment of the student for each examination is done, based on relative performance. Maximum Grade Point (GP) is 10 corresponding to O (Outstanding). For all courses, a student is required to pass both internal and external examination separately with a minimum Grade Point of 4.000 corresponding to Grade P. Students securing less than 40% absolute marks in each head of passing will be declared FAIL. The University awards a degree to the student who has achieved a minimum CGPA of 4.000 out of maximum of 10 CGPA for the program. |        |       |        |
| <b>13. AWARD OF DEGREE</b>  |  | Students opting for Stream-A of the programme will be awarded Master of Science (Biotechnology) at the end of semester IV examination after taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA.<br>Students opting for Stream-B of the programme will be awarded Master of Science (Biotechnology) with specific mention of "By Research" on the degree certificate after taking into consideration the performance of all semester examinations after                                |        |       |        |

|                                      | obtaining minimum 4.00 CGPA out of 10 CGPA.<br>Students opting for Stream-C of the programme will be awarded Master of Science (Biotechnology) after successfully completing the mapped credits at the respective university abroad and after taking into consideration the performance of all semester examinations after obtaining minimum 4.00 CGPA out of 10 CGPA. |                  |                     |                         |               |                               |                                 |           |
|--------------------------------------|--|------------------|---------------------|-------------------------|---------------|-------------------------------|---------------------------------|-----------|
| <b>14. CLASSIFICATION OF CREDITS</b> |  |                  |                     |                         |               |                               |                                 |           |
| Semester                             | Generic Core   | Generic Elective | Specialization Core | Specialization Elective | Open Elective | Mandatory Non-Credit Course/s | Non-Letter Grade Audit Course/s | Total     |
| <b>Stream A</b>                      |  |                  |                     |                         |               |                               |                                 |           |
| 1                                    | 20   | 0                | 0                   | 0                       | 0             | 1                             | As per the student's choice     | 20        |
| 2                                    | 20   | 0                | 0                   | 0                       | 0             | 1                             |                                 | 20        |
| 3                                    | 20   | 0                | 0                   | 0                       | 0             | 0                             |                                 | 20        |
| 4                                    | 20   | 0                | 0                   | 0                       | 0             | 0                             |                                 | 20        |
| <b>Total</b>                         | <b>80</b>  | <b>0</b>         | <b>0</b>            | <b>0</b>                | <b>0</b>      | <b>0</b>                      |                                 | <b>80</b> |
| <b>Stream B</b>                      |  |                  |                     |                         |               |                               |                                 |           |
| 1                                    | 20   | 0                | 0                   | 0                       | 0             | 1                             | As per the student's choice     | 20        |
| 2                                    | 20   | 0                | 0                   | 0                       | 0             | 1                             |                                 | 20        |
| 3                                    | 20   | 0                | 0                   | 0                       | 0             | 0                             |                                 | 20        |
| 4                                    | 20   | 0                | 0                   | 0                       | 0             | 0                             |                                 | 20        |
| <b>Total</b>                         | <b>80</b>  | <b>0</b>         | <b>0</b>            | <b>0</b>                | <b>0</b>      | <b>0</b>                      |                                 | <b>80</b> |
| <b>Stream C</b>                      |  |                  |                     |                         |               |                               |                                 |           |
| 1                                    | 20   | 0                | 0                   | 0                       | 0             | 1                             | As per the student's choice     | 20        |
| 2                                    | 20   | 0                | 0                   | 0                       | 0             | 1                             |                                 | 20        |
| 3                                    | Courses delivered as per the syllabus and structure of M.Sc. Biotechnology (Biomedical) of University of Adelaide or M.Sc. Stem Cells and Regenerative Medicine of Aston University or M. Res. Bioscience from Aston University. Please refer to the annexure for course and credit mapping  |                  |                     |                         |               |                               |                                 |           |
| 4                                    |  |                  |                     |                         |               |                               |                                 |           |

**This Programme Structure is aligned with the norms laid down by the University and is approved by the Academic Council.  
Hereafter changes (if any) which conform to the policy on "Curriculum Development and Review" would be permissible, subject to revision of the Programme Structure, following the specified processes.**

