

Karmaveer Bhaurao Patil University, Satara Faculty of Science and Technology

B. Sc. (Chemistry)

Programme and Credit Structure as per NEP 2020

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The degree shall be titled as 'Bachelor of Science (Chemistry) under the faculty of Science and

Technology

B. Sc. Sem. I & II from Academic Year 2024-25

B. Sc. Sem.III & IV from Academic Year 2025-26

B. Sc. Sem. V & VI from Academic Year 2026-27

B. Sc.Sem. VII&VIII from Academic Year 2027-28

Programme Outcomes for B. Sc. (Chemistry)

DO No	Programme Outcomes
PU. No.	After completing B.Sc. (Chemistry) Programme the students will be able to
PO-1	graduate with proficiency in the subject.
PO-2	continue higher studies in his subject.
PO-3	pursue higher studies abroad.
PO-4	appear for the examinations for jobs in government organizations.
PO-5	appear for jobs with minimum eligibility as science graduate.
PO-6	Secure industrial jobs with minimum eligibility as Chemistry graduate.
DEO NO	Programme Specific Outcomes
P50. NU	The student will be able to
PSO-1	gain the knowledge of fundamental Chemistry through theory and practicals.
DSO 2	handle instruments for basic and modern chemical analysis and use modernchemical tools,
130-2	Models, Chem-draw.
PSO-3	secure profitable employment in industry or in government sector and apply general
150-5	laboratory practice guidelines, including safety.
	acquire with thorough knowledge of qualitative and quantitative analysis, chemical synthesis,
PSO-4	spectroscopic, electro-analytical, chromatographic, thermal, microscopic techniques and other
150 +	basic analytical techniques to cater the need of various sections in industries such as QC, QA,
	R & D etc.
PSO-5	improve the research based skills by entering into a research internship as well as in house
150 5	project.
PSO-6	present their research findings in research conglomerations like conferences and in research
150-0	journals in the form of publications.

Semester, Credit Framework, NSQF Level and Exit Points

Sr. No.	Semester	Year	Year	Credits	Level	Exit Points &Award
1	Sem. I& II	2024-25	1Year	44	4.5	UG Certificate in Chemistry
2	Sem.III& IV	2025-26	2Year	88	5.0	UG Diploma in Chemistry
3	Sem. V &VI	2026-27	3Year	132	5.5	B. Sc. in Chemistry (UG Three Year Degree)
4	Sem.VII& VIII	2027-28	4Year	176	6.0	B. Sc. in Chemistry [Honors/Research] (UG Four Year Degree)

Sr. No.	Course	3 Year Degree Programme			4 Year Honors Degree Programme			4 Year Honors with Research Degree Programme		
		Courses	Credits	0/	Courses	Credits	0/	Courses	Credits	0/
		(3 Yr)	(3 Yr)	%	(4 Yr)	(4 Yr)	%	(4 Yr)	(4 Yr)	%
1	Major	26	52	39.39	34	80	45.45	32	72	40.91
2	Elective	04	08	6.06	08	16	9.09	08	16	9.09
3	IKS	02	04	3.03	02	04	2.27	02	04	2.27
4	VSC	04	08	6.06	04	08	4.55	04	08	4.55
5	FP	01	02	1.52	01	02	1.14	01	02	1.14
6	OJT	01	04	3.03	02	08	4.55	01	04	2.27
7	RP	00	00	0.00	00	00	00	02	12	6.82
8	SEC	03	06	4.55	03	06	3.41	03	06	3.41
9	CEP	01	02	1.52	01	02	1.14	01	02	1.14
Total ((Major) (A)	42	86	65.15	55	126	71.59	54	126	71.59
1	Minor & RM	12	24	18.18	13	28	15.91	13	28	15.91
Total	(Minor) (B)	12	24	18.18	12	28	15.91	13	28	15.91
1	OE	04	08	6.06	04	08	4.55	04	08	4.55
2	AEC	04	08	6.06	04	08	4.55	04	08	4.55
3	VEC	02	04	3.03	02	04	2.27	02	04	2.27
4	CC	01	02	1.52	01	02	1.14	01	02	1.14
Т	otal (C)	11	22	16.67	11	22	12.50	11	22	12.50
Grand T	Total (A+B+C)	65	132	100	79	176	100	78	176	100

Credit Distribution

Duration:

- > The program shall be a full-time program.
- The duration of program shall be three years for Bachelor of Science and four years for Bachelor of Science with Honors or Bachelor of Science with Research.
- > Every year students will have exist option with:
- > (1st Year: Certificate, 2nd Year: Diploma, 3rd Year: Degree, 4th Year: Honors/ Research)
- These students are allowed to re-enter the degree program within three years and complete the degree program within the stipulated maximum period of Seven Years.

