University of Mumbai

Website – mu.ac.in
Email id - dr.aams@fort.mu.ac.in
aams3@mu.ac.in

Academic Authorities,
Meetings &Services (AAMS)
Room No. 128, M. G. Road, Fort,
Mumbai – 400 032.
Tel. 022-68320033

Re- accredited with A ++ Grade (CGPA 3.65) by NAAC
Category- I University Status awarded by UGC

No. AAMS_UGS/ICC/2025-26/75 Date: 23rd July, 2025

CIRCULAR:-

Attention of all the Principals of the Affiliated Colleges, Directors of the Recognized Institutions and the Head, University Departments is invited to this office Circular No. AAMS_UGS/ICC/2024-25/115 dated 23rd August, 2024 relating to the introduction of the syllabus of M3 Pattern (Scheme –III) Major 4 Credits of Science Programs.

They are hereby informed that the recommendations made by the Board of Studies in Chemistry and subsequently passed by the Board of Deans at its meeting held on 19th May, 2025 vide item No. 6.1 (R) have been accepted by the Academic Council at its meeting held on 20th May, 2025 vide item No. 6.70 (R) and that in accordance therewith revised syllabus for **B.Sc. (Chemistry) (Scheme –III) (Sem – I & II)** (NEP 2020) with revision of VSC & SEC as per appendix with effect from the academic year 2025-26.

(The said circular is available on the University's website www.mu.ac.in).

MUMBAI – 400 032
23rd July, 2025

(Dr. Prasad Karande)
REGISTRAR

To,

The Principals of the Affiliated Colleges, Directors of the Recognized Institutions.

AC 6.70 (R)/20/05/2025

Copy forwarded with Compliments for information to:-

1) The Chairman, Board of Deans,
2) The Dean, Faculty of Science & Technology,
3) The Chairman, Board of Studies in **Chemistry**,
4) The Director, Board of Examinations and Evaluation,
5) The Director, Department of Students Development,
6) The Director, Department of Information & Communication Technology,
7) The Director, Centre for Distance and Online Education (CDOE), Vidyanagari,
8) The Deputy Registrar, Admissions, Enrolment, Eligibility & Migration Department (AEM).

AC No.- 20/05/2025
Item No. -6.70 (R)

As Per NEP 2020

University of Mumbai

Revised Syllabus for
B.Sc. (Chemistry)

Syllabus for

Semester – Sem.- I & II

(Scheme – III)

Ref: GR dated 20th April, 2023 for Credit Structure of UG

(With effect from the academic year 2025-26)

University of Mumbai

(As per NEP 2020)

Sr. No.	Heading	Particulars
1	**Title of program** **O:**_____	**B.Sc. (Chemistry)**
2	**Exit Degree**	**U.G. Certificate in Chemistry**
3	**Scheme of Examination** **R:** _____	NEP 40% Internal 60% External, Semester End Examination Individual Passing in Internal and External Examination
4	Standards of Passing **R:** _____	**40%**
5	Credit Structure **R: SU-525A (III) SU- 525B (III)**	**Attached herewith**
6	Semesters	**Sem. I & II**
7	**Program Academic Level**	**5.00**
8	**Pattern**	**Semester**
9	**Status**	**Revised**
10	**To be implemented from Academic Year**	**2025-26**

Sd/-	**Sd/-**	**Sd/-**
Sign of **Dr. Sunil Patil** **Coordinator,** **Board of Studies in Chemistry**	**Sign of** **Prin. (Dr.) Madhav Rajwade** **Offg. Associate Dean,** **Faculty of Science and Technology**	**Sign of** **Prof. (Dr.) Shivram Garje** **Offg. Dean,** **Faculty of Science and Technology**

5) Credit Structure of the Program (Sem I, II, III, IV, V & VI)

Under Graduate Certificate in Chemistry

Credit Structure (Sem. I & II)

