



# **CURRICULUM AND CREDIT FRAMEWORK**

**For**

**B.Sc. Honours/ Honours with Research in  
Chemistry**

**As per NEP 2020**

**(To be Effective from June, 2024)**



## **ORDINANCES AND REGULATIONS:**

Ordinances & Regulations for the Degree of Bachelor of Science (As Per NEP 2020) are as under:

### **Ordinances:**

#### **Ord. – 1:**

Candidate for admission to the Bachelor of Science must have passed standard 12th or equivalent examination in respective stream from Gujarat Higher Secondary Board or any other board.

**Ord – 2:** Candidate who have passed an equivalent examination from any other board or examining body and is seeking admission to the B.Sc. will be required to provide necessary eligibility certificate.

#### **Ord. – 3:**

### **Definitions of Keywords:**

#### **1. Academic Year:**

An Academic Year is divided into two semesters and a semester of minimum 15 weeks comprises 90 working days.

**2. Programme:** An educational programme leading to award of the Certificate, Diploma, Bachelor, Bachelor (Honours) or Bachelor (Honours with Research).

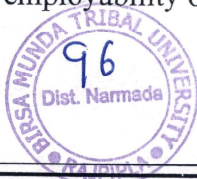
**3. Course:** Usually referred to, as 'paper/subject' is a component of a program. The courses should define learning activities, objectives and learning outcomes. Types of courses / activities constitute the programs of study comprise lectures outreach activities / Practical / Case Study / Group Discussion / Quiz / Project work/ Viva / Seminars / Assignment / Internship / Presentations / Research Project etc. or a combination of some of these.

**4. Major & Minor Discipline Course:** Major discipline is grouping of courses of main focus and the degree will be awarded in that discipline. Students should secure the prescribed number of credits (about 50% of total credits) through core courses in the major discipline. Minor discipline helps a student to gain a broader understanding beyond the major discipline

**5. Multidisciplinary Courses:** These courses are intended to broaden the intellectual experience and form part of other disciplines.

**6. Ability Enhancement Courses:** The courses aim at enabling the students to acquire and demonstrate the core linguistic skills, including critical reading and expository and academic writing skills, that help students articulate their arguments and present their thinking clearly and coherently and recognize the importance of language as a mediator of knowledge and identity.

**7. Skills Enhancement Courses:** These courses are aimed at imparting practical skills, hands-on training, soft skills, etc., to enhance the employability of students.



**8. Value-Added Courses / Indian Knowledge System:** The course aims at enabling the students to acquire and demonstrate the knowledge and understanding of contemporary India with its historical perspective, the basic framework of the goals and policies of national development, and the constitutional obligations with special emphasis on constitutional values and fundamental rights, ethics and duties.

**9. Summer Internship/ Apprenticeship:** Students will have to undergo Internships / Apprenticeships in a firm, industry, or organization or Training in labs with faculty and researchers in their own or other HEIs/research institutions during the summer term. Students will be provided with opportunities for internships with local industry, business organizations, health and allied areas, local governments (such as panchayats, municipalities). Parliament or elected representatives, media organizations, artists, crafts persons, and a wide variety of organizations so that students may actively engage with the practical side of their learning and, as a by-product, further improve their employability.

**10. Vocational Courses:** Vocational Education and Training will form an integral part of the undergraduate programme to impart skills along with theory and practical.

**11. Research Dissertation:** Students choosing a 4-Year Bachelor's degree (Honours with Research) are required to take up research dissertation under the guidance of a faculty member. The students are expected to complete the Research Dissertation in the eighth semester.

**12. Credit:** It determines the number of hours of instruction required per week over the duration of a semester. One credit is equivalent to one hour of teaching per week, One credit for tutorial work means one hour of engagement per week, A one-credit course in practical or lab work, community engagement and services, and fieldwork in a semester mean two-hour engagement per week, A one-credit of Seminar or Internship or Studio activities or Field practice/projects or Community engagement and service means two-hour engagements per week.

**13. Letter Grade:** It is an index of the performance of students in a said course. Grades are denoted by letters O, A+, A, B+, B, C, P, F and Ab.

