



# Syllabus

## Fourth Semester Courses in

### MSc

## Biotechnology

### (2024-2025)

#### Contents:

- Syllabus for Core Course:
  - PSBTY6502RP1 Research Project with Dissertation
- Evaluation and Assessment guidelines

**APPROVED SYLLABUS**



  
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ST. XAVIER'S COLLEGE  
AUTONOMOUS  
MUMBAI - 400 001.

<b>MSc II in BIOTECHNOLOGY</b>		
<b>Course Title: RESEARCH PROJECT WITH DISSERTATION</b>		
<b>Course Code: PSBTY6502RP1</b>		
<b>Credits: 18</b>		<b>Practical Course</b>
<b>Course Objectives</b>		
<ul style="list-style-type: none"> <li>The Dissertation work aims to enable students to formulate clear, focused research questions or hypotheses that address a gap in knowledge or contribute to a specific field of study. The dissertation process will prepare students for future academic or professional endeavours, including further study at the PhD level, career advancement, or engagement in research-related activities.</li> <li>The Internship in a Biotechnology based industry will help the learner to bridge the gap between academic learning and industry practice, preparing them for careers in the field.</li> </ul>		
<b>CO</b>	<b>Course Outcomes</b> <i>On completing the course, the learner will be able to</i>	<b>Bloom's Taxonomy Level (BT level)</b>
1	Identify a research query based on the knowledge acquired across the previous semesters and relevant scientific literature.	Applying
2	Design the research study, plan, and execute the research project and validate the methods for reliability and reproducibility.	Analyzing
3	Apply ethical principles of scientific research.	Evaluating
4	Critically evaluate the data obtained and compare it with existing scientific literature with regard to validity and applicability.	Creating
5	Develop skills and competencies that are valuable for future academic or professional endeavors, such as critical analysis, written and oral communication, and project management.	Analysis, Creating
6	Develop effective communication (interpersonal, oral , written) and collaboration skills by working closely with supervisors, mentors, and team members on projects.	Applying



Content		40 hours/week
	<ul style="list-style-type: none"> <li>Project in Research Institute /Internship at Biotechnology based /allied Industry for 6 months with Dissertation / Report</li> </ul>	

**Evaluation (Practical- Research Project, PSBTY6502RP1):**

**Total Marks: 500**

I. Summative Assessment 'of' Learning (focus on outcomes, quantitative data for outcomes of instruction).

*Each student will be supervised by one Research Institute mentor/ Industry Mentor and one internal faculty member throughout the project/internship period*

a) Research Project-

- Mentor/Principal Investigator/Supervisor's evaluation – 200 M.
- Dissertation– 200 M
- Presentation and Viva Voce (External Examiners)- 100M

b) Internship in industry

- Industry Mentor/Project Supervisors evaluation- 200M
- Report with Certificate – 200M.
- Presentation and Viva (External Examiners)- 100M

**Distribution of Bloom's Taxonomy Levels for the Course Assessment**

Units	Remembering	Understanding	Analyzing	Application	Evaluation	Creation
*Percentage	NA	20	20	20	20	20





# Syllabus

## Fourth Semester Courses in

### MSc

### Biotechnology

### (2024-2025)

#### Contents:

- Syllabus for Elective Course:
  - PSBTY6503EL1 Emerging Trends in Biotechnology
- Evaluation and Assessment guidelines

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<b>MSc II in BIOTECHNOLOGY</b>		
<b>Course Title: Emerging Trends in Biotechnology</b>		
<b>Course Code: PSBTY6503EL1</b>		
<b>Credits: 4 4 (2T +2P) 30 hrs Theory +60 hours Practical</b>		
<b>Course Objectives</b>		
<ul style="list-style-type: none"> <li>• The elective course aims to provide opportunities to acquire new skills, techniques, or knowledge relevant to the course topic through structured learning activities via MOOCs .</li> <li>• The Capstone project will provide an opportunity to apply concepts, knowledge and skills and understand real-world challenges faced by Biotech businesses, startups, or entrepreneurs in areas such as product development, market entry, and growth strategies..</li> </ul>		
<b>CO</b>	<b>Course Outcomes</b> <i>On completing the course, the learner will be able to</i>	<b>Bloom's Taxonomy Level (BT level)</b>
1	Refine and enhance their existing skills, competencies, or expertise in the subject area through targeted course work, feedback, and reflection.	Applying, Analysing and Evaluating
2	Demonstrate the ability to apply theoretical knowledge and practical skills acquired throughout the academic program to address a real-world problem or challenge..	Applying, Analysing and Evaluating
3	Demonstrate creativity, innovation, and originality in the conceptualization, design, and implementation of the capstone project, generating novel solutions or approaches to address the identified problem or challenge.	Creating
4	Cultivate critical thinking abilities to identify opportunities, assess risks, and develop innovative solutions to complex business challenges in the context of product innovation, market research, and business planning.	Analysing and evaluating
5	Understand the ethical implications associated with conducting market research, analyzing patents, and developing business plans, and adhere to ethical standards throughout the project.	Analysing and evaluating

Content		
Module 1	The student will complete one MOOC from NPTEL/SWAYAM on domains inclusive and not restricting to Emerging Trends in Core domains of Biotechnology, IPR, Entrepreneurship among others. The course will be curated by the department.	8-12 weeks course
Module 2	Capstone Project (Business Plan/ Patent Analysis for product innovation/ Market Research/Quantitative surveys for real world challenge)	4 hrs/week

**Evaluation (Practical- PSBTY6503EL1):**

**Total Marks: 200**

- I. Formative Assessment 'for' Learning
  - a) Weekly assignments of MOOCs- 40 marks
  - b) Capstone project Proposal, Wrok flow, Data analysis – 40 marks
  
- II. Summative Assessment 'of' learning.
  - a) Completion of Assignments and certification from the MOOCs Portal -60 marks
  - b) Capstone Project Report and *Viva Voce* – 60 marks

**Distribution of Bloom's Taxonomy Levels for the Course Assessment**

Units	Remembering	Understanding	Analyzing	Application	Evaluation	Creation
*Percentage	NA	20	20	20	20	20

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