Eligibility: 12thPass with Science, or equivalent.

Medium of Instruction: The medium of instructions shall be in English.

Scheme of Examination & Standard of Passing (CCE and ESE): As per the decision of the concern Board of Studies or Competent Authority.

- > End Semester Exam (ESE): 30 Marks (Min 12 Marks for Passing)
- Continuous Comprehensive Evaluation (CCE): 20 Marks (Min 08 Marks for Passing)
- \blacktriangleright Total Marks = 50 Marks
- Minimum 40% Marks Required for Passing and there is separate head of Passing for End Semester Examination (ESE) and Continuous Comprehensive Evaluation (CCE).
- A candidate who acquire 32 credits or moreduring semester I & II shall be admitted to B.Sc.II (appear for semester–III & IV examination).
- However the candidate shall not be admitted to B.Sc. III (Semester-V) unless he/she passed in all the subjects at B.Sc. I (Semester-I & Semester- II) and acquire 32 credits or more during semester – III & IV.
- However the candidate shall not be admitted to B. Sc.IV (Semester-VII) unless he/she passed in all the subjects at B. Sc. II (Semester -III & Semester-IV) &B. Sc. III (Semester-V & Semester-VI).
- However under the National Education Policy the rules extended by KBP University, time to time regarding ATKT will be applicable.

Eligibility of the Core Faculty:

- > As per rules and regulations of Karmaveer Bhaurao Patil University, Satara and Govt. of Maharashtra.
- Eligibility for Professor of Practice or Professional Trainer: Any other eligibility as per the guidelines and regulations passed by concern board of studies, academic council of the autonomous college and rules & regulations of Karmaveer Bhaurao Patil University, Satara and Government of Maharashtra and UGC norms.



Karmaveer Bhaurao Patil University, Satara Faculty of Science and Technology

B. Sc. (Chemistry) Part-I

Seme	Semester I						
Sr. No.	Components	Course Code	Course	Credits			
		BCT 111	Physical Chemistry (P-I)	02			
1	Course-I	BCT 112	Inorganic Chemistry (P-II)	02			
		BCP 113	Practical Based on theory paper BCT 111 & BCT 112	02			
2	Course-II		DSC-I, DSC-II & DSP-I	06			
3	Course-III		DSC-I, DSC-II & DSP-I	06			
4	OE	BCTOE 1	Environmental Studies P-I	02			
5	IKS	BCTIKS 1	Introduction to Indian Knowledge System	02			
Total							
Seme	ester II	1		-			
Sr. No.	Components	Course Code	Course	Credits			
		BCT 121	Organic Chemistry (P-III)	02			
1	Course-I	BCT 122	Analytical Chemistry (P-IV)	02			
		BCP 123	Practical Based on theory paper BCT 121 & BCT 122	02			
2	Course-II		DSC-III, DSC-IV & DSP-II	06			
3	Course-III		DSC-III, DSC-IV & DSP-II	06			
4	OE	BCTOE 2	Environmental Studies P-II	02			
5	VEC	BCTVEC 1	Democracy, Election and Indian Constitution	02			
	Total			22			
	EXIT OPTION: Award of UG Certificate in Major with 44 credits & an additional 4 credits consellater NSQF Course/Internship OR Continue with Major & Minor.						