**14. Credit Point:** It is the product of grade point and number of credits for a course.

**15. Semester Grade Point Average (SGPA):** It is a measure of performance or work done in a semester. It is ratio of total credit points secured by a student in various courses registered in a semester and the total course credits taken during that semester. It shall be expressed up to two decimal places.

**16. Cumulative Grade Point Average (CGPA):** it is a measure of overall cumulative performance of a student over all semesters. The CGPA is the ratio of total credit points secured by a student in various courses in all semesters and the sum of the total credits of all courses in all the semesters. It is expressed up to two decimal places.



**Ord. – 4 :** B.Sc. Degree programme is of three/four academic year's duration, consisting of six/eight semesters, which will be required to be completed within **7 years** from the date of his/her first admission in the First Semester. Students are permitted to take a break or exit with a UG certificate / UG Diploma / UG Degree are permitted to re-enter within three years and complete the degree programme. But total duration for completing the programme shall not exceed 7 years.

**Ord. – 5:** B.Sc. Three years (six semesters)/ Four years (eight semesters) Degree programme is a regular fulltime programme. A student can pursue two full time academic programmes in physical mode provided that in such cases, class timing for one programme do not overlap the class timings of the other programme. Students can pursue two academic programmes, one in full time and physical mode and another in Open and Distance Learning (ODL)/ Online mode; or up to two ODL/Online programmes simultaneously.

**Ord. – 6:** No candidate will be admitted to any semester end examination unless it is certified by the principal that he/she has attended the course of study to the satisfaction of the principal of the school.

**Ord. – 7:** Candidate desirous of appearing at any semester end examination of the said programme must forward their application in the prescribed form to the University through the principal on or before the date prescribed for the purpose under the relevant ordinances.

**Ord. – 8:** No candidate will be permitted to reappear at any semester end examination, which he/she has already passed. The marks of successfully completed course will be carrying forwarded for the award of class.

**Ord. – 9:** Medium of instruction is English/Gujarati.

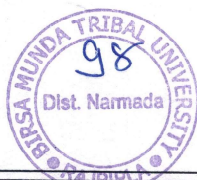
**Ord. – 10:** B.Sc. Programme of the University as per NEP 2020 is implemented along with the Continuous and Comprehensive Evaluation (CCE) and minimum attendance is at least 75% attendance.

**Ord. – 11:**

The main aim of the NEP-2020 is to facilitate Multiple Entry and Exit options with UG certificate/ UG diploma/ or degree, depending upon the number of credits secured. The Entry and Exit options for students, who enter in the B.Sc. programme, are as follows:

**1ST YEAR:**

**Entry 1:** The entry requirement for Level 4.5 is Higher Secondary School Leaving Certificate obtained after the successful completion of Grade 12 and should meet the entrance requirements, availability of seats, admission regulations of the BMTU. A programme of study leading to entry into the first year of the Bachelor's degree is open to those who have met the eligibility requirements, including specified levels of attainment at the higher secondary level of education specified in the programme admission regulations. Admission to the Bachelor degree programme of study is based on the evaluation of documentary evidence (including the academic record) of the applicant's ability to undertake and complete a Bachelor's degree programme.



**Exit 1: UG Certificate:** A UG certificate shall be awarded if a student exit at the end of year one (two semesters) after successfully securing 44 credits. The student also needs to secure 4 additional credits in summer internship/Apprenticeship in the major discipline or multidiscipline offered course. These students are allowed to re-enter the degree programme within three years and complete the degree programme within the stipulated maximum period of seven years.

#### **2ND YEAR:**

**Entry 2.** The entry requirement for Level 5.0 is a Certificate in Science obtained from any University after completing the first year (two semesters) of the undergraduate programme and meet the entrance requirements, availability of seats and admission regulations of the BMTU.

**Exit 2: UG Diploma:** A UG diploma shall be awarded if a student exit after two years (four semesters) after successfully securing 88 credits from level 4.5 to 5.0, with 44 credits at level 5.0. The student also needs to secure 4 additional credits in summer internship/Apprenticeship in major discipline or multidiscipline offered course. These students are allowed to re-enter within a period of three years and complete the degree programme within the maximum period of seven years.

