Four Year Bachelor of Science & BCA Examination

Scheme of Examination for Four Year Bachelor of Science (B.Sc.) & BCA Program from Academic Session 2023-24

As approved by all the Boards of Studies in the Faculty of Science & Technology in their meetings held on 20th May 2023

Placed before the Faculty of Science & Technology for consideration and approval in its meeting scheduled on 25th May 2023

Preamble:

The Academic Council of Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur has adopted the Government Resolution No. NEP-2020/प्र.क्र.09/विशी-3/शिकाना dated 20th April 2023 issued by the Government of Maharashtra in its meeting held on 21st April 2023 in view of implementation of National Education Policy, 2020. The Faculty of Science & Technology, R T M Nagpur University has approved the following 'Teaching and Examination Scheme' for 'Four Year – Bachelor of Science (B.Sc.) Honours/Research Degree with Major and Minor' in its meeting held on 25th May 2023. The scheme is also approved by the Academic Council of the University in its meeting held on 5th June 2023. This notification is issued to facilitate the HEIs (Affiliated Colleges) and students for smooth conduct of admission process for the year 2023-24. Basic details required at the time of admission are provided in this notification and a detailed Direction/Regulation containing comprehensive provisions related to all aspects shall soon be issued by the University. Further, a list of 'Co-Curricular Courses (Annexure – VI) shall also be soon issued by the University.

1. **Details of Eligibility for B.Sc. & BCA Semester I Examination**

    a. The candidate should have passed 12th Standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education/CBSE/ICSE, with English at Higher or Lower level and any Modern Indian Language at higher or lower level together with any three science subjects comprised in the Faculty of Science or an examination recognized as equivalent thereto in such subjects and with such standards of attainments as may be prescribed;

        OR

    b. 12th Standard Examination of Maharashtra State Board of Secondary and Higher Secondary and offering Education in Vocational/Bi-focal Stream with one language only with any three science subjects comprised in the faculty of Science OR any other examination recognized as equivalent thereto in such subjects and with such standards of attainments as may be prescribed by Minimum Competency Vocational Courses (MCVC).

        OR

    c. Any other Equivalent Examination of any State in (10+2) pattern with any three science subjects comprised in the Faculty of Science or an examination recognized as equivalent thereto in such subjects and with such standards of attainments as may be prescribed.

    d. For admission to the B.Sc. programs in i) Computer Science ii) Information Technology, iii) Data Science iv) Electronics and v) Bachelor in Computer Applications (BCA), the candidate should have passed the 12th Standard Examination of the Maharashtra State Board of Secondary and Higher Secondary Education with English and other Modern Indian Languages together with mathematics or an examination recognized as equivalent thereto in such subjects and with such standards of attainments as may be prescribed.

2. **Duration of the Program, Student Progression Path and Provisions for Multiple Entry and Exit**

   Duration of the **B.Sc. & BCA** Program shall be FOUR years with the provision for multiple exits as mentioned here:

   Multiple Exit:

   Students will have the flexibility to enter a program in odd semesters and exit a program after the successful completion of even semester as per their future career needs:

   a. A student can exit the program after successful completion of semesters I & II having earned requisite number of credits as mentioned in the scheme of examination and additional 'NSQF* Course or Internship' with 4 credits. Such a student shall be eligible for the award of 'Certificate in Science' by the University.
   ___OR___ a student can continue the program in 2nd year.

   b. A student can exit the program after successful completion of semesters I, II, III, & IV having earned requisite number of credits as mentioned in the scheme of examination and additional 'NSQF* Course or Internship' with 4 credits. Such a student shall be eligible for the award of 'Diploma in Science' by the University.
   ___OR___ a student can continue the program in 3rd year.

   c. A student can exit the program after successful completion of semesters I, II, III, IV, V & VI having earned requisite number of credits as mentioned in the scheme of examination. Such a student shall be eligible for the award of 'Three Year Bachelor of Science' degree by the University.
   ___OR___ a student can continue the program in 4th year for either HONOURS or RESEARCH degree.

   d. A student, on successful completion of all the 8 semesters and having earned requisite number of credits as mentioned in the scheme of examination shall be eligible for the award of either 'Bachelor of Science (Honours) Degree with Major and Minor' OR 'Bachelor of Science (Research) Degree with Major and Minor'.

   Table 2: Eligibility for Award of Certificate/Diploma/Degree/Honours or Research Degree

Levels	Qualification Title	Additional Credits to be Earned	Credit Earned	Sem.	Year
4.5	UG Certificate in Science OR Continue with Major	4 (NSQF* Course or Internship)	44	2	1
5.0	UG Diploma in Science with Major & Minor OR Continue with Major	4 (NSQF* Course or Internship)	88	4	2
5.5	Three Year Bachelor Degree in Science with Major & Minor OR Continue with Major & Minor	Not Required	132	6	3
6.0	Bachelor Degree in Science (Honors/Research) with Major and Minor	Not Required	172	8	4

   ***NSQF:** National Skill Qualification Framework or the skill courses prescribed by the RTMNU.*

3. **Re-entry or Lateral Entry**

   a. Students, opting for exit at any level, will have the option to re-enter the programme from where they had left off, in the same or in a different higher education institution within THREE years of exit and complete the degree programme within the stipulated maximum period of SEVEN years from the date of admission to first year.

    b. Re-entry at various levels for lateral entrants in academic programmes shall be based on the earned and valid credits as deposited and accumulated in the Academic Bank of Credits (ABC) through Registered Higher Education Institutions (RHEI) and proficiency test records.

    c. Lateral entry into the programme of study leading to the UG Diploma / Three Year UG Degree / Four Year Bachelor's Degree with Honours/Research will be based on the validation of prior learning outcomes achieved and subject to availability of seats based on intake capacity.

