



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

Academic Ordinance
for
Bachelor of Science (B.Sc.) Honours
Chemistry Programme

(Amended with CBCS as per UGC Guidelines

&

Approved by the Academic Council in the meeting held on 25/09/2021)

2021-22

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 (B.Sc.) Honours Chemistry 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 passed 10+2 exam with Science stream with 45% (40% for SC/ST) marks or valid MAT/CAT score. Admission in B.Sc. programme will be based on Merit/ Entrance examination. 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. 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/Annual examination. 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.	≥ 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.

(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.

9. Course of study

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

COURSE STRUCTURE
SESSION: 2021-22
B.Sc. (Hons) Chemistry I Year (Bio Group)

S. No.	Subject Code	Subject Title	Periods			EVALUATION SCHEME				Total	Credit
						Internal Exam			External Exam		
			L	T	P	MSE	AS+AT	Total			
Semester-I											
1.	BCHECC(H)-101	INORGANIC CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
2.	BCHECC(H)-102	ORGANIC CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
3.	BCHECC(H)-151	CHEMISTRY LAB-1	0	0	4	0	0	30	70	100	2
4.	BZOCC(H)-101	LOWER NON-CHORADATA	3	1	0	10+10	5+5	30	70	100	4
5.	BZOCC(H)-102	HIGHER NON-CHORDATA	3	1	0	10+10	5+5	30	70	100	4
6.	BZOCC(H)-151	ZOOLOGY LAB-1	0	0	4	0	0	30	70	100	2
7.	BBOCC(H)-101	DIVERSITY OF MICROBES	3	1	0	10+10	5+5	30	70	100	4
8.	BBOCC(H)-102	ALGAE AND BRYOPHYTES	3	1	0	10+10	5+5	30	70	100	4
9.	BBOCC(H)-151	BOTANY LAB-1	0	0	4	0	0	30	70	100	2
10.	AECC*	ENVIRONMENTAL STUDIES	3	0	0	10+10	5+5	30	70	100*	3*
		Total	21	6	12					900	30
Semester-II											
1.	BCHECC(H)-201	PHYSICAL CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
2.	BCHECC(H)-202	BASICS OF ANALYTICAL CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
3.	BCHECC(H)-251	CHEMISTRY LAB-2	0	0	4	0	0	30	70	100	2
4.	BZOCC(H)-201	CELL AND MOLECULAR BIOLOGY	3	1	0	10+10	5+5	30	70	100	4
5.	BZOCC(H)-202	GENETICS	3	1	0	10+10	5+5	30	70	100	4
6.	BZOCC(H)-251	ZOOLOGY LAB-2	0	0	4	0	0	30	70	100	2
7.	BBOCC(H)-201	PTERIDOPHYTES, GYMNOSPERM AND PALAEOBOTANY	3	1	0	10+10	5+5	30	70	100	4
8.	BBOCC(H)-202	SYSTEMATICS OF FLOWERING PLANTS AND ECONOMIC BOTANY	3	1	0	10+10	5+5	30	70	100	4
9.	BBOCC(H)-251	BOTANY LAB-2	0	0	4	0	0	30	70	100	2
		Total	18	6	12					900	30

***This is an audit course which is mandatory for UG courses.**

B.Sc. (Hons) Chemistry II Year (Bio Group)

S. No.	Subject Code	Subject Title	Periods			EVALUATION SCHEME				Total	Credit
			L	T	P	Internal Exam			External Exam		
						MSE	AS+AT	Total			
Semester-III											
1.	BCHECC(H)-301	INORGANIC CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
2.	BCHECC(H)-302	ORGANIC CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
3.	BCHECC(H)-351	CHEMISTRY LAB-3	0	0	4	0	0	30	70	100	2
4.	BZOCC(H)-301	CHORDATA	3	1	0	10+10	5+5	30	70	100	4
5.	BZOCC(H)-302	DEVELOPMENTAL BIOLOGY	3	1	0	10+10	5+5	30	70	100	4
6.	BZOCC(H)-351	ZOOLOGY LAB-3	0	0	4	0	0	30	70	100	2
7.	BBOCC(H)-301	SEXUAL REPRODUCTION IN FLOWERING PLANTS	3	1	0	10+10	5+5	30	70	100	4
8.	BBOCC(H)-302	PLANT ANATOMY	3	1	0	10+10	5+5	30	70	100	4
9.	BBOCC(H)-351	BOTANYLAB-3	0	0	4	0	0	30	70	100	2
		Total	18	6	12					900	30
Semester-IV											
1.	BCHECC(H)-401	PHYSICAL CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
2.	BCHECC(H)-402	ENVIROMENTAL CHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
3.	BCHECC(H)-451	CHEMISTRY LAB-4	0	0	4	0	0	30	70	100	2
4.	BZOCC(H)-401	PHYSIOLOGY AND BIOCHEMISTRY	3	1	0	10+10	5+5	30	70	100	4
5.	BZOCC(H)-402	ANIMAL DISTRIBUTION & EVOLUTION	3	1	0	10+10	5+5	30	70	100	4
6.	BZOCC(H)-451	ZOOLOGY LAB-4	0	0	4	0	0	30	70	100	2
7.	BBOCC(H)-401	CELL AND MOLECULAR BIOLOGY	3	1	0	10+10	5+5	30	70	100	4
8.	BBOCC(H)-402	GENETICS, PLANT BREEDING AND BIostatISTICS	3	1	0	10+10	5+5	30	70	100	4
9.	BBOCC(H)-451	BOTANY LAB-4	0	0	4	0	0	30	70	100	2
10.	UDM*	DISASTER MANAGEMENT	3	0	0	10+10	5+5	30	70	100*	3*
		Total	21	6	12					900	30