#### **3RD YEAR:**

**Entry 3.** The entry requirement for Level 5.5 is a UG Diploma obtained from any institution after completing two years (four semesters) of the undergraduate and meet the entrance requirements, availability of seats and admission regulations of the BMTU.

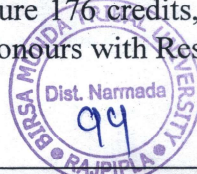
**Exit 3:** On successful completion of three years, the relevant Bachelor of Science Degree shall be awarded (Level 5.5). A Bachelor's degree requires minimum 132 credits from levels 4.5 to 5.5, with minimum 44 credits at level 4.5, minimum 44 credits at level 5.0, and minimum 44 credits at level 5.5.

#### **4TH YEAR:**

**Entry 4.** A student seeking admission to a 4-year Bachelor of Science degree (Honours/Honours with Research) (Level 6.0) in a specified field of learning, must have completed all requirements of the relevant three-year Bachelor of Science degree (Level 5.5) and meet the entrance requirements, availability of seats and admission regulations of the BMTU. After completing the requirements of a three-year Bachelor's degree programme, candidates shall be allowed to continue studies in the fourth year of the undergraduate programme to pursue and complete the Bachelor's degree in Honours /Bachelor's degree in Honours with Research.

**Exit 4: 4-year UG Degree (Honours):** A four-year UG Honours degree in the major discipline will be awarded to those who complete a four-year degree programme with 176 credits and have satisfied the credit requirements including 12 credits from O-J-T or equivalent courses.

**4-year UG Degree (Honours with Research):** They should do a research dissertation under the guidance of a faculty member of the University. The research dissertation will be in the major discipline. The students, who secure 176 credits, including 12 credits from a research dissertation, are awarded UG Degree (Honours with Research).



### Summary of Multiple Exit System:

1	<b>UG Certificate</b>	UG Certificate will be awarded when a student exits after completion of semester 1 and semester 2 with 44 credits along with successfully completion of work based vocational course of 4 credits Online/Offline or internship/Apprenticeship
2	<b>UG Diploma</b>	UG Diploma will be awarded when a student exits after completion of semester 1 to semester 4 with 88 credits along with successfully completion of work based vocational course of 4 credits Online/Offline or internship /Apprenticeship
3	<b>UG Degree</b>	Bachelor's degree will be awarded when a student exits after completion of semester 1 to semester 6 with 132 credits.
4	<b>UG Degree Honours</b>	Bachelor's degree (Honours) will be awarded when a student exits after completion of semester 1 to semester 8 with 176 credits. including <b>12 credits from O-J-T (On the Job Training) or equivalent courses</b>
5	<b>UG Degree Honours with Research</b>	Bachelor's degree (Honours with Research) will be awarded when a student exits after completion of semester 1 to semester 8 with 176 credits including <b>12 credits from a research dissertation</b>

### Ord. – 12:

A regular candidate having obtained minimum marks for passing in **CCE (i.e. 9 out of 25 & 18 out of 50)** and **SEE (i.e. 9 out of 25 & 18 out of 50)** or more but fails to obtain minimum **36%** aggregate marks will be required to re-appear in both the component viz CCE and SEE. In such a case candidate will not be required to keep term for the respective semester. The marks of the examination in which the student has passed will be carried forward.

No.	<b>CCE (Continuous &amp; Comprehensive Evaluation)</b>	<b>SEE (Semester End Evaluation)</b>	<b>Result</b>	<b>Require to Appear in Exam</b>
1	Pass	Pass	Pass	N. A.
2	Pass	Fail	Fail	SEE Only
3	Fail	Pass	Fail	CCE Only
4	Fail	Fail	Fail	Both (CCE & SEE)

## Regulations:

### R.1

The new curriculum as per NEP 2020 is not only student centric in the teaching-learning processes but also in their evaluation process. The evaluation consists of the following two components: The component consists of Continuous and Comprehensive Evaluation (CCE) and the second component consists of the Semester end examination. The division of marks between the two shall be 50:50 in the NEP 2020; the evaluation process shall follow the norm that the faculty, who teaches the course, shall conduct the Continuous and Comprehensive Evaluation (CCE). **The concerned faculty shall be accountable for transparency and reliability of entire evaluation of the student in the concerned Course**

In each course, every credit carries 25 marks, of which 50% marks is assigned for CCE and rest 50% marks for SEE.

