

Academic Regulations for M.Sc. in Biotechnology Programme

School of Biotechnology

Centurion University of Technology and Management

2025

1. Introduction

This Programme provides flexibility to students to choose a single discipline or a combination of disciplines/ streams as an academic career path. The Programme envisages a competency-based, multi-disciplinary, holistic academic programme with a creative combination of disciplines/ skills/ Domain/ Research of study with multiple entry and exit options.

The curriculum emphasizes a flexible combination of a wide range of courses with a focus on analytical and critical thinking, computational skills, use of cutting-edge technology, innovation, creativity, experiential learning including the development of a competency-based skilling ecosystem and holistic development of students leading to specific career prospects.

The university follows a dynamic curriculum development approach. Hence, it reserves the rights to revise / modify the syllabus, structure, credits etc. as deemed fit.

2. Objective

- To provide basic and advanced knowledge on principles of biotechnology, as well as current research and development.
- To develop technical skills in areas such as plant, animal, microbial, and medical biotechnology and to use high throughput biological lab equipments.
- To conduct research and develop research ideas. They also learn how to perform biotechnological research independently or in collaboration with others
- To create and develop the skills critical judgments about the legal, ethical, social, and business aspects of biotechnology.
- To train students in biochemical concepts and techniques and how to apply this knowledge in practical ways.
- To create and apply appropriate techniques, resources and modern instruments for biochemical estimation, animal tissue culture and plant tissue culture experiments, environment insults measurements, genetics, bioinformatics, cellular, molecular and physiological activities of all living organisms with an understanding of the application and limitations.

- To introduce with the area of research as per the recent outbreaks or demand in the society.
- To train and enhance skills using biological principles and systems to create new products.
- To practice biotechnological research, its importance for society, health, safety, legal and environmental issues and the consequent responsibilities relevant to the biodiversity conservation practice.
- To foster innovation and entrepreneurship skills, enabling students to identify opportunities, drive positive change and contribute to the growth of biotechnology field.
- To prepare students to adapt to evolving technologies and methodologies, emphasizing the importance of continuous learning and professional development.

3. Eligibility

A student who has passed Bachelor's degree in a relevant field, such as biotechnology, biology, life sciences, biochemistry, botany, zoology, or microbiology with a minimum aggregate of 50 % in Bachelor's degree (5 % relaxation for SC/ST candidates) from a recognized university is eligible to take admission to the M.Sc. Biotechnology Programme.

4. Programme structure

Choice-based Credit System (CBCS) Structure

Basket	Type of Course	Minimum Credit Requirement	
		PG	
		Credit	Approx. Weightage
I	Core Courses	56	64 %
II	Specialization Courses	29	27 %
III	Skill Courses	08	9 %
TOTAL		93	100 %

5. Types of courses

5.1 Major (Core) courses

Major (Core) Courses are the foundational and specialized courses directly related to a student's chosen major discipline. These courses form the core of the academic programme and provide in-depth knowledge and skills in the chosen field of study.

Major (Core) Courses aim to build a strong theoretical and practical foundation in the chosen major discipline. They equip students with the specialized knowledge and expertise required to excel in their field of study and future careers.

Please refer to Annexure- I for courses offered in major (core) discipline.

5.2 Elective Courses

Elective Courses: These are courses from advanced biotechnology fields, providing students with a secondary area of expertise and will benefit students for research and development.

Please refer to Annexure- II for courses offered under this basket.

5.3 Domain Courses

Domain Courses: These are courses from a chosen minor discipline, providing students with a secondary area of expertise. There are several domains offered by the university for the academic year 2023-24.

Please refer to Annexure- III for courses offered under this basket.

5.4 Skill Courses / Summer Internship / Research Project / Dissertation / Production Action Learning

Skill Courses: These courses focus on developing practical skills and competencies that are valuable in various professional contexts. Please refer to Annexure-3 for courses offered under this basket.

Summer Internship or Community Engagement programmes involve students participating in real-world work experiences, either in industry or within the community, during the summer break. These experiences can be credit-bearing and provide practical exposure to their chosen field of study.

