



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

Academic Ordinance
for
Bachelor of Science in Microbiology (B.Sc. MB)
Programme
(w.e.f. Session 2021-22)

(Amended with NEP-2020 as per the Department of Higher Education, MHRD
&
Approved by the Academic Council in the Meeting held on September 25, 2021)

Sanjay Dhanwal
REGISTRAR
IFTM UNIVERSITY
MORADABAD.

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 Bachelor of Science in Microbiology (B.Sc. MB) Degree Program (NEP) 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 10 + 2 level with Physics, Chemistry and Maths/ Biology with 45% (40% for SC/ST) marks. Admission in B.Sc. MB 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 B.Sc. MB shall extend over a period of six semesters (three 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

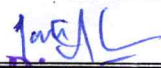
Medium of instruction and examination shall be in English.

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.

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


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control of students.

7. Program/Course credit structure

As per the philosophy of National Education Policy (NEP), certain quantum of academic work viz. theory classes, practical classes, project, industrial training 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 programme 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.	≥ 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

'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.

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(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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9. Course of study

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

B.Sc. MB I Semester

Theory Papers (Total 6)

Semester I							
S. No.	Subject Description	Subject Code	Subject Title (Theory/ Practical)	Credits (C) (L+T+P)	Continuous Internal Evaluation (CIE)	University Exam (UE)	Maximum Marks (MM)
1.	Subject -1 (Major) From own faculty	B080101T	General Microbiology	04 (03+01+0)	25	75	100
		B080102P	Experiments in Basic Microbiology	02 (0+0+02)	25	75	100
2.	Subject -2 (Major) From own faculty	BMB101T	Animal Science	04 (03+01+0)	25	75	100
		BMB151P	Animals Science Lab	02 (0+0+02)	25	75	100
3.	Subject-3 (Major) Any Faculty	BMB102T	Plant Science	04 (03+01+0)	25	75	100
		BMB152P	Plant Science Lab	02 (0+0+02)	25	75	100
4.	Subject-4 (Minor/ Elective) Other Faculty	BMB103T	Chemistry I	04 (03+01+0)	25	75	100
5.	Vocational (Minor) Vocational faculty	A190101T	Foundations of Library and Information Science	03 (03+0+0)	25	75	100
6.	Co-Curricular Course (Minor)	Z010101T	Food, Nutrition and Hygiene	02 (02+0+0)	25	75	100
Total Credits				27	225	675	900




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B.Sc. MB II Semester
Theory Papers (Total 6)

Semester II							
S. No.	Subject Description	Subject Code	Subject Title (Theory/Practical)	Credits (C) (L+T+P)	Continuous Internal Evaluation (CIE)	University Exam (UE)	Maximum Marks (MM)
1	Subject -1 (Major) From own faculty	B080201T	Agriculture and Environmental Microbiology	04 (03+01+0)	25	75	100
		B080202P	Experiments in Agriculture and Environmental Microbiology	02 (0+0+02)	25	75	100
2	Subject -2 (Major) From own faculty	BMB201T	Elementary Biology	04 (03+01+0)	25	75	100
		BMB251P	Experiments in Elementary Biology	02 (0+0+02)	25	75	100
3.	Subject-3 (Major) Any Faculty	BMB202T	Chemistry II	04 (03+01+0)	25	75	100
		BMB252P	Chemistry II Lab	02 (0+0+02)	25	75	100
4	Subject-4 (Minor/ Elective) Other Faculty	BMB203T	Fundamentals of Computers	04 (03+01+0)	25	75	100
5	Vocational (Minor) Vocational faculty	A270101T	Basics of Mass Communication and Journalism	03 (03+0+0)	25	75	100
6	Co-Curricular Course	Z020201	First aid and health	02 (02+0+0)	25	75	100
Total Credits				27	225	675	900


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B.Sc. MB III Semester
Theory Papers (Total 6)