	R: SU-525 A (III)								
Level	**Semester**	**Major**		**Minor**	**OE**	**VSC, SEC (VSEC)**	**AEC, VEC, IKS**	**OJT, FP, CEP, CC, RP**	**Cum. Cr. / Sem.**	**Degree/ Cum. Cr.**
		Mandatory	**Electives**							
4.5	I	4 **M3-1** Basics in Physical, Inorganic and Organic Chemistry I **M3CHP1:** Chemistry Practical 1 **(M3 of other two Subjects of 4 + 4 Credits)**	-	-	-	**VSC:2, VSCCH1:** Laboratory Techniques: Solution Preparation and Calibration of Equipment **SEC:2** Sampling Techniques **OR** Basic Statistical Tools in Chemistry	AEC:2, VEC:2, IKS:2	-	22	**UG Certificate 44**
	R: SU-525 B (III)									
	II	4 **M3-2:** Basics in Physical, Inorganic and Organic Chemistry II **M3CHP2:** Chemistry Practical 2 **(M3 of other two Subjects of 4 + 4 Credits)**			2	**VSC:2, VSCCH2:** Commercial Analysis of Food Samples **SEC:2** Data Analysis in Chemistry **OR** Softwares in Chemistry	AEC:2,	CC:2	22	
	Cum Cr.	24	-	-	2	4+4	4+2+2	2	44	

Exit option: Award of UG Certificate in Major with 40-44 credits and an additional 4 credits core NSQF course/ Internship OR Continue with Majorand Minor

Skill Enhancement Course (SEC)

Semester I

Title of the course

Sampling Techniques

F.Y.B. Sc. (Chemistry)

Sr. No.	Heading	Particulars
1	**Description the Course**	The aim of Skill Enhancement Courses (SECs) is to introduce the students with opportunities to develop required skills in Chemistry
2	**Vertical**	Skill Enhancement Course (SEC)
3	**Type**	Practical
4	**Credits**	2 Credits (1 Credit = 30 Hours for Practical)
5	**Hours Allotted**	60 hrs
6	**Marks Allotted**	50 Marks
7	**Course Objectives (CO)**	
	CO1: To introduce students to sampling techniques for certain samples. **CO2:** To enable students to analyze soil samples for essential parameters such as pH and electrical conductivity. **CO3:** To develop skills for evaluating water quality by estimating parameters like hardness, alkalinity, TDS, and TSS. **CO4:** To introduce basic analytical methods for assessing the chemical and physical properties of dairy products. **CO5:** To introduce edible oil analysis for parameters like iodine value and unsaturation. **CO6:** To provide hands-on experience in estimating nutritional components such as protein, fat, and vitamin C in food samples. **CO7:** This course aims to train students in specific pharmaceutical analyses.	
8	**Course Outcomes (OC)** After completion of the course, the learner will be able to **OC 1:** Demonstrate appropriate sampling techniques for different samples of water and soil. **OC2:** Analyze the soil for pH and conductivity. **OC3:** Determine the water quality parameters like total hardness, alkalinity, TDS, TSS, etc.	

	OC4: Assess the certain properties of dairy products. **OC5:** Evaluate the nutritional and chemical quality of edible oils. **OC6:** Analyze essential nutrients such as protein, fat, and vitamin C in food samples. **OC7:** Apply analytical methods to assess the physical characteristics of pharmaceutical tablets.
9	**Modules I**

Semester	Module	Description	Credits
	Practical	Practical Component	**02**

Module	Description	Hours
I Practical (Perform Any 10 Practicals)	**Practicals** 1) To demonstrate a sampling technique for a water sample 2) To demonstrate a sampling technique for a soil samples 3) To collect samples from the nearby area and determine the pH of the same. (minimum two) 4) To collect the soil samples from the nearby area and determine conductance (minimum two) 5) To collect the water sample from the nearby area for determination of hardness by complexometric titration 6) To collect the water sample from the nearby area for estimation of alkalinity. 7) To collect the water sample from nearby and determine the TDS and TSS. 8) To determine the acidity level of different milk samples by acid-base titration 9) To analyze buttermilk samples for specific gravity, color, and viscosity. 10) To determine the iodine value of a vegetable oil sample. 11) To collect the milk samples and examine their protein and fat composition. 12) To collect a sample of coconut oil and to determine the degree of unsaturation	**60**

	13) To estimate vitamin C content from a variety of citrus fruit samples 14) Sampling pharmaceutical tablets and measuring theirchanical hardness (demonstration). 15) To collect a curd sample for estimation of its acid value using acid-base titration.	

10. **References**

1) Schrader, B. (Ed.). (1995). *Infrared and Raman Spectroscopy: Methods and Applications*. Wiley.

2) Laserna, J. J. (1996). *Modern Techniques in Raman Spectroscopy*. Wiley.

3) Bloembergen, N. (1987). Nonlinear optics and spectroscopy. *Pure and Applied Chemistry, 59*(9), 1229.

4) Harvey, A. B. (Ed.). (1981). *Chemical Applications of Non-linear Raman Spectroscopy*. Academic Press.

