



आईएफटीएम विश्वविद्यालय, मुरादाबाद, उत्तर प्रदेश  
**IFTM University, Moradabad, Uttar Pradesh**  
NAAC ACCREDITED

Academic Ordinance  
for  
Master of Science in Biotechnology (M.Sc. BT)  
Programme  
(w.e.f. Session 2021-22)

(Amended with CBCS as per UGC Guidelines  
&


Approved by the Academic Council in the Meeting held on September 25, 2021)

**IFTM UNIVERSITY**

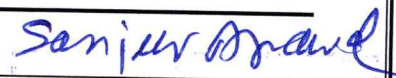
(Established under U.P. Govt. Act No.24 of 2010 and approved under section 22 of UGC Act 1956)

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## REGULATIONS

### 1. Short Title and Commencement

These regulations shall be called as "The Regulations for the Master of Science in Biotechnology M.Sc. BT Degree Program (CBCS) of the IFTM University, Moradabad", latest revised from the Academic Year 2021-22. The regulations framed are subject to modifications from time to time by IFTM University, Moradabad.

### 2. Minimum qualification for admission

Candidate must have bachelor's degree in any discipline of life sciences stream with 45% (40% for SC/ST) marks. Admission in M.Sc. BT programme will be based on Merit. Only primary mode of evaluation (CGPA or percentage) as mentioned in the qualifying degree certificate/mark sheet will be considered while verifying eligibility. Conversion from CGPA to percentage or vice versa given by individual Institute/University will not be allowed.

Foreign National candidates, who apply through Ministry of Human Resource Development, Government of India, are eligible to apply provided that they possess the same minimum qualification.

### 3. Duration of the program


The course of study for M.Sc. BT shall extend over a period of four semesters (two academic years) for students. The curricula and syllabi for the program shall be prescribed from time to time by IFTM University, Moradabad.


### 4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

### 5. Working days in each semester

Each semester shall consist of not less than 90 working days. The odd semesters shall be conducted from the month of June/July to November/December and the even semesters shall be conducted from December/January to May/June in every calendar year.

  
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## 6. Attendance and progress

A candidate is required to put in at least 75% attendance to appear in End-Semester. However, the same can be condoned to 15% on medical grounds or for other genuine reasons beyond the control of students.

## 7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, practical classes, project report, internship etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

### 7A. Credits and Grade System


(a) All programmes shall have credits associated with them as per their Lecture/Tutorial/Practical (LTP) structure and shall be determined as follows:

- One lecture hour per week per semester shall be assigned one credit.
- One practical hour per week shall be assigned half credit.

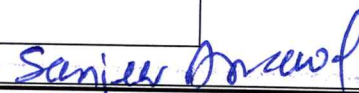
However, the credits associated with every programmes will be a whole number, i.e., wherever the sum comes out to be in half credit on calculation following the aforesaid process, the half shall be rounded to the next whole number.

(b) The letter grades based upon the overall marks obtained in a subject will be as follows:

S.No.	Marks	Letter Grade	Grade Point
1.	$\geq 90$	A+	10
2.	80-89	A	9
3.	70-79	B+	8
4.	60-69	B	7
5.	50-59	C+	6
6.	40-49	C	5
7.	35-39	D	4
8.	30-34	E	2
9.	$< 30$	F	0

  
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'E' & 'F' Grade will be treated as Carry Over Paper.

In addition to the above grades, there shall be two more letter grades 'I' and 'AB' which shall stand for Incomplete and Absent Grades, respectively.

**(c) Semester Grade Point Average (SGPA)**

The SGPA is a weighted average of the grade points earned by a student in all the papers credited and described his/her academic performance in a semester. If the grade points associated with the letter grades awarded to a student are  $g_1, g_2, g_3, \dots, g_k$ , etc. and the corresponding credits are  $c_1, c_2, c_3, \dots, c_k$ , the SGPA is given by :

$$SGPA = \frac{c_1g_1 + c_2g_2 + c_3g_3 + \dots + c_kg_k}{c_1 + c_2 + c_3 + \dots + c_k}$$

Where,  $k$  is the number of papers for which the candidate remains registered during the semester.

**(d) Cumulative Grade Point Average (CGPA)**

The Cumulative Grade Point Average (CGPA) indicates the overall academic performance of a student in all the papers registered in that particular academic year. It is computed in the same manner as the SGPA, considering all the papers (say,  $n$ ), and is given by:

$$CGPA = \frac{\sum_{i=1}^n c_i g_i}{\sum_{i=1}^n c_i}$$

**(e) Final CGPA**

It is the weighted average of the CGPA of all years of study.