Semester III

S. No.	Subject Description	Subject Code	Subject Title (Theory/Practical)	Credits (C) (L+T+P)	Continuous Internal Evaluation (CIE)	University Exam (UE)	Maximum Marks (MM)
1.	Subject -1 (Major) From own faculty	B080301T	Basic Biochemistry and Microbial Physiology	04 (03+01+0)	25	75	100
		B080302P	Experiments in Basic Biochemistry and Microbial Physiology	02 (0+0+02)	25	75	100
2.	Subject -2 (Major) From own faculty	BMB303T	Bioinformatics	04 (03+01+0)	25	75	100
		BMB353P	Bioinformatics Lab	02 (0+0+02)	25	75	100
3.	Subject-3 (Major) Any Faculty	BMB304T	Bioinstrumentation	04 (03+01+0)	25	75	100
		BMB354P	Biotechnical lab	02 (0+0+02)	25	75	100
4.	Subject-4 (Minor/ Elective) Other Faculty	BMB305T	Introductory Bioprocess	04 (03+01+0)	25	75	100
5.	Vocational (Minor) Vocational faculty	BMB306T	Quality Assurance	03 (03+0+0)	25	75	100
6.	Co-Curricular Course	Z030301	Human Values and Environment studies	02 (02+0+0)	25	75	100
Total Credits				27	225	675	900

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B.Sc. MB IV Semester**Theory Papers (Total 6)**

Semester IV							
S. No.	Subject Description	Subject Code	Subject Title (Theory/Practical)	Credits (C) (L+T+P)	Continuous Internal Evaluation (CIE)	University Exam (UE)	Maximum Marks (MM)
1.	Subject -1 (Major) From own faculty	B080401T	Molecular Biology and Microbial Genetics	04 (03+01+0)	25	75	100
		B080402P	Experiments in Molecular Biology and Microbial Genetics	02 (0+0+02)	25	75	100
2.	Subject -2 (Major) From own faculty	BMB402T	Recombinant DNA Technology	04 (03+01+0)	25	75	100
		BMB452P	Recombinant DNA Technology Lab	02 (0+0+02)	25	75	100
3.	Subject-3 (Major) Any Faculty	BMB403T	Proteomics and Genomics	04 (03+01+0)	25	75	100
		BMB453P	Proteomics and Genomics Lab	02 (0+0+02)	25	75	100
4.	Subject-4 (Minor/ Elective) Other Faculty	BMB404T	Project Management and Entrepreneurship	04 (03+01+0)	25	75	100
5.	Vocational (Minor) Vocational faculty	BMB405T	Mushroom culture technology	03 (03+0+0)	25	75	100
6.	Co-Curricular Course	Z040401	Physical education and yoga	02 (02+0+0)	25	75	100
Total Credits				27	225	675	900


Industrial Training needs to be done in summer break after semester IV and will be considered for evaluation in semester V



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B.Sc. MB V Semester**Theory Papers (Total 5)****Industrial Training (Total 1)**

Semester V							
S. No.	Subject Description	Subject Code	Subject Title (Theory/Practical)	Credits (C) (L+T+P)	Continuous Internal Evaluation (CIE)	University Exam (UE)	Maximum Marks (MM)
1	Subject -1 (Major) From own faculty	B080501T	Medical Microbiology	04 (03+01+0)	25	75	100
		B080502T	Immunology	04 (03+01+0)	25	75	100
		B080551P	Experiments in Medical Microbiology & Immunology	02 (0+0+02)	25	75	100
2	Subject-2 (Major) From own Faculty	BMB503T	Biosafety and Bioethics	04 (03+01+0)	25	75	100
		BMB504T	Microbial Technology	04 (03+01+0)	25	75	100
		BMB554P	Microbial Technology Lab	02 (0+0+02)	25	75	100
3.	Co-Curricular Course	Z050501	Analytical ability and Digital awareness	02 (02+0+0)	25	75	100
4.	Industrial Training	BMB554P	Industrial Training Evaluation & Viva-voce	03 (0+0+3)	100	-	100
Total Credits				25	275	525	800


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B.Sc. MB VI Semester**Theory Papers (Total 5)****Project (Total 1)**

Semester VI							
S. No.	Subject Description	Subject Code	Subject Title (Theory/ Practical)	Credits (C) (L+T+P)	Continuous Internal Evaluation (CIE)	University Exam (UE)	Maximum Marks (MM)
1.	Subject -1 (Major) From own faculty	B080601T	Food Microbiology	04 (03+01+0)	25	75	100
		B080602T	Industrial Microbiology	04 (03+01+0)	25	75	100
		B080603P	Experiments in Food & Industrial Microbiology	02 (0+0+02)	25	75	100
2.	Subject-2 (Major) From own Faculty	BMB606T	Virology	04 (03+01+0)	25	75	100
		BMB607T	Dairy Microbiology	04 (03+01+0)	25	75	100
		BMB657P	Experiments in Dairy Microbiology	02 (0+0+02)	25	75	100
3.	Co-Curricular Course	Z060601	Communication Skill and Personality Development	02 (02+0+0)	25	75	100
4.	Project	BMB681P	Project	03 (0+0+3)	100	-	100
Total Credits				25	275	525	800