**Director - Academics**

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**Annexure A**

| Catalog Course Code         | Course Code | Course Title                             | Specialization | Credit    | Continuous Assessment | Term End Examination | Total Marks                 |
|-----------------------------|-------------|--|----------------|-----------|-----------------------|----------------------|-----------------------------|
| <b>Semester : 1</b>         |             |  |                |           |                       |                      |                             |
| <b>Generic Core Courses</b> |             |  |                |           |                       |                      |                             |
| TH4099                      | 0403420101  | Biochemistry                             |                | 3         | 90                    | 60                   | 150                         |
| TH4110                      | 0403420102  | Practicals in Biochemistry               |                | 3         | 90                    | 60                   | 150                         |
| TH4098                      | 0403420103  | Advanced Molecular Biology               |                | 3         | 90                    | 60                   | 150                         |
| TH4107                      | 0403420104  | Microbiology                             |                | 3         | 90                    | 60                   | 150                         |
| TH4114                      | 0403420105  | Practicals in Molecular Biology          |                | 3         | 90                    | 60                   | 150                         |
| TH4116                      | 0403420106  | Research Methodology and Biostatistics   |                | 3         | 90                    | 60                   | 150                         |
| TH4103                      | 0403420107  | Genetic Analysis                         |                | 2         | 60                    | 40                   | 100                         |
| TH4788                      | 0403420108  | Health and Wellness Module I             |                | 0         | 0                     | 0                    | Mandatory Non-Credit Course |
| <b>Total</b>                |             |  |                | <b>20</b> | <b>600</b>            | <b>400</b>           | <b>1000</b>                 |
| <b>Semester : 2</b>         |             |  |                |           |                       |                      |                             |
| <b>Generic Core Courses</b> |             |  |                |           |                       |                      |                             |
| TH4113                      | 0403420201  | Practicals in Microbiology               |                | 3         | 90                    | 60                   | 150                         |
| TH4097                      | 0403420202  | Advanced Immunology                      |                | 3         | 90                    | 60                   | 150                         |
| TH4101                      | 0403420203  | Cell Biology                             |                | 3         | 90                    | 60                   | 150                         |
| TH4104                      | 0403420204  | Genetic Engineering                      |                | 3         | 90                    | 60                   | 150                         |
| TH4108                      | 0403420205  | Practicals in Animal Tissue Culture      |                | 2         | 60                    | 40                   | 100                         |
| TH4115                      | 0403420206  | Practicals in Recombinant DNA Technology |                | 2         | 60                    | 40                   | 100                         |
| TH4111                      | 0403420207  | Practicals in Bioinformatics             |                | 2         | 60                    | 40                   | 100                         |
| TH4063                      | 0403420208  | Bioinformatics                           |                | 2         | 60                    | 40                   | 100                         |
| TH4789                      | 0403420209  | Health and Wellness Module II            |                | 0         | 0                     | 0                    | Mandatory Non-Credit Course |
| <b>Total</b>                |             |  |                | <b>20</b> | <b>600</b>            | <b>400</b>           | <b>1000</b>                 |
| <b>Semester : 3</b>         |             |  |                |           |                       |                      |                             |
| <b>Stream - A</b>           |             |  |                |           |                       |                      |                             |
| <b>Generic Core Courses</b> |             |  |                |           |                       |                      |                             |
| TH4100                      | 0403420301  | Bioprocess Engineering                   |                | 3         | 90                    | 60                   | 150                         |
| TH4109                      | 0403420302  | Practicals in Bioanalytical Techniques   |                | 3         | 90                    | 60                   | 150                         |
| TH4112                      | 0403420303  | Practicals in Immunology and Virology    |                | 3         | 90                    | 60                   | 150                         |
| TH4118                      | 0403420304  | Virology                                 |                | 3         | 90                    | 60                   | 150                         |