**(f) Percentage equivalence of CGPA/Final CGPA**

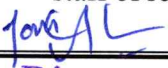
The conversion of CGPA/Final CGPA to exact percentage of marks does not have perfect rationale. However, its equivalent at best can be arrived at by multiplying by 10.00.

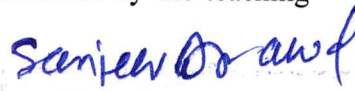
**7B. Change of Grade already awarded**

Letter Grade 'E' will be changed into Letter Grade 'D' up to a maximum of 03 papers at the time of promotion to the next academic year provided he/she can be declared to have passed the academic year without any carry over paper, by changing the Grade.

**8. Academic work**

A regular record of attendance both in Theory and Practical shall be maintained by the teaching staff of respective courses.

  
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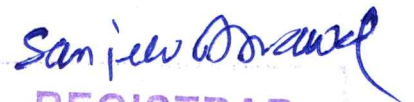
  
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### 9. Course of study

The course of study for M.Sc. BT shall include Semester-Wise Theory & Sessional. The number of hours to be devoted to each theory including tutorial courses in any semester shall not be less than 40 sessions and for practical courses in any semester shall not be less than 20 sessions.



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**M.Sc. BT I Semester**

**Theory Papers (Total 5)**

**Practical (Total 2)**

S.No.	Category	Course Code	Course Name	Periods			EVALUATION SCHEME				Course Total	Credits
				L	T	P	Mid Term Exam			External Exam		
							CT	AS +AT	Total			
<b>THEORY</b>												
1.	CC-T	MSB101T	Biochemistry	3	1	0	20	10	30	70	100	4
2.	CC-T	MSB102T	Microbiology	3	1	0	20	10	30	70	100	4
3.	DSE	MSB103T	Cell Biology	3	1	0	20	10	30	70	100	4
4.	AECC	MSB104T	Bioinstrumentation	3	1	0	20	10	30	70	100	4
5.	SEC	MSB105T	Molecular Biology	3	1	0	20	10	30	70	100	4
<b>PRACTICALS / PROJECT</b>												
6.	CC-P	MSB101P	Biochemistry Lab	0	0	2	-	-	30	70	100	1
7.	CC-P	MSB102P	Microbiology Lab	0	0	2	-	-	30	70	100	1
<b>TOTAL</b>				<b>15</b>	<b>05</b>	<b>04</b>	<b>-</b>	<b>-</b>	<b>210</b>	<b>490</b>	<b>700</b>	<b>22</b>

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**M.Sc. BT II Semester**

**Theory Papers (Total 5)**

**Practical (Total 2)**

S.No.	Category	Course Code	Course Name	Periods			EVALUATION SCHEME			Course Total	Credits	
							Mid Term Exam		External Exam			
				L	T	P	CT	AS +A T				Total
<b>THEORY</b>												
1.	CC-T	MSB201T	Immunology & Immunotechnology	3	1	0	20	10	30	70	100	4
2.	CC-T	MSB202T	Microbial Technology	3	1	0	20	10	30	70	100	4
3.	DSE	MSB203T	Plant Biotechnology	3	1	0	20	10	30	70	100	4
4.	AECC	MSB204T	Advanced Proteomics and Genomics	3	1	0	20	10	30	70	100	4
5.	SEC	MSB205T	Enzymology and Enzyme Technology	3	1	0	20	10	30	70	100	4
<b>PRACTICALS / PROJECT</b>												
6.	CC-P	MSB201P	Immunology & Immunotechnology Lab	0	0	2	-	-	30	70	100	1
7.	CC-P	MSB202P	Microbial Technology Lab	0	0	2	-	-	30	70	100	1
<b>TOTAL</b>				<b>15</b>	<b>05</b>	<b>04</b>	<b>-</b>	<b>-</b>	<b>210</b>	<b>490</b>	<b>700</b>	<b>22</b>

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M.Sc. MB III Semester

Theory Papers (Total 5)

Practical (Total 2)

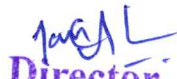
S. No	Category	Course Code	Course Name	Periods			EVALUATION SCHEME			Course Total	Credits	
							Mid Term Exam					External Exam
				L	T	P	CT	AS+AT	Total			
<b>THEORY</b>												
1.	CC-T	MSB301T	Genetic Engineering	3	1	0	20	10	30	70	100	4
2.	CC-T	MSB302T	Bioinformatics	3	1	0	20	10	30	70	100	4
3.	DSE	MSB303T	Environmental Biotechnology	3	1	0	20	10	30	70	100	4
4.	GE	MSB304T	Biostatistics	3	1	0	20	10	30	70	100	4
5.	AECC	Departmental Elective*	*Only 01 paper is to be chosen from the basket of the departmental electives having 03 papers, provided by the school	3	1	0	20	10	30	70	100	4
<b>PRACTICALS / PROJECT</b>												
6.	CC-P	MSB301P	Genetic Engineering Lab	0	0	2	-	-	30	70	100	1
7.	CC-P	MSB302P	Bioinformatics Lab	0	0	2	-	-	30	70	100	1
<b>TOTAL</b>				<b>15</b>	<b>05</b>	<b>04</b>	<b>-</b>	<b>-</b>	<b>210</b>	<b>490</b>	<b>700</b>	<b>22</b>