Sr. No.	Evaluation	4 credit subjects (Marks)	2 credit subjects (Marks)
1	CCE (50%)	Final marks 50	25
2	SEE (50%)	Final marks 50	25
	<b>Total</b>	<b>100</b>	<b>50</b>

**Note:-** Total Theory(CCE+SEE) 150 Marks converted for 75 Marks and Total Practical (CCE+SEE) 50 marks converted for 25 marks

### R-2

**Continuous and Comprehensive Evaluation (CCE):** Subject-wise CCE will be undertaken by the concerned faculty member. The mode of evaluation will be decided by the faculty member concerned with the subject.

Normally CCE Theory includes Assignment, MCQ quizzes, Seminar, Reflective notes, class participation, case analysis and presentation, tutorials, slip tests (announced/ surprised), attendance etc. or any combination of these. The students are expected to submit their answer scripts/ reports of internal evaluation within the stipulated time. Failure to do so may result in the script not being valued.

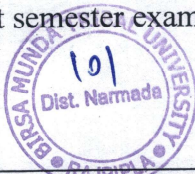
CCE PWE includes Laboratory practical work, project work, viva simulation exercise work etc

Another part of CCE consists of Mid Semester Examination, which is compulsory for all students. It can be done in a scheduled manner. **The duration of the mid-term evaluation shall be one hour.**

### R-3

**Semester End Evaluation (SEE):** The SEE carries 50% of the marks assigned to a course. **SEE shall be of 2½ hours for 4 credit course (75 Marks) and 1½ hours in case of 2 credit courses.** The controller of the examination will conduct this examination. Paper setting and evaluation will be done by the internal and external examiners. This examination shall be conducted as per a schedule which shall be notified in advance.

The backlog exam will be conducted twice a year just after the result declared of the semester evaluation. Students shall have a second chance to clear their backlog and avoid the burden to carry forward the backlog with the next semester exam.



Appearance in all the evaluations is mandatory and no exemption can be granted except in the following case:

1. In case of inability to attend the exam due to reasons considered genuine by the controller of examination in consultation with the Registrar/VC.
2. In case of medical emergency, a certificate from the registered medical practitioner must be produced before the commencement of exams. The authority will then take final decision on the recommendation for exemption.

#### **R-4**

**Eligibility Criteria to appear in SEE:** To be able to appear for the SEE, a student must comply with the following conditions:

1. Should have at least 75% of attendance in all the courses put together
2. Should have at least 70% of attendance in each course/subject
3. Should not have any disciplinary proceedings pending against him/her
4. Should have no pending due

#### **R-5**

**Practical Examination:** Practical examination (wherever applicable) shall be conducted at the end of every semester. The examination shall be conducted as per norms decided by the concerned authority of the University

#### **R-6**

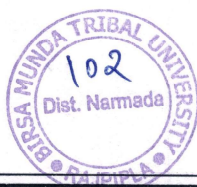
**Research Dissertation work:** The research dissertation work and the Supervisor shall be assigned to the student by the concerned school well in advance. Evaluation of dissertation will be done by the subject experts appointed by the university. Maximum marks of the dissertation will be 200.

#### **R-7**

#### **Letter Grades and Grade Points**

The Semester Grade Point Average (SGPA) is computed from the grades as a measure of the student's performance in a given semester. The SGPA is based on the grades of the current term, while the Cumulative Grade Point Average (CGPA) is based on the grades in all courses taken after joining the programme of study.

The relative grading system provides the relative performance of a student to a group/class wherein the student is ranked in a group/class based on relative level of achievements. BMTU may also mention the marks obtained by the students in each course and a weightage average of marks on the Grade sheet for the benefits of the students.