5) Zumbusch, A., Holtom, G. R., & Hie, X. S. (1999). The study focused on three-dimensional vibrational imaging using coherent anti-Stokes Raman scattering. *Physical Review Letters, 82*(20), 4142.

6) Asher, S. A., Munro, C. H., & Chi, Z. (1997). They utilized UV resonance Raman spectroscopy to analyze biological and medical data. *Laser Focus World, 33*, 99.

7) McCreery, R. L. (1996). In Laserna, J. J. (Ed.), *Modern Techniques in Raman Spectroscopy* (pp. xx–xx). Wiley.

8) Puppels, G. J., De Mul, F. F. M., Otto, C., Greve, J., Robert-Nicoud, M., Arndt-Jovin, D. J., & Jovin, T. (1990). The study focused on analyzing single living cells and chromosomes using confocal Raman microspectroscopy. *Nature, 347*(6290), 301.

9) Brenan, C. J. H., & Hunter, W. (1994). The study focused on high-resolution spectroscopy using an acousto-optic tunable filter. *Applied Optics, 33*(34), 7520.

Skill Enhancement Course (SEC)

Semester I

F.Y.B. Sc. (Chemistry)

Title of the course

Basic Statistical Tools in Chemistry

Sr. No.	Heading	Particulars
1	**Description the Course**	The aim of Skill Enhancement Courses (SECs) is to introduce the students with opportunities to develop required skills in Chemistry
2	**Vertical**	Skill Enhancement Course (SEC)
3	**Type**	Practical
4	**Credits**	2 Credits (2 Credits = 60 Hours for Practical)
5	**Hours Allotted**	60 hours
6	**Marks Allotted**	50 Marks

7	**Course Objectives (CO)** **CO 1:** To apply statistical tools such as mean, median, and mode for analyzing titration data. **CO 2:** To determine experimental data variability using standard deviation and variance. **CO 3:** To estimate chemical concentrations and assess experimental accuracy through absolute and relative error calculations. **CO 4:** To perform comprehensive error analysis using deviation-based statistical methods on chemical data. **CO 5:** To utilize Microsoft Excel for data analysis and interpretation of chemical experimental results. **CO 7:** To evaluate precision, reproducibility, and instrumental errors in classical and instrumental chemical analyses.
8	**Course Outcomes (OC)** After completion of the course, the learner will be able to **OC 1:** Apply statistical tools (mean, median, mode) for titration data analysis. **OC 2:** Determine data variability using standard deviation and variance. **OC 3:** Estimate chemical concentrations and evaluate accuracy via error calculations. **OC 4:** Perform error analysis using deviation-based statistical methods. **OC 5:** Use Microsoft Excel for analyzing and interpreting chemical experimental data. **OC 6:** Evaluate precision, reproducibility, and errors in chemical analyses.

9	Modules I

Semester	Module	Description	Credits
	I Practical	Practicals	**02**

II (Practical Component) (Perform Any 10 Practicals)	**1)** Determination of mean, median, and mode of titervalues of acid-base titration (minimum number of titervalues = 10) **2)** Determination of standard deviation and variance of titervalues of any complexometric titration (minimum number of titervalues = 10) **3)** Determination of acetic acid in vinegar by potentiometry and calculation of absolute and relative errors (Demo) 4) Calculate the absolute, average, and relative deviations from the provided data in any chemistry experiment. **5)** Determination of absolute and relative error in standardization of $Na_2S_2O_3$ by using 0.05 N $K_2Cr_2O_7$. (The readings of all students of the batch shall be used for calculation, and also expert reading shall (data will be provided). **6)** To calculate precision in terms of mean, mode, and median For the set of readings, pH values **7)** To determine the viscosity of liquid using an Ostwald viscometer and calculate standard deviation for replicate values . **8)** Estimation of Aspirin Content Using Volumetric Method and Quantification of Error Through Absolute and Relative Error Calculations **9)** Estimation of hardness of water using complexometry and study of precision by calculating average deviation. **10)** Calculation of relative average from mean deviation for a set of readings obtained in the determination of vitamin C from the given sample. **11)** Determination of emission intensity of a sample containing sodium using a flame photometer and calculation of relative average deviation for repeated observations from the mean (demo) **12)** To determine the boiling point of a liquid and calculate the range, mean, and standard deviation for replicate values **13)** To introduce Google Sheets for various basic statistical calculations in chemistry. 14) To introduce Microsoft Excel for various basic Statistical calculations in	**60**

	chemistry.	

