

Academic Regulations for B-Tech 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 knowledge and laboratory skills of the subjects.
- 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 the Higher Secondary (12th grade) or its equivalent examination with subjects - Physics, Biology and Chemistry as core subjects with minimum 50% overall (45% for SC/ST candidates) is eligible to take admission to the 1st year of B.Sc. Biotechnology programme.

4. Programme structure

Basket	Basket Category	Minimum credits to be acquired
I	Foundation Courses in Sciences	17
II	Foundation Courses in Humanities & Management [A: 6 credits (choice), B: 6 credits (Compulsory)]	12
III	Smart Stack	25
IV	Foundation and Core Engineering Courses	58
V	Domain/Skill/Internship/Minor Project/MOOC	48
Total Credits		160

5. Types of courses

5.1 Foundation Courses in Sciences

Foundation Courses in Science are designed to equip students with the fundamental scientific principles necessary for pursuing an engineering degree. These courses typically cover the basics of physics, chemistry, and mathematics, providing a solid grounding in the concepts and problem-solving skills that are essential for more advanced engineering studies.

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

5.2 Foundation Courses in Humanities & Management [A: 6 credit (choice), B: 6 credit (Compulsory)]

Humanities and management courses within an engineering program are designed to provide engineering students with essential knowledge and skills beyond the technical aspects of their field. These courses aim to develop well-rounded engineers who understand the broader social, cultural, ethical, and managerial contexts in which engineering solutions are applied.

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

5.3 Smart Stack

These courses on Smart Engineering Tools focus on equipping students with the knowledge and skills to utilize advanced software, technologies and methodologies that enhance the efficiency, accuracy, and innovation of engineering processes. These courses emphasize the integration of digital tools, automation, data analysis and emerging technologies into engineering practice.

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

5.4 Foundation and Core Engineering Courses

Core engineering 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.

These 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- IV for courses offered in major (core) discipline.

5.5 Domain/Skill/Internship/Minor Project/MOOC

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.

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.

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- V for courses offered under this basket.

6. Assessment

6.1 Evaluation for Theory Components

Component	Theory (Marks)	Practice (Marks)
Marks	100	100
Mid-Sem 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	
Presentation <i>(There will be single individual presentation of which the rubrics are given below)</i> <i>Rubric is as under:</i> <ul style="list-style-type: none"> ➤ Content & Creativity = 05 ➤ Presentation & Discussion = 05 	10	
Assignments <i>(There will be five individual assignments from which the average will be considered)</i>	10	
Learning Record <ul style="list-style-type: none"> ➤ Based on the parameters indicated in the learning record format 	10	

Continuous Assessment (50%)	50	
End-Sem Examination <i>(Full marks will be 100 but 50% weightage will be considered)</i>	50	
Internal (50%)		50
External (50%)		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 Choice-based Credit System (CBCS) Structure

Basket IV Core Courses				
Sl. No.	Course Code	Course Title	Credits	Type T+P+PJ
1.	CUTM4350	Fermentation Biotechnology	4	3-1-0
2.	CUTM4117	Microbial Biotechnology	4	3-1-0
3.	CUTM4351	Genetic Engineering	4	3-1-0
4.	CUTM2363	Plant Tissue Culture Engineering	4	3-1-0
5.	CUTM4118	Biosafety Engineering	3	3-0-0
6.	CUTM4115	Cell Biology	4	3-1-0
7.	CUTM4116	Molecular Biology	4	3-1-0
8.	CUTM4119	Biochemistry	4	3-1-0
9.	CUTM4352	Immunology	4	3-1-0
10.	CUTM4120	Animal Biotechnology	4	3-1-0
11.	CUTM4355	Cancer Biology	4	3-1-0
12.	CUTM2367	Introduction to Biotechnology	3	3-0-0
13.	CUTM4121	Bioanalytical Techniques	4	3-1-0
14.	CUTM4122	Introduction to Bioinformatics	4	3-1-0
15.	CUTM4354	Introduction to R programming	4	2-1-1
16.	Total Credits		58	-

Basket V				
Domain/Skill/MOOC/Minor Project/Internship/ Electives				
Sl. No.	Course Code	Course Title	Credits	Type T+P+PJ
Electives				
1.	CUTM2375	Nanobiotechnology	3	2-0-1
2.	CUTM2376	Biomaterials	3	2-0-1
Domains				
1.		Genetics and Genomics	29	
2.		Organic Farming	29	
3.		Food processing	29	
5.		Nutraceuticals	29	
Skills				
Internship/Minor Project				
			Total Credits	48