***This is an audit course which is mandatory for UG courses.**

COURSE STRUCTURE
SESSION: 2021-22
B.Sc. (Hons) Chemistry I Year (Maths Group)
Semester-I

S. No.	Course Code	Course Titles	EVALUATION SCHEME							Course Total (Marks)	Credits
			Internal Exam						External Exam		
			L	T	P	CT	AS+AT	Total			
1.	BCHECC(H)-101	Inorganic Chemistry	3	1	0	20	10	30	70	100	4
2.	BCHECC(H)-102	Organic Chemistry	3	1	0	20	10	30	70	100	4
3.	BPHYCC(H)-101	Mechanics	3	1	0	20	10	30	70	100	4
4.	BPHYCC(H)-102	Thermal Physics	3	1	0	20	10	30	70	100	4
5.	BMATCC(H)-101	Matrices and Trigonometry	3	1	0	20	10	30	70	100	4
6.	BMATCC(H)-102	Calculus	3	1	0	20	10	30	70	100	4
7.	BCHECC(H)-151	Chemistry Lab -1	0	0	4	-	-	30	70	100	2
8.	BPHYCC(H)-151	Physics Lab-1	0	0	4	-	-	30	70	100	2
TOTAL			18	6	4	-	-	-	-	800	28

Semester – II

S. No.	Course Code	Course Titles	EVALUATION SCHEME							Course Total (Marks)	Credits
			Internal Exam						External Exam		
			L	T	P	CT	AS+AT	Total			
1.	BCHECC(H)-201	Physical Chemistry	3	1	0	20	10	30	70	100	4
2.	BCHECC(H)-202	Basic of Analytical Chemistry	3	1	0	20	10	30	70	100	4
3.	BPHYCC(H)-201	Waves & Oscillations	3	1	0	20	10	30	70	100	4
4.	BPHYCC(H)-202	Optics	3	1	0	20	10	30	70	100	4
5.	BMATCC(H)-201	Vector Calculus and Co-ordinate geometry	3	1	0	20	10	30	70	100	4
6.	BMATCC(H)-202	Differential equations and Integral Transforms	3	1	0	20	10	30	70	100	4
7.	BCHEPCC(H)-251	Chemistry lab-2	0	0	4	--	--	30	70	100	2
8.	BPHYCC(H)-251	Physics lab-2	0	0	4	-	-	30	70	100	2
9.	AECC* Audit course	Environmental Science	3	0	0	20	10	30	70	100	3*
TOTAL			18	6	4	-	-	-	-	800	28

**B.Sc. (Hons) Chemistry II Year (Maths Group)
Semester-III**

S. No.	Course Code	Course Titles	Periods			EVALUATION SCHEME				Course Total (Marks)	Credits
						Internal Exam			External Exam		
			L	T	P	CT	AS+AT	Total			
1.	BCHECC(H)-301	Inorganic Chemistry	3	1	0	20	10	30	70	100	4
2.	BCHECC(H)-302	Organic chemistry	3	1	0	20	10	30	70	100	4
3.	BPHYCC(H)-301	Electricity and Magnetism	3	1	0	20	10	30	70	100	4
4.	BPHYCC(H)-302	Circuit fundamental and Basic Electronics	3	1	0	20	10	30	70	100	4
5.	BMATCC(H)-301	Mechanics	3	1	0	20	10	30	70	100	4
6.	BMATCC(H)-302	Numerical Methods	3	1	0	20	10	30	70	100	4
7.	BCHEP(H)-351	Chemistry Lab -3	0	0	4	-	-	30	70	100	2
8.	BPHYP(H)-351	Physics Lab -3	0	0	4	-	-	30	70	100	2
9.	UDM* Audit course	Disaster Management	3	0	0	20	10	30	70	100	03*
TOTAL			18	6	8	-	-	-	-	800	28