10. References

1. Christian, G. D. (2004). Christian, G. D. (2004) authored the 6th edition of Analytical Chemistry. John Wiley & Sons.

2. Khopkar, S. M. (2004). Khopkar, S. M. (2004) authored the book "Basic concepts of analytical chemistry" in its 2nd edition. New Age International Publishers.

3. Mendham, J., Denney, R. C., Barnes, J. D., & Thomas, M. J. K. (2000). *Vogel*'s textbook of quantitative chemical analysis, 6th ed., Low Price Edition, was published by Pearson Education Ltd. in 2000. Pearson Education Ltd.

4. Harris, D. C. (2015). *Quantitative chemical analysis* (9th ed.). W. H. Freeman and Company.

5. Miller, J. N., & Miller, J. C. (2010). The book, Statistics and Chemometrics for Analytical Chemistry, is in its 6th edition and is published by Pearson Education. Pearson Education.

6. Skoog, D. A., West, D. M., Holler, F. J., & Crouch, S. R. (2013). The book is titled "Fundamentals of Analytical Chemistry" and is currently in its 9th edition. Cengage Learning.

7. Dean, J. A. (1995). *Analytical chemistry handbook* (1st ed.). McGraw-Hill.

8. Massart, D. L., Vandeginste, B. G. M., Deming, S. N., Michotte, Y., & Kaufman, L. (1988). *Chemometrics: A textbook*. Elsevier.

Sem. – II

Skill Enhancement Course (SEC)

Semester II
F.Y.B. Sc (Chemistry)

Title of the course: Data Analysis in Chemistry

Sr. No.	Heading	Particulars
1	**Description the Course**	The aim of Skill Enhancement Courses (SECs) is to introduce the students with opportunities to develop required skills in Chemistry
2	**Vertical**	Skill Enhancement Course (SEC)
3	**Type**	Practical
4	**Credits**	2 Credits (1 Credit = 30 Hours for Practical)
5	**Hours Allotted**	60 Hours
6	**Marks Allotted**	50 Marks
7	**Course Objectives (CO)** CO1: To familiarize students with statistical rules (2.5d, 4.0d) for evaluating experimental consistency in titration and quantitative analysis. CO2: To train students in applying the Q-test for identifying and rejecting outliers in analytical chemistry data. CO3: To develop the ability to calculate and interpret confidence intervals and limits for experimental results. CO4: To promote accurate reporting of analytical data using appropriate significant figures and rounding methods. CO5: To provide practical experience in gravimetric and colorimetric estimation with integrated statistical validation of results. CO6: To encourage comparison and critical evaluation of results obtained by different individuals or groups using statistical metrics. CO7: To apply statistical tools such as standard deviation, coefficient of variation, and F-test for assessing data reliability and precision. CO8: To enable students to carry out real-world water and commercial sample analysis with a focus on data accuracy, error analysis, and validation.	
8	**Course Outcomes (OC)**	

	After completion of the course, the learner will be able to **OC1:** Apply the 2.5d and 4.0d rules to validate titration data, ensuring the accuracy and precision of the results. **OC2:** Analyze gravimetric data using the Q-test and confidence intervals to assess the reliability and significance of measurements. **OC3:** Evaluate absorbance results in colorimetry by employing statistical tools to ensure consistent and valid data interpretation. **OC4:** Calculate confidence intervals and establish limits for reported data to assess the precision and accuracy of experimental results. **OC5:** Interpret significant figures in chemistry data sets accurately, ensuring that the precision of the measurement is correctly represented. **OC6:** Compare experimental outcomes using deviation analysis and perform F-test methods to assess the consistency and reliability of the results. **OC7:** Perform purity analysis using absolute and relative deviation techniques to determine the purity of a sample and evaluate its precision.