Departmental Elective

MSB305T Animal Cell Culture

MSB306T Principles of Nanobiotechnology

MSB307T IPR & Biosafety

  
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**M.Sc. MB IV Semester**

**Dissertation (Total 1)**

S. No.	Category	Course Code	Course Name	Periods			EVALUATION SCHEME			Course Total	Credits	
				L	T	P	Mid Term Exam		External Exam			
							CT	AS +AT				Total
<b>THEORY</b>												
1.	CC-P	MSB481P	Dissertation	0	0	20	-	-	150	250	400	20
<b>TOTAL</b>				<b>0</b>	<b>0</b>	<b>20</b>	<b>-</b>	<b>-</b>	<b>150</b>	<b>250</b>	<b>400</b>	<b>20</b>


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## LIST OF COURSES

Course Code		CBCS BASKET	Credits			
<b>Core Courses- Theory (CC-T)</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB101T		Biochemistry	3	1	0	4
MSB102T		Microbiology	3	1	0	4
MSB201T		Immunology & Immunotechnology	3	1	0	4
MSB202T		Microbial Technology	3	1	0	4
MSB301T		Genetic Engineering	3	1	0	4
MSB302T		Bioinformatics	3	1	0	4
<b>Core Courses-Practical (CC-P)</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB101P		Biochemistry Lab	0	0	2	1
MSB102P		Microbiology Lab	0	0	2	1
MSB201P		Immunology & Immunotechnology Lab	0	0	2	1
MSB202P		Microbial Technology Lab	0	0	2	1
MSB301P		Genetic Engineering Lab	0	0	2	1
MSB302P		Bioinformatics Lab	0	0	2	1
<b>Discipline Specific Elective (DSE)</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB103T		Cell Biology	3	1	0	4
MSB203T		Plant Biotechnology	3	1	0	4
MSB303T		Environmental Biotechnology	3	1	0	4
<b>Generic Elective (GE)</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB304T		Biostatistics	3	1	0	4
<b>Ability Enhancement Compulsory Course (AECC)</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB104T		Bioinstrumentation	3	1	0	4
MSB204T		Advanced Proteomics and Genomics	3	1	0	4
<b>Elective</b>	MSB305T MSB306T MSB307T	Animal Cell Culture Principles of Nanobiotechnology IPR & Biosafety	3	1	0	4
<b>Skill Enhancement Courses (SEC)</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB105T		Molecular Biology	3	1	0	4
MSB205T		Enzymology and Enzyme Technology	3	1	0	4
<b>Project/Dissertation</b>			<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
MSB481P		Dissertation	0	0	20	20

  
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## 10. Examinations/Assessments

### 10A. Internal/ Sessional Examination

- (a) The minimum Grade required to pass in each Theory & Practical paper is 'GRADE D'.
- (b) A candidate, in order to pass must satisfy the requirement of Minimum CGPA of 4.50 in a particular academic year inclusive of both semesters of that academic year subject to conditions of clause 10D.
- (c) In case of audit/qualifying paper the minimum Grade required to pass is Grade D. However, the Grade obtained in audit paper shall not be included in SGPA.

### 10B. End-Semester Examination

There will be two End Semester Examinations in all theory and project subjects viz. Odd Semester Examination and Even Semester Examination in an academic year.

### 10C. Carry Forward of Marks

In case, if a student gets the back in a course/paper, the sessional marks of the subject concerned will be carried forward in the total of marks when he/she re-appears for the examination of the course in which he/she has got the back.

### 10D. Heads of Passing

- (a) The minimum passing marks in each theory subject (including Internal/ Sessional marks) will be 35%.
- (b) The minimum passing marks in each comprehensive viva/project will be 50 %.
- (c) A student, in order to pass must satisfy the following:
  - Minimum 45% marks in aggregate of a particular academic year inclusive of both semesters of that academic year subject to the conditions of the clause 7B.