Summer Internship and Community Engagement experiences bridge the gap between theoretical knowledge and practical application. They offer students an opportunity to apply

what they have learned in a real-world context, gain hands-on experience and develop professional networks.

These are in-depth, research-oriented components of the academic programme. Students engage in original research, dissertation writing, or production action learning, depending on the programme's requirements. Research projects are typically carried out under the guidance of faculty members.

These components aim to develop students' research skills, critical thinking abilities and problem-solving capabilities. They encourage students to explore, analyze and contribute to the knowledge base of their major discipline, preparing them for careers in research, academia, or industry leadership roles.

Please refer to Annexure- IV for courses offered under this basket.

6. Assessment

6.1 Evaluation for Theory Components

i. End semester theory examinations (50% weightage):

- a. Duration – 3 hrs
- b. Full Mark – 100. During result processing, it will be proportionately added.
- c. Distribution of marks (should cover all COs)
 - i. 10 short questions x 2 marks = 20 marks
 - ii. 5 long questions x 12 marks = 60 marks
 - iii. 4 short notes x 5 marks = 20 marks

ii. Continuous assessments: Details are as indicated in the table below:

Sl. No.	Continuous Assessment	Score
1	Individual / Group Presentation <i>Rubric is as under:</i> <ul style="list-style-type: none"> • Content & creativity – 05 • Presentation & Discussion – 05 	10
2	Mid-semester (Written Examination) <i>Mark Distribution:</i> <ul style="list-style-type: none"> • 5 short questions x 1 marks = 5 marks • 2 long questions x 5 marks = 10 marks • 2 short notes x 2.5 marks = 5 marks 	20

3	Assignment (2 assignments x 5 marks each)	10
4	Learning Record (<i>Based on the parameters indicated in the learning record format, course faculty to evaluate and award score</i>)	10
Total		50

6.2 Evaluation of Practice/ Laboratory Components

The evaluation of the practice component will be carried out 50% by concerned faculty and 50% by the external examiner and will be conducted as per the present policy. Details are as under:

Internal

A	Concept	10
B	Planning & Execution/ Practical/ Simulation/ Programming	10
C	Result and Interpretation	10
D	Record/ Report	10
E	Viva	10
Total		50

External

A	Execution & Result	20
B	Record of Applied and Action Learning	10
C	Viva	20
Total		50

6.3 Evaluation of Project Component

The evaluation of the project component will be completed 50% by concerned faculty and 50% by the external examiner and will be conducted as per the present policy. Following guideline may be referred during evaluation of internal and external components:

Internal

A	Understanding the relevance, scope and dimension of the project	10
B	Methodology	10
C	Quality of Analysis and Results	10
D	Interpretations and Conclusions	10

E	Report	10
Total		50

External

A	Understanding the relevance, scope and dimension of the project	10
B	Report	20
C	Viva	20
Total		50

6.4 Evaluation of Internship

The evaluation of the internship will be completed 50% by concerned faculty and 50% by the industry guide. Following guideline may be referred during evaluation of internal and external components:

Internal

A	Daily Diary & Log Report	20
B	Periodical (Weekly/Monthly) Report	10
C	Presentation & Viva	20
Total		50

External

A	Completion of the task / project assigned	30
B	Feedback of the industry supervisor	20
Total		50

6.5 Evaluation of Workshop Component

The evaluation of the workshop component will be completed 100% by concerned faculty as per the present policy. Following guideline may be referred during evaluation:

A	Critical Thinking/ Simulation/ Field work & Report	50
B	Presentation & Viva	50
Total		50

7. Pass criteria

A. **Theory papers**: students must secure a minimum of **30% in individual components** (both continuous assessment & end-semester theory) **along with 40% in aggregate**

B. **Theory & practice papers**

- i. Theory component: minimum of 30% in individual components (both continuous assessment & end-semester theory) along with 40% in aggregate
- ii. Practice component: minimum of 50% marks both in internal & external

C. **Theory & project type papers**

- i. Theory component: minimum of 30% in individual components (both continuous assessment & end-semester theory) along with 40% in aggregate
- ii. Project component: minimum of 50% marks both in internal & external