Semester -IV

S. No.	Course Code	Course Titles	Periods			EVALUATION SCHEME				Course Total (Marks)	Credits
						Internal Exam			External Exam		
			L	T	P	CT	AS+AT	Total			
1.	BCHECC(H)-401	Physical Chemistry	3	1	0	20	10	30	70	100	4
2.	BCHECC(H)-402	Environmental Chemistry	3	1	0	20	10	30	70	100	4
3.	BPHYCC(H)-401	Atomic and Laser Physics	3	1	0	20	10	30	70	100	4
4.	BPHYCC(H)-402	Classical and Statistical Mechanics	3	1	0	20	10	30	70	100	4
5.	BMATCC(H)-401	Discrete Structures	3	1	0	20	10	30	70	100	4
6.	BMATCC(H)-402	Real Analysis	3	1	0	20	10	30	70	100	4
7.	BCHECC(H)-451	Chemistry Lab-4	0	0	4	-	-	30	70	100	2
8.	BPHYCC(H)-451	Physics Lab- 4	0	0	4	-	-	30	70	100	2
TOTAL			18	6	8	-	-	-	-	800	28

**B.Sc. (Hons) Chemistry III Year
Semester-V**

S. No.	Course Code	Course Titles	Periods			EVALUATION SCHEME					Total Marks
			L	T	P	Internal Exam			External Exam	Credits	
						CT	AS+AT	Total			
1.	BCHECC(H)-501	Inorganic Chemistry	3	1	0	20	10	30	70	04	100
2.	BCHECC(H)-502	Organic Chemistry	3	1	0	20	10	30	70	04	100
3.	BCHECC(H)-503	Green Chemistry	3	1	0	20	10	30	70	04	100
4.	BCHECC(H)-504	Pharmaceutical Chemistry	3	1	0	20	10	30	70	04	100
5.	BCHECC(H)-505	Novel Inorganic Solids	3	1	0	20	10	30	70	04	100
6.	BCSOE(H)-506	Computer Fundamentals & Programming in C [common to all branches]	3	1	0	20	10	30	70	04	100
7.	BCHECC(H)-551	Chemistry Lab- 5	0	0	4	-	-	30	70	02	100
8.	BCSCC(H)-556	Lab in Programming in C [common to all branches]	0	0	4	30	20	30	70	02	100
TOTAL										28	800

Semester-VI

S. No.	Course Code	Course Titles	Periods			EVALUATION SCHEME					Total Marks
			L	T	P	Internal Exam			External Exam	Credits	
						CT	AS+AT	Total			
1.	BCHECC(H)-601	Physical Chemistry	3	1	0	20	10	30	70	04	100
2.	BCHECC(H)-602	Polymer Chemistry	3	1	0	20	10	30	70	04	100
3.	BCHECC(H)-603	Fuel Chemistry	3	1	0	20	10	30	70	04	100
4.	BCHECC(H)-604	Cosmetic Chemistry	3	1	0	20	10	30	70	04	100
5.	BCHECC(H)-605	Organometallics and Bioinorganic Chemistry	3	1	0	20	10	30	70	04	100
6.	BCHECC(H)-651	Chemistry Lab- 6	0	0	4	-	-	30	70	02	100
7.	BCHECC(H)-661	Chemistry Project	0	0	4	-	-	50	150	06	200
TOTAL										28	800

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 (I, III, V) Semester Examination and Even (II, IV, VI) 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 re-appears for the examination of the course in which he 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/practical 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.
- (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. The maximum duration of course completion is six years.

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) **Summer Training, Project Report, Seminar etc.**

Summer Training, Project Report, Seminar, 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>Comprehensive Viva-Voce</i>	<i>--</i>	<i>100</i>	<i>100</i>
<i>Summer Training Project Report Evaluation and Viva-Voce</i>	<i>30</i>	<i>70</i>	<i>100</i>
<i>Research Project Report Evaluation and Viva-Voce</i>	<i>30</i>	<i>70</i>	<i>100</i>

Question paper pattern for End-semester Examinations

I. Multiple Choice Questions (MCQs) =	20 x 1 =	20
(Internal Choice questions)		
II. Long Answers (Answer 1 out of 2) =	5 x 10 =	50
Total Marks	=	70

Question paper pattern for Internal/ Sessional Examinations

I. Multiple Choice Questions (MCQs) =	04 x 0.5 =	02
(Internal Choice questions)		
II. Long Answers (Answer 1 out of 2) =	02 x 04 =	08
Total Marks	=	10
Total Marks (for 02 Internal/ Sessional Examinations) =		20

12. Award of Division

- (a) The division shall be awarded on the basis of final year result.
- (b) 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.
- (c) 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.
- (d) 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

- (a) 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.
- (b) 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

- (a) The result of a candidate shall be declared on the basis of the performance of both semesters of the same academic year.
- (b) 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.