### 10E. Carry Over System

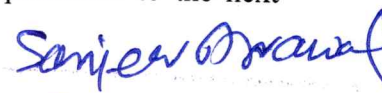
Maximum number of carry over papers (Theory/viva/project) permissible for promotion to next year will be 05.

### 10F. Promotion

- (a) A candidate satisfying all the requirements under clause 10A shall be promoted to the next academic year of study.



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(b) A candidate shall be eligible for provisional promotion with carryover (PCP status) to the next academic year of study provided he/she fails to satisfy the requirements of clause 10A(a) in not more than permissible carry over paper as mentioned in clause 10D.

(c) If a candidate satisfies the requirement of clause 10A(a) but fails to satisfy the requirement of 10A(b) he/she shall be eligible for provisional promotion with carryover (PCP-A {aggregate} status). He/she may choose up to a maximum of any 04 theory papers of that particular academic year as per his/her choice to pass the examination of that.

#### 10G. Ex-studentship

A candidate opting for ex-studentship shall be required to appear in all the theory/practical/viva papers in the end semester examinations of both semesters/ annual examination of the same academic year. However, the sessional marks of theory & practical both shall remain the same as those secured earlier.

#### 11. Evaluation of Performance

(a) **Programmes:** Evaluation of performance of the students in a programme shall be a continuous process based on their performance in the class test, quizzes, assignments and the end semester examinations.

##### **Theory papers in semester system (Maximum Marks: 100)**

The evaluation will be done through two class test and one end semester examination.

This will be in addition to quizzes, assignments, attendance, etc. Each class test will carry a weightage of 10 marks, and the end semester examination will carry a weightage of 70 marks.

The remaining 10 marks will be awarded on the basis of attendance and performance in quizzes and assignments.

(b) **Practical and dissertation etc.**

Practical and dissertation and other learning-oriented activities shall have associated maximum marks and credits, as stated in the syllabus.

<i>Evaluation Scheme</i>			
	<i>Internal</i>	<i>External</i>	<i>Total</i>
<i>Theory</i>	<i>30</i>	<i>70</i>	<i>100</i>
<i>Practical</i>	<i>30</i>	<i>70</i>	<i>100</i>
<i>Dissertation</i>	<i>150</i>	<i>250</i>	<i>400</i>

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### Question paper pattern for End-semester Examinations

Long Answers (Answer 5 out of 10)	=	5 x 14	=	70
<b>Total Marks</b>	=		=	<b>70</b>

### Question paper pattern for Internal/ Sessional Examinations

Long Answers (Answer 2 out of 3)	=	2 x 5	=	10 (each mid-sem)
<b>2 class test</b>	=		=	<b>20</b>
Internal Assessment (Attendance/ Assignment)	=		=	10
<b>Total Marks</b>	=		=	<b>30</b>

#### 12. Award of Division

- The division shall be awarded on the basis of final year result.
- If a student passes all examinations and secure minimum Final CGPA 4.50 to 5.99, he/she shall be eligible for the award of SECOND DIVISION.
- If a student passes all examinations and secure minimum Final CGPA 6.00 to 7.49, he/she shall be eligible for the award of FIRST DIVISION.
- If a student passes all examinations in first attempt without change of Grade and secures minimum Final CGPA 7.50 & above, he/she shall be eligible for the award of FIRST DIVISION WITH HONOURS.

#### 13. Scrutiny and Re-evaluation

- Scrutiny shall be allowed in only theory papers, in which Re-totalling of the marks awarded will be done and only unchecked answers (if any) will be evaluated.
- Re-evaluation of theory/practical papers is not permitted.

#### 14. Unfair Means

Cases of unfair means shall be dealt as per the rules of the University.

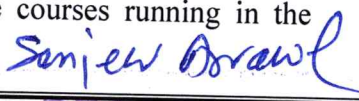
#### 15. Result

- The result of a candidate shall be declared on the basis of the performance of both semesters of the same academic year.
- Result of the final year shall be declared on the basis of working out Final CGPA which is the weighted average of CGPA of all years of the study.

#### 16. Improvement

There shall be no provision of Improvement examination in all the courses running in the University.

  
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### 17. Grade Card

- (a) A copy of the Grade Card shall be issued to each student at the end of each academic year. The duplicate copy, if required can be obtained on payment of prescribed fee.
- (b) The Grade Report Card of a student may be withheld if he/she has not paid his/her dues or if there is a case of indiscipline pending against him/her or for any other such reasons.


### 18. Re-Admission

A candidate may be allowed for re-admission provided he/she satisfies one of the following conditions:

- (a) A candidate is declared fail.
- (b) A candidate promoted with carry over papers and opts for re-admission.

### 19. Duration for completion of the program of study

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

  
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