Sr. No.	Letter Grade	Grade Point	Marks (In %)
1	O (outstanding)	10	96.0-100
2	A+ (Excellent)	9	86.0-95.9
3	A (Very Good)	8	76.0-85.9
4	B+ (Good)	7	66.0-75.9
5	B (Above Average)	6	56.0-65.9
6	C (Average)	5	46.0-55.9
7	P (Pass)	4	36.0-45.9
8	F (Fail)	0	Below 36.0
9	Ab (Absent)	0	Absent

**Minimum passing marks for each pattern of evaluation (formative and summative):**

Maximum Marks	Minimum Passing Marks
25	9
50	18
100	36

**R-8**

### Computation of SGPA and CGPA

The UGC recommends the following procedure to compute the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA):

1. The SGPA is the ratio of the sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.

$$\text{SGPA } (S_i) = \frac{\sum(C_i \times G_i)}{\sum C_i}$$

Where  $S_i$  is the SGPA for  $i^{\text{th}}$  course,  $C_i$  is the number of credits of the  $i^{\text{th}}$  course and  $G_i$  is the grade point scored by the student in the  $i^{\text{th}}$  course.

### Example for Computation of SGPA

Sem	Course	Credit	Letter Grade	Grade point	Credit Point (Credit x Grade)
I	Major Course 1	4	A	8	4 X 8 = 32
I	Major Course 2	4	B+	7	4 X 7 = 28
I	Minor Course 3	4	B	6	4 X 6 = 24
I	MDC 4	4	O	10	4 X 10 = 40
I	AEC 5	2	C	5	2 X 5 = 10
I	SEC 6	2	B	6	2 X 6 = 12
I	IKS 7	2	A+	9	2 X 9 = 18
		<b>22</b>			<b>164</b>
<b>SGPA :-</b>					<b>164/22 = 7.45</b>



2. The Cumulative Grade Point Average (CGPA) is also calculated in the same manner taking into account all the courses undergone by a student over all the semesters of a programme, i.e.

$$\text{CGPA} = \frac{\sum(C_i \times S_i)}{\sum C_i}$$

Where  $S_i$  is the SGPA of the  $i^{\text{th}}$  semester and  $C_i$  is the total number of credits in that semester.

#### Example for Computation of CGPA

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Credit: 22 SGPA:6.82	Credit: 22 SGPA:7.8	Credit:22 SGPA:5.6	Credit: 22 SGPA:6.0	Credit: 22 SGPA: 6.3	Credit 22 SGPA 8.0
$\text{CGPA} = (22 \times 6.82) + (22 \times 7.8) + (22 \times 5.6) + (22 \times 6.0) + (22 \times 6.3) + (22 \times 8.0) / 132$					
$\text{CGPA} = 149.6 + 171.6 + 123.2 + 132 + 138.6 + 176 / 132$					
$\text{CGPA} = 891 / 132$					
$\text{CGPA} = 6.75$					

The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the grade sheet. The grade sheet may issue for each semester based on SGPA and CGPA and consolidated grade sheet indicating the performance in each semester.

#### R-9

##### Percentage Calculation

The percentage calculation will be on the basis as below

$$\text{Percentage} = \frac{\text{Total Marks Obtained in all the semesters} \times 100}{\text{Grand Total of Maximum Marks of all the semesters.}}$$

#### R-10

##### Award of Class:

A candidate who become eligible for the award of Bachelor of Science Honours / Honours with Research Degree shall be placed in one of the following classes based on Marks.

Sr. No.	Range of Marks	Description/Class
1	$\geq 70\%$ and $\leq 100\%$	Distinction
2	$\geq 60\%$ and $< 70\%$	First Class
3	$\geq 48\%$ and $< 60\%$	Second Class
4	$\geq 36\%$ and $< 48\%$	Pass Class
5	$< 36\%$	FAIL

#### R-11

If candidates who have failed in all the courses/papers of the semester are eligible to enter in next semester till the last semester. The result of the last semester shall not be declared (kept withheld) unless and until the candidate clears all the courses/papers of a programme.