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List of Courses

S. No.	Course Description	No. of Courses	Course Name
1.	Subject -1 (Major) From own faculty	8	<ol style="list-style-type: none"> 1. B080101T General Microbiology 2. B080201T Agriculture and Environmental Microbiology 3. B080301T Basic Biochemistry and Microbial Physiology 4. B080401T Molecular Biology and Microbial Genetics 5. B080501T Medical Microbiology 6. B080502T Immunology 7. B080601T Food Microbiology 8. B080602T Industrial Microbiology
		6	<ol style="list-style-type: none"> 1. B080102P Experiments in Basic Microbiology 2. B080202P Experiments in Agriculture and Environmental Microbiology 3. B080402P Experiments in Basic Biochemistry and Microbial Physiology 4. B080302P Experiments in Molecular Biology and Microbial Genetics 5. B080551P Experiments in Medical Microbiology & Immunology 6. B080603P Experiments in Food & Industrial Microbiology
2.	Subject -2 (Major) From own faculty	8	<ol style="list-style-type: none"> 1. BMB101T Animal Science 2. BMB201T Elementary Biology 3. BMB303T Bioinformatics 4. BMB402T Recombinant DNA Technology 5. BMB503T Biosafety and Bioethics 6. BMB504T Microbial Technology 7. BMB606T Virology 8. BMB607T Dairy Microbiology
		6	<ol style="list-style-type: none"> 1. BMB151P Animals Science Lab 2. BMB251P Experiments in Elementary Biology 3. BMB353T Bioinformatics Lab 4. BMB452P Recombinant DNA Technology Lab 5. BMB554P Microbial Technology Lab 6. BMB657P Experiments in Dairy Microbiology
3.	Subject-3 (Major) Any Faculty	4	<ol style="list-style-type: none"> 1. BMB102T Plant Science 2. BMB202T Chemistry II 3. BMB304T Bioinstrumentation 4. BMB403T Proteomics and Genomics
		4	<ol style="list-style-type: none"> 1. BMB152P Plant Science Lab 2. BMB252P Chemistry II Lab 3. BMB354P Biotechnical Lab 4. BMB453P Proteomics and Genomics Lab
4.	Subject-4 (Minor/ Elective) Other Faculty	4	<ol style="list-style-type: none"> 1. BMB103T Chemistry I 2. BMB203T Fundamentals of Computers 3. BMB305T Introductory Bioprocess 4. BMB404T Project Management and Entrepreneurship
5.	Vocational (Minor) Vocational faculty	4	<ol style="list-style-type: none"> 1. A190101T Foundations of Library and Information Science 2. A270101T Basics of Mass Communication and Journalism 3. BMB306T Quality Assurance 4. BMB405T Mushroom culture technology

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6.	Co-Curricular Course (Minor)	6	<ol style="list-style-type: none">1. Z010101T Food, Nutrition and Hygiene2. Z020201 First aid and health3. Z030301 Human Values and Environment studies4. Z040401 Physical education and yoga5. Z050501 Analytical ability and Digital awareness6. Z060601 Communication Skill and Personality Development
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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 Six 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 06.

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 75 marks. The remaining 05 marks will be awarded on the basis of attendance and performance in quizzes and assignments.

- (b) **Practical, Industrial Training and Project etc.**

Practical, Industrial Training, Project 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>25</i>	<i>75</i>	<i>100</i>
<i>Industrial Training</i>	<i>100</i>	<i>-</i>	<i>100</i>
<i>Project Report</i>	<i>100</i>	<i>-</i>	<i>100</i>

Question paper pattern for End-semester Examinations

I. Multiple Choice Questions (MCQs) (Internal Choice questions)	=	25 x 1 =	25
II. Long Answers (Answer 1 out of 2)	=	5 x 10 =	50
Total Marks	=		75

Question paper pattern for Internal/ Sessional Examinations

Long Answers (Answer 2 out of 3)	=	2 x 4 =	08 (each mid-sem)
Multiple Choice Questions (MCQs)	=	4 x 0.5 =	02 (each mid-sem)
Total Marks	=		10
2 class tests	=	10*2 =	20
Teacher Assessment and Attendance	=		05
Total Marks	=		25

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-totaling 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.

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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