Semester	Modules	Description	Credits
	Practical Component	Practicals	**02**

9	**Modules I**

Module	Description	Hours
I **Practical** **(Perform Any 10 Practicals)**	1. Application of the the 2.5d rule for a redox titration of ferrous sulphate against potassium dichromate K2Cr2O7. (with provided data) **2.** Application of the 4.0d rule for standardization of sodium hydroxide (NaOH) by using succinic acid as the primary standard. (with provided data) **3.** Application of the Q-Test for the gravimetric estimation of Ni+2 as Ni-DMG (with provided data) **4.** Determination of significant figures from the given data of any experiments in chemistry. **5.** Treatment of data in the results obtained for gravimetric determination of sulfate as barium sulfate (emphasis on rounding off, significant figures, and	**60**

	confidence interval analysis with provided data) **6.** Estimate iron concentration using colorimetry and analyze absorbance data statistically, incorporating the Q-test. (Data Provided) **7.** Analysis of talcum powder for its magnesium content and rejections of titer values obtained in data based on the 2.5d Rule. **8.** Estimation of basicity for a sodium carbonate sample using methyl orange indicator and application of variance ratio for five readings. **9.** Standardization of potassium permanganate with oxalic acid: application of Q-test for readings to identify data anomalies **10.** Comparison of colorimetric estimation of phosphate in soft drinks: validation of findings using confidence interval analysis (with provided data) **11.** Determination of calcium content of a sample in percentage by complexometric titration and estimation of absolute and relative error (true value should be given) **12.** Estimation of precision by calculating standard deviation and coefficient of variance for data obtained in estimation of chloride content in water sample using Mohr's method **13.** Application of computer for analysis of data in calculation of precision in terms of mean and standard deviation.	

10. References

1)Burdick, R. K., LeBlond, D., Sandell, D., & Yang, H. (2013). Statistical methods for validation of procedure accuracy and precision. Pharmacopeial Forum, 39(3), 1-12.

2) Nethercote, P., & Ermer, J. (2013). Quality by design for analytical methods: Implications for method validation and transfer. Pharmaceutical Technology, 36(10), 74-79.

3) Christian, C. D. (2004). Analytical chemistry (6th ed.). John Wiley & Sons.

4) Khopkar, S. M. (2004). Basic concepts of analytical chemistry (2nd ed.). New Age International Publishers.

5) Mennham, J., Denney, R. C., Barnes, J. D., & Thomas, M. J. K. (2000). Vogel's textbook of quantitative chemical analysis (6th ed.). Pearson Education Ltd.

6) Harvey, D. (1999). Modern analytical chemistry (pp. 53-84). McGraw-Hill Higher Education.

7) Skoog, D. A., & West, D. M. (2004). Fundamentals of analytical chemistry (8th ed.). Saunders College Publishing.

Skill Enhancement Course (SEC)

F. Y.B. Sc (Chemistry)

Semester II Title of the course

Software's in Chemistry

Sr. No.	Heading	Particulars
1	**Description the Course**	The aim of Skill Enhancement Courses (SECs) is to introduce the students with opportunities to develop required skills in Chemistry
2	**Vertical**	Skill Enhancement Course (SEC)
3	**Type**	Theory and Practical
4	**Credits**	2 Credits (1 Credit = 30 Hours for Practical)
5	**Hours Allotted**	60 Hours
6	**Marks Allotted**	50 Marks
7	**Course Objectives (CO)** **CO1:** To develop the ability to write chemical equations and chemical formulas using MS Word and software like ChemSketch and ChemDraw. **CO2:** To learn to use Excel for performing calculations, plotting graphs, and analyzing kinetic data, **CO3:** To acquire skills in drawing chemical structures and determining molecular parameters like molecular weight, bond angles, and bond lengths using ChemSketch/ChemDraw. **CO4:** To understand the application of Origin software for creating, interpreting, and analyzing 2D and 3D graphical representations of experimental data **CO5:** To enhance conceptual clarity and data interpretation skills **CO6:** To practice the construction of detailed organic reaction mechanisms using ChemDraw. **CO7:** To develop fundamental research and scientific writing skills through literature searches	
8	**Course Outcomes (OC)** After completion of the course, the learner will be able to **OC1:** Write chemical equations and draw chemical structures using MS Word,	

	ChemSketch, and ChemDraw. **OC2:** Perform calculations, plot graphs, and analyze kinetic data using Excel. **OC3:** Draw various types of chemical structures and determine molecular parameters like molecular weight, bond angles, and bond lengths using ChemSketch/ChemDraw. **OC4:** Use Origin software to create, interpret, and analyze 2D and 3D graphs. **OC5:** Conduct and interpret virtual experiments using online simulation tools like Chem Collective. **OC6:** Construct and illustrate detailed organic reaction mechanisms (SN2, SN1, E1) using ChemDraw. **OC7:** Carry out basic literature surveys using Google Scholar, apply scientific referencing, and prepare concise summaries on chemistry topics.