B. Sc. (Chemistry) Part-II

	Semester III					
Sr. No.	Components	Course Code	Course	Credits		
		BCT 231	Organic Chemistry (P-V)	02		
1	Major	BCT 232	Analytical Chemistry (P-VI)	02		
		BCP 233	Practical Based on theory paper BCT 231 & BCT 232	02		
2	Minor		DSC-V, DSC-VI & DSP-III	06		
3	OE	BCTOE 3	Environmental Studies P-III	02		
4	VSC	BCTVSC 1	Food Quality Analyst	02		
5	SEC	BCTSEC 1	Water Quality Analyst	02		
6	AEC	BCTAEC 1	English P-I	02		
7	IKS	BCTIKS 2	Indian Knowledge System P-II	02		
			Total	22		
			Semester IV			
Sr. No.	Components	Course Code	Course	Credits		
1	Major	BCT 241	Physical Chemistry (P-VII)	02		

		BCT 242	Inorganic Chemistry (P-VIII)	02	
		BCP 243	Practical Based on theory paper BCT 241 & BCT 242	02	
2	Minor		DSC-VII, DSC-VIII & DSP-IV	06	
3	OE	BCTOE 4	Environmental Studies P-IV	02	
4	VSC	BCTVSC 2	Fertilizer Analyst	02	
5	SEC	BCTSEC 2	Soil Quality Analyst	02	
6	AEC	BCTAEC 2	English P-II	02	
7	VEC	BCTVEC 2	Environmental Studies	02	
Total 21					
EXI	EXIT OPTION: Award of UG Diploma in Major and Minor with 88 Credits& an additional 4 credits core				
NSQ	NSOF Course/ Internship OR Continue with Major & Minor				

B. Sc. (Chemistry) Part-III

	Semester V				
Sr. No.	Components	Course Code	Course	Credits	
		BCT 351	Physical Chemistry (P-IX)	02	
1	Major	BCT 352	Inorganic Chemistry (P-X)	02	
		BCT 353	Organic Chemistry (P-XI)	02	
2	2 Electives	BCT 354 E1	Analytical Chemistry (P-XII E1) /	02	
	Liectives	BCT 354 E2	Industrial Chemistry (P-XII E2)	02	
3	Major Lab	BCP 355	Practical Based on theory paper BCT 351, BCT 352 & BCT 353	02	
4	Elective Lab	BCP 356	Practical Based on theory paper BCT 354	02	
5	VSC	BCTVSC 3	Computer Skills for Chemist	02	
6	AEC	BCTAEC 3	English P-III	02	
7	OJT	BCTOJT 1	On Job Training in Chemistry I	04	
8	CEP	BCTCEP 1	Community Engagement Programme in Chemistry	02	
			Total	22	
			Semester VI		
C.	a .				
Sr.	Components	Course Code	Course	Credits	
Sr.	Components	Course Code BCT 361	Course Physical Chemistry (P-XIII)	Credits02	
Sr.	Components Major	Course CodeBCT 361BCT 362	Course Physical Chemistry (P-XIII) Inorganic Chemistry (P-XIV)	Credits 02 02	
5г. 1	Components Major	Course Code BCT 361 BCT 362 BCT 363	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)	Credits 02 02 02	
1 2	Components Major	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /	Credits 02 02 02 02 02	
1 2	Components Major Electives	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)	Credits 02 02 02 02 02	
1 2 3	Components Major Electives Major Lab	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363	Credits 02 02 02 02 02 02 02 02	
Sr. 1 2 3 4	ComponentsMajorElectivesMajor LabElective Lab	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365 BCP 366	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363Practical Based on theory paper BCT 364	Credits 02 02 02 02 02 02 02 02 02 02 02 02 02 02	
Sr. 1 2 3 4 5	ComponentsMajorElectivesMajor LabElective LabVSC	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365 BCP 366 BCTVSC 4	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363Practical Based on theory paper BCT 364Instrumental Analyst	Credits 02 02 02 02 02 02 02 02 02 02 02 02 02 02 02 02 02	
Sr. 1 2 3 4 5 6	ComponentsMajorElectivesMajor LabElective LabVSCSEC	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365 BCP 366 BCTVSC 4 BCTSEC 3	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363Practical Based on theory paper BCT 364Instrumental AnalystETP Operator	Credits 02	
I 1 2 3 4 5 6 7	ComponentsMajorElectivesMajor LabElective LabVSCSECFP	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365 BCP 366 BCTVSC 4 BCTSEC 3 BCTFP 1	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363Practical Based on theory paper BCT 364Instrumental AnalystETP OperatorField Project in Chemistry	Credits 02	
I 1 2 3 4 5 6 7 8	ComponentsMajorElectivesMajor LabElective LabVSCSECFPCC	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365 BCP 366 BCTVSC 4 BCTSEC 3 BCTFP 1 BCTCC 1	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363Practical Based on theory paper BCT 364Instrumental AnalystETP OperatorField Project in ChemistryCo-curricular Course in Chemistry	Credits 02	
I 1 2 3 4 5 6 7 8 9	ComponentsMajorElectivesMajor LabElective LabVSCSECFPCCAEC	Course Code BCT 361 BCT 362 BCT 363 BCT 364 E1 BCT 364 E2 BCP 365 BCP 366 BCTSEC 3 BCTFP 1 BCTCC 1 BCTAEC 4	CoursePhysical Chemistry (P-XIII)Inorganic Chemistry (P-XIV)Organic Chemistry (P-XV)Analytical Chemistry (P-XVIE1) /Industrial Chemistry (P-XVIE2)Practical Based on theory paper BCT 361, BCT 362 &BCT 363Practical Based on theory paper BCT 364Instrumental AnalystETP OperatorField Project in ChemistryCo-curricular Course in ChemistryEnglish P-IV	Credits 02	

