



Celebrating 50 Years of Excellence

Symbiosis School of Biological Sciences, Pune
Master of Science (Biotechnology)
Programme Structure 2022-24

| | | | | | |
|---|------------------------------------|--|--|--|---|
| 1. | OBJECTIVE | 1. Provide expertise in laboratory-based techniques. 2. Impart skill sets to formulate and execute independent research project. 3. Enable students with skill sets to carve a career as a researcher in the field of biotechnology. 4. Empower students with an ability to translate biotechnology research skill set to provide sustainable solutions to societal issues. | | | |
| 2. | DURATION (IN MONTHS) | 24 (Full Time) | | | |
| 3. | INTAKE | 40 | | | |
| 4. | RESERVATION | I. Within the sanctioned intake | a) SC (In Percentage) | b) ST (In Percentage) | c) Differently abled (In Percentage) |
| | | | 15 | 7.5 | 3 |
| | | II. Over and above the sanctioned intake | a) Kashmiri Migrants (In Seats) | b) International Students (In Percentage) | |
| | | | 2 | 15 | |
| 5. | ELIGIBILITY | 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. | SELECTION PROCEDURE | Written Test / Personal Interaction | | | |
| 7. | MEDIUM OF INSTRUCTION | English | | | |
| 8. | PROGRAMME PATTERN | Semester | | | |
| 9. | COURSE & SPECIALIZATION | As per Annexure A | | | |
| 10. | FEE | | Academic Fee p.a | Institute Deposit | Total |
| M.Sc. (Biotechnology) | | | | | |
| | | Indian Students | 220000 | 20000 | 240000 |
| | | International Students (USD equivalent to INR) | 330000 | 20000 | 350000 |
| M.Sc. Biotechnology (By Research) 1st Year | | | | | |



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| | | Indian Students | 220000 | 20000 | 240000 | | |
|---|--|--|---------------------|-------------------------|---------------|----------|-----------|
| | | International Students (USD equivalent to INR) | 330000 | 20000 | 350000 | | |
| M.Sc. Biotechnology (By Research) 2nd Year | | | | | | | |
| | | Indian Students | 440000 | 0 | 440000 | | |
| | | International Students (USD equivalent to INR) | 660000 | 0 | 660000 | | |
| 11. | ASSESSMENT | 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. | | | | | |
| 12. | STANDARD OF PASSING | 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. | | | | | |
| 13. | AWARD OF DEGREE/ DIPLOMA/ CERTIFICATE | <p>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.</p> <p>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.</p> | | | | | |
| 14. | CLASSIFICATION OF CREDITS | | | | | | |
| Semester | Generic Core | Generic Elective | Specialization Core | Specialization Elective | Open Elective | Audit | Total |
| Stream A | | | | | | | |
| 1 | 20 | 0 | 0 | 0 | 0 | 0 | 20 |
| 2 | 20 | 0 | 0 | 0 | 0 | 1* | 20 |
| 3 | 18 | 2 | 0 | 0 | 0 | 1* | 20 |
| 4 | 20 | 0 | 0 | 0 | 0 | 0 | 20 |
| Total | 78 | 2 | 0 | 0 | 0 | 0 | 80 |
| Stream B | | | | | | | |
| 1 | 20 | 0 | 0 | 0 | 0 | 0 | 20 |
| 2 | 20 | 0 | 0 | 0 | 0 | 1* | 20 |
| 3 | 20 | 0 | 0 | 0 | 0 | 1* | 20 |
| 4 | 20 | 0 | 0 | 0 | 0 | 0 | 20 |

| | | | | | | | |
|--------------|-----------|----------|----------|----------|----------|----------|-----------|
| Total | 80 | 0 | 0 | 0 | 0 | 0 | 80 |
|--------------|-----------|----------|----------|----------|----------|----------|-----------|

* Satisfactory completion of the non letter grade courses 'Integrated Disaster Management', 'Research Publication' is mandatory for award of degree.

**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.**

Head - Academics

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Annexure A

| Catalog Course Code | Course Code | Course Title | Specialization | Credit | Internal Marks | External Marks | Total Marks |
|-----------------------------|-------------|---|----------------|-----------|----------------|----------------|------------------|
| Semester : 1 | | | | | | | |
| Generic Core Courses | | | | | | | |
| 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 |
| Total | | | | 20 | 600 | 400 | 1000 |
| Semester : 2 | | | | | | | |
| Generic Core Courses | | | | | | | |
| 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 |
| TH4105 | 0403420208 | Genomics, Proteomics and Bioinformatics | | 2 | 60 | 40 | 100 |
| T4005 | 0403420209 | Integrated Disaster Management * | | 0 | 0 | 0 | Non Letter Grade |
| Total | | | | 20 | 600 | 400 | 1000 |
| Semester : 3 | | | | | | | |
| Stream - A | | | | | | | |
| Generic Core Courses | | | | | | | |
| 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 |
| 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 |
| T0100 | 0403420308 | Research Publication * | | 0 | 0 | 0 | Non Letter Grade |



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| Catalog Course Code | Course Code | Course Title | Specialization | Credit | Internal Marks | External Marks | Total Marks |
|--|-------------|----------------------------------|----------------|-----------|----------------|----------------|------------------|
| Total Required Credits | | | | 18 | 540 | 360 | 900 |
| Stream - A | | | | | | | |
| Generic Elective Courses | | | | | | | |
| TH4096 | 0403420309 | Advanced Genomics and Proteomics | | 2 | 60 | 40 | 100 |
| TH4102 | 0403420310 | Environmental Biotechnology | | 2 | 60 | 40 | 100 |
| Total Required Credits | | | | 2 | 60 | 40 | 100 |
| Stream-B (By Research) | | | | | | | |
| Generic Core Courses | | | | | | | |
| T0100 | 0403420308 | Research Publication * | | 0 | 0 | 0 | Non Letter Grade |
| T4820 | 0403420311 | Project (Part I) | | 20 | 600 | 400 | 1000 |
| Total Required Credits | | | | 20 | 600 | 400 | 1000 |
| Semester : 4 | | | | | | | |
| Stream - A (Generic Elective Courses Group) | | | | | | | |
| T4820 | 0403420401 | Project | | 20 | 600 | 400 | 1000 |
| T4920 | 0403420402 | Internship | | 20 | 600 | 400 | 1000 |
| Total Required Credits | | | | 20 | 600 | 400 | 1000 |
| Stream - B (By Research) | | | | | | | |
| T4820 | 0403420403 | Project (Part II) | | 20 | 600 | 400 | 1000 |
| Total Required Credits | | | | 20 | 600 | 400 | 1000 |



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| Semester | Internal Credits | External Credits | Total Credits | Total Marks |
|--------------|------------------|------------------|---------------|-------------|
| Semester 1 | 0 | 20 | 20 | 1000 |
| Semester 2 | 0 | 20 | 20 | 1000 |
| Semester 3 | 0 | 20 | 20 | 1000 |
| Semester 4 | 0 | 20 | 20 | 1000 |
| Total | 0 | 80 | 80 | 4000 |