9	**Modules I**

Semester	**Modules**	**Description**	**Credits**
	Practical	Practicals	**02**

Module	**Description**	**60 Hours**
I **Practical** **(Perform Any 10 Practicals)**	1. To create chemical equations and formulas using MS Word. 2. To plot a graph and calculate rate constants of hydrolysis of methyl acetate using Excel sheets (with provided data) 3. To draw the chemical structure of organic compounds (acyclic, cyclic, polycyclic, heterocyclic) by using ChemSketch/ChemDraw. 4. To plot a graph of given data by using Origin software for potentiometric titration of a weak acid against a strong base (with provided data) 5. To determine the molecular weight, molecular formula, refractive index, bond angles, and bond lengths of certain organic compounds by using ChemSketch/ChemDraw 6. To demonstrate any experiment in chemistry using Virtual Laboratory (http://www.chemcollective.org/vlab/vlab.php) (Minimum 2 Experiments) 7. Design and Illustration of Five Basic Chemical Reactions Using ChemDraw Software: Practicing Chemical Drawing Conventions	

	8. To analyze experimental data, determine the order of reaction graphically by applying integrated rate law plots. 9. To construct a mechanism of an SN2 reaction using ChemDraw. 10. To perform a basic literature survey using Google Scholar on a simple chemistry topic 11. To use Origin software for creating and interpreting 2D and 3D graphical representations from provided datasets. 12. To convert IUPAC names into structural formulas and vice versa for five examples using ChemSketch or ChemDraw. 13. Practice scientific referencing by collecting 10 citations on a simple chemistry topic through Google Scholar using proper referencing formats. 14. To apply a graphical method for the generation of a calibration curve from experimental data and the interpretation of the linearity	

10. References

1) Kothari, C. R. *Research Methodology – Methods and Techniques*. 2nd ed. New Age International, 2004.
2) Humphrey, M. L. *Excel 2019 Charts (Easy Excel Essentials 2019)*. CreateSpace Independent Publishing Platform, 2019.
3) Morton, J. *Tutorial to ChemDraw: For Beginner*. Cambridge University Press, 2012.
4) Arsalan, Muhammad, and Azka Awais. *Origin Software Complete Usage Instruction and Graph Representation: A Complete Guide for New Users*. 2022
5) Bhaskaran, S., and K. S. Bhat. *Statistical Methods in Research and Data Analysis*. CRC Press, 2018.
6) Brown, T. L., et al. *Introduction to Organic Chemistry*. 7th ed. Pearson Education, 2017.
7) Jain, P. K. *Biostatistics for Biomedical Sciences*. Wiley-Blackwell, 2015.
8) Sharma, B. D., and J. V. Patel. *Instrumental Methods of Chemical Analysis*. 3rd ed. CBS Publishers, 2019.

Examination Pattern for Vocational Skill Courses (VSC) and Skill Enhancement Courses (SEC)

Practical	Credit	No. of Hours	Marks
	02	60	50

Internal Continuous Assessment: 40% (20 Marks)	**Practical Examination: 60% (30 Marks)**
Continuous Evaluation through: Presentation, project, creative writing, Industrial Visit report submission (at least 1) (10 Marks) and Survey Reports (any two) (10 Marks)	**Practical Journal: 05 Marks** **Practical on Unit I or Unit II: 25 Marks**
Individual Passing in Internal and External Examination	

Letter Grades and Grade Points:

Semester GPA/ Programme CGPA Semester/ Programme	% of Marks	Alpha-Sign/ Letter Grade Result	Grading Point
9.00 - 10.00	90.0 - 100	O (Outstanding)	10
8.00 - < 9.00	80.0 - < 90.0	A+ (Excellent)	9
7.00 - < 8.00	70.0 - < 80.0	A (Very Good)	8
6.00 - < 7.00	60.0 - < 70.0	B+ (Good)	7
5.50 - < 6.00	55.0 - < 60.0	B (Above Average)	6
5.00 - < 5.50	50.0 - < 55.0	C (Average)	5
4.00 - < 5.00	40.0 - < 50.0	P (Pass)	4
Below 4.00	Below 40.0	F (Fail)	0
Ab (Absent)	-	Ab (Absent)	0

Sd/-
Sign of
Dr. Sunil Patil Coordinator,
Board of Studies in Chemistry

Sd/-
Sign of
Dr. Madhav R. Rajwade
Offg. Associate Dean
Faculty of Science & Technology

Sd/-
Sign of
Prof. Shivram S. Garje
Offg. Dean
Faculty of Science & Technology