EXIT OPTION: Award of UG Degree in Major with 132 credits OR B. Sc. (Chemistry) Part-IV Honors Degree Continue with Major & Minor.

	11						
Sr. No.	Components	Course Code	Course	Credits			
		BCT 471	Physical Chemistry (P-XVII)	04			
1	Major	BCT 472	Inorganic Chemistry (P-XVIII)	04			
		BCT 473	Organic Chemistry (P-XIX)	04			

2	Electives	BCT 474 E1	Analytical Chemistry (P-XXE1)/	02	
		BC14/4E2	Practical Based on theory paper BCT 471, BCT 472 & BCT		
3	Major Lab	BCP 475	473	02	
4	Elective Lab	BCP 476	Practical Based on theory paper BCT 474	02	
5	Minor	BCT 477	Research Methodology	04	
Total					
Semester VIII					
Sr.	Components	Course Code	Course	Credits	
		BCT 481	Physical Chemistry (P-XXI)	04	
1	Major	BCT 482	Inorganic Chemistry (P-XXII)	04	
		BCT 483	Organic Chemistry (P-XXIII)	04	
2	Flootivos	BCT 484 E1	Analytical Chemistry (P-XXIVE1)/	02	
2	Liectives	BCT 484 E2	Applied Chemistry (P-XXIVE2)	02	
3	Major Lab	BCD 485	Practical Based on theory paper BCT 481, BCT 482 & BCT	02	
3	Iviajoi Lau	DCF 405	483	02	
4	Elective Lab	BCP 486	Practical Based on theory paper BCT 484	02	
5	OJT	BCTOJT 2	On Job Training in Chemistry II	04	
			Total	22	
Award	Award of Four year UG Honors Degree in Major and Minor with 176 credits.				

B. Sc. (Chemistry) Part-IV Honors with Research Degree

	Semester VII					
Sr. No.	Components	Course Code	Course	Credits		
1	Maior	BCT 471	Physical Chemistry (P-XVII)	04		
1	Major	BCT 473	Organic Chemistry (P-XIX)	04		
2		BCT 474 E1	Inorganic Chemistry (P-XXII) /	04		
2	Electives	BCT 474 E2	Analytical Chemistry (P-XXE1)	04		
3	Major Lab	BCP 475	Practical Based on theory paper BCT 471 & BCT 472	02		
4	Minor	BCT 476	Research Methodology	04		
5	RP	BCTRP 1	Research Project in Chemistry I	04		
			Total	22		
			Semester VIII			
Sr. No.	Components	Course Code	Course	Credits		
1	Maior	BCT 481	Physical Chemistry (P-XXI)	04		
1	iviajor	BCT 483	Organic Chemistry (P-XXIII)	04		
2		BCT 484 E1	Inorganic Chemistry (P-XXII) /	04		
Z	Electives	BCT 484 E2	Analytical Chemistry (P-XXIVE1)	04		
3		Derielde	That field chemistry (Fifth (E1))			
5	Major Lab	BCP 485	Practical Based on theory paper BCT 481 & BCT 482	02		
4	Major Lab RP	BCP 485 BCTRP 2	Practical Based on theory paper BCT 481 & BCT 482 Research Project in Chemistry II	02 08		
4	Major Lab RP	BCP 485 BCTRP 2	Practical Based on theory paper BCT 481 & BCT 482 Research Project in Chemistry II Total	02 08 22		

Chairman BoS in Chemistry Secretary Academic Council Chairman Academic Council