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|--|-------------|---|----------------|-----------|-----------------------|----------------------|-------------|
| T1656  | 0403420305  | Intellectual Property Rights              |                | 2         | 60                    | 40                   | 100         |
| TH4106   | 0403420306  | Introduction to Laboratory Animal Science |                | 2         | 60                    | 40                   | 100         |
| TH4117   | 0403420307  | Stem Cell Biology                         |                | 2         | 60                    | 40                   | 100         |
| <b>Total Required Credits</b>  |             |   |                | <b>18</b> | <b>540</b>            | <b>360</b>           | <b>900</b>  |
| <b>Generic Elective Course Group<br/>Stream - A (Choose any one course)</b>  |             |   |                |           |                       |                      |             |
| TH4582   | 0403420308  | Genomics and Proteomics                   |                | 2         | 60                    | 40                   | 100         |
| TH4102   | 0403420309  | Environmental Biotechnology               |                | 2         | 60                    | 40                   | 100         |
| <b>Total Required Credits</b>  |             |   |                | <b>2</b>  | <b>60</b>             | <b>40</b>            | <b>100</b>  |
| <b>Stream-B<br/>Generic Core Course<br/>(By Research)</b>  |             |   |                |           |                       |                      |             |
| T4820  | 0403420310  | Project (Part I)                          |                | 20        | 600                   | 400                  | 1000        |
| <b>Total Required Credits</b>  |             |   |                | <b>20</b> | <b>600</b>            | <b>400</b>           | <b>1000</b> |
| <b>Stream-C (Dual Degree)</b>  |             |   |                |           |                       |                      |             |
| <p>Note: Courses delivered as per the syllabus and structure of M.Sc. Biotechnology (Biomedical) degree from the University of Adelaide or M.Sc. Stem cells and Regenerative Medicine from Aston University or M. Res. Bioscience from Aston University. Students will take courses to fulfill the credit requirements of our programme.</p> |             |   |                |           |                       |                      |             |
| <b>Semester : 4</b>  |             |   |                |           |                       |                      |             |
| <b>Generic Elective Course Group<br/>Stream - A (Choose any one course)</b>  |             |   |                |           |                       |                      |             |
| T4820  | 0403420401  | Project                                   |                | 20        | 600                   | 400                  | 1000        |
| T4920  | 0403420402  | Internship                                |                | 20        | 600                   | 400                  | 1000        |
| <b>Total Required Credits</b>  |             |   |                | <b>20</b> | <b>600</b>            | <b>400</b>           | <b>1000</b> |
| <b>Stream - B<br/>Generic Core Course<br/>(By Research)</b>  |             |   |                |           |                       |                      |             |
| T4820  | 0403420403  | Project (Part II)                         |                | 20        | 600                   | 400                  | 1000        |
| <b>Total Required Credits</b>  |             |   |                | <b>20</b> | <b>600</b>            | <b>400</b>           | <b>1000</b> |
| <b>Stream-C (Dual Degree)</b>  |             |   |                |           |                       |                      |             |
| <p>Courses delivered as per the syllabus and structure of M.Sc. Biotechnology (Biomedical) degree from the University of Adelaide or M.Sc. Stem cells and Regenerative Medicine from Aston University or M. Res. Bioscience from Aston University. Students will take courses to fulfill the credit requirements of our programme.</p>       |             |   |                |           |                       |                      |             |

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| Semester        | Continuous Assessment   | Term End Examination | Total Credits | Total Marks |
|-----------------|---|----------------------|---------------|-------------|
| <b>STREAM-A</b> |   |                      |               |             |
| Semester 1      | 0   | 20                   | 20            | 1000        |
| Semester 2      | 0   | 20                   | 20            | 1000        |
| Semester 3      | 0   | 20                   | 20            | 1000        |
| Semester 4      | 0   | 20                   | 20            | 1000        |
| <b>Total</b>    | <b>0</b>  | <b>80</b>            | <b>80</b>     | <b>4000</b> |
| <b>STREAM-B</b> |   |                      |               |             |
| Semester 1      | 0   | 20                   | 20            | 1000        |
| Semester 2      | 0   | 20                   | 20            | 1000        |
| Semester 3      | 0   | 20                   | 20            | 1000        |
| Semester 4      | 0   | 20                   | 20            | 1000        |
| <b>Total</b>    | <b>0</b>  | <b>80</b>            | <b>80</b>     | <b>4000</b> |
| <b>STREAM-C</b> |   |                      |               |             |
| Semester 1      | 0   | 20                   | 20            | 1000        |
| Semester 2      | 0   | 20                   | 20            | 1000        |
| Semester 3      | Courses delivered as per the syllabus and structure of M.Sc. Biotechnology (Biomedical) of University of Adelaide or M.Sc. Stem Cells and Regenerative Medicine of Aston University or M.Res. Bioscience from Aston University. Please refer to the annexure for course and credit mapping. |                      |               |             |
| Semester 4      |   |                      |               |             |