D. **Theory, practice & project type papers**

- i. Theory component: minimum of 30% in individual components (both continuous assessment & end-semester theory) along with 40% in aggregate
- ii. Practice component: minimum of 50% marks both in internal & external
- iii. Project component: minimum of 50% marks both in internal & external

E. **Practice & project type papers**

- i. Practice component: minimum of 50% marks both in internal & external
- ii. Project component: minimum of 50% marks both in internal & external

F. **Workshop or Internship type papers**: 50% in aggregate

8. Grading

CUTM follows “Absolute” grading system / Grade point or marks scheme applicable for different programmes. Under absolute grading system, a Ten Point grading system on base of 10 shall be followed in CUTM. Categorization of these grades and their correlation shall be as under:

Qualification	Grade	Score on 100 Percentage Points	Point
Outstanding	O	90 and above up to 100	10
Excellent	E	80 and above but less than 90	9
Very Good	A	70 and above but less than 80	8
Good	B	60 and above but less than 70	7
Fair	C	50 and above but less than 60	6
Pass	D	40 and above but less than 50	5
Failed	F	Below 40	2
Malpractice	NOT APPLICABLE	NOT APPLICABLE	0
Absent	NOT APPLICABLE	NOT APPLICABLE	0

N.B. Grade C shall be considered as average, Grade D shall be the passing Grade for theory and Grade C shall be the Pass Grade for Practical/ Project/ Workshop mode paper.

9. Attendance

Attendance will be calculated from the date of commencement of classes or date of admission, whichever is later.

- a. A student attending at least 75% of the total number of classes held shall be allowed to sit for the concerned Semester Examinations subject to fulfilment of other conditions laid down in the regulation.
- b. A student attending at least 60% but less than 75% of the total number of classes held shall be allowed to sit for the concerned Semester Examinations subject to the payment of prescribed fees and fulfilment of other conditions laid down in the regulations.
- c. A student attending less than 60% of the total number of classes held shall not be allowed to sit for the concerned Semester Examinations and he /she has to take admission to the same Semester in the very next year for attending the classes and appearing at the said Semester Examination.

Details of the Courses for M.Sc. Biotechnology

Basket I

Sl. No.	Course Type	Course Code	Course Title	Credit	Type (T+P+Pj)
1	Core Courses	CUTM1433	Biochemistry and Enzyme Technology	4	3+1+0
2	Core Courses	CUTM1437	Cell and Molecular Biology	4	3+1+0
3	Core Courses	CUTM1451	Immunology and Cancer Biology	4	3+1+0
4	Core Courses	CUTM1438	Bioanalytical Techniques	4	3+1+0
5	Core Courses	MRM301T	Research Methodology & Biostatistics	4	4+0+0
6	Core Courses	CUTMXXXX	Advanced Microbiology	4	3+1+0
7	Core Courses	CUTM1454	Genetics and epigenetics	4	3+1+0
8	Core Courses	CUTM1563	Genetic Engineering	4	2+2+0
9	Core Courses	CUTM1569	IPR, Biosafety and Bioentrepreneurship	4	2+0+2
10	Core Courses	CUTM1452	Animal Biotechnology	4	3+1+0
11	Core Courses	CUTM1439	Plant Biotechnology	4	3+1+0
12	Core Courses	CUTM1568	Transcriptomics, Proteomics and Metabolomics	4	2+2+0
13	Core Courses	CUTM1567	Frontiers in Genomics	4	3+1+0
14	Core Courses	CUTM1428	Plant Physiology and Metabolism	4	3+1+0

Credits to be completed from Basket I \geq 56.

Basket II

Sl. No.	Course Type	Course Code	Course Title	Credit	Type (T+P+Pj)
1	Specialization	CUTMXXXX	Domain	29	

Credits to be completed from Basket II \geq 24.

Basket III

Sl. No.	Course Type	Course Code	Course Title	Credit	Type (T+P+Pj)
1	Skill Courses	CUTMXXXX	Skill Course I	4	0+2+2
1	Skill Courses	CUTMXXXX	Skill Course II	4	0+2+2

Credits to be completed from Basket III \geq 8.