4. Types of Courses

A student admitted to this program is required to undergo and successfully complete the following types of courses as mentioned in the scheme of examination:

Table 1: Types of Courses and Choice for Selection

SN	Course Type	Choice for Selection
1.	Major (Core) Subject	A student is required to select her/his 'MAJOR' subject from amongst the choices provided in this scheme of examination before filling the examination form for 1st Semester. Change of major subject shall not be permitted after the examination form is submitted. Major subject comprises of Mandatory and Elective Course.
2.	Minor Subject	A student is required to select her/his 'MINOR' subject from amongst the choices provided in this scheme of examination or any other degree program offered by the university in any other faculty before filling the examination form for 3rd Semester. Change of minor subject shall not be permitted after the examination form for 3rd Semester is submitted.
3.	Open Elective Course (OE)	A student is required to select an 'OPEN ELECTIVE' from the 'Open Elective Basket' of any program offered by the university in any faculty before filling the examination form for the semester concerned. Such an 'OPEN ELECTIVE' cannot be selected from the subjects chosen by a student as 'Major' and 'Minor' subjects. A student is allowed to earn credits for 'OPEN ELECTIVE' by successfully completing online courses of equivalent credits from SWAYAM/NPTEL learning platforms or from other Higher Education Institutions affiliated to RTM Nagpur University. However, this needs to be informed by student to the college before commencement of the semester and an application for transfer of credits is required to be made by student.
4.	Vocational Skill Course (VSC)	A student is required to successfully complete the 'VOCATIONAL SKILL COURSE' as mentioned in this scheme of examination. This course must be a course corresponding to the 'MAJOR' and/or MINOR subject selected by a student. A student is allowed to earn credits for 'VOCATIONAL SKILL COURSE' by successfully completing online courses of equivalent credits from SWAYAM/NPTEL learning platforms or from other Higher Education Institutions affiliated to RTM Nagpur University provided they are approved by the competent authority of RTM Nagpur University. However, this needs to be informed by student to the college before commencement of the semester and an application for transfer of credits is required to be made by student.
5.	Skill Enhancement Course (SEC)	A student is required to select a 'SKILL ENHANCEMENT COURSE' from the basket provided by the university for this purpose. A separate notification and guidelines in this regard shall be displayed by the university on its website. A student is allowed to earn credits for 'SKILL ENHANCEMENT COURSE' by successfully completing online courses of equivalent credits from

		SWAYAM/NPTEL learning platforms or from other Higher Education Institutions affiliated to RTM Nagpur University provided they are approved by the competent authority of RTM Nagpur University or the courses from Sector Skill Council. However, this needs to be informed by student to the college before commencement of the semester and an application for transfer of credits is required to be made by student.
6.	Ability Enhancement Course (AEC)	A student is required to undergo and successfully complete the 'ABILITY ENHANCEMENT COURSE' as mentioned in this scheme of examination.
7.	Indian Knowledge System Course (IKS)	A student is required to undergo and successfully complete the 'INDIAN KNOWLEDGE SYSTEM COURSE' as mentioned in this scheme of examination.
8.	Value Education Course (VEC)	A student is required to undergo and successfully complete the 'VALUE EDUCATION COURSE' as mentioned in this scheme of examination.
9.	Co-Curricular Course (CC)	A student is required to select a 'Co-Curricular Course' as mentioned in this scheme of examination. This course must be completed at the Higher Education Institute (HEI) where the student has taken admission and transfer of credit is not permissible for this type of course.
10.	Field Project (FP) / On the Job Training (OJT) /Community Engagement Project (CEP) / Research Project (RP)	A student is required to undergo and successfully complete this course as mentioned in the scheme of examination under the guidance of supervisor/mentor assigned by the HEI. This course must be corresponding to the 'MAJOR.' This course must be completed at the HEI where the student has taken admission and transfer of credit is not permissible for this type of course.

5. Availability of 'Major' and 'Intake Capacity'

All HEIs affiliated to the University for offering B. Sc. Program in the Faculty of Science and Technology shall adhere to the following:

Table 3: List of MAJOR Subjects

Affiliated Program	Sanctioned Intake	'Major' to be offered	Code of 'Major'
B. Sc. (Group A)	As approved by the University	Chemistry	CH
		Environmental Science	ES
		Textile Science	TS
		Fashion Design	FD
B. Sc. (Group B)	As approved by the University	Physics	PH
		Zoology	ZO
		Biochemistry	BC
		Cosmetic Tech.	CT
B. Sc. (Group C)	As approved by the University	Mathematics	MT
		Botany	BO
		Home Science	HS
		Forensic Science	FS
		Interior Design	HD
B. Sc. (Group D)	As approved by the University	Statistics	ST
		Microbiology	MI
		Biotechnology	BT
		Geology	GE
		Electronics	EN

B. Sc. (Group E)	As approved by the University	Computer Science	CS
		Data Science	DS
		Information Technology	IT
		Bachelor of Computer Application	CA
		App. Electronics & Software Technology	ET

NOTES:
- Table 3 above has five groups accommodating all the Major programs. A student is required to select one Major program (subject) from any Basket.
- A student is required to select one Minor from any basket except the basket from which she/he has selected the Major program (subject).
- Total intake capacity for the program as approved by the university shall remain the same and be divided amongst the 'Major' subjects allowed for that program.
- The HEI may offer a particular 'Major' subject based on the availability of teachers and students.
- The HEI is not expected to force any student to opt for a particular subject where a choice is provided in the scheme of examination.
- Subject code given in the table may change, however the change if any will be notified.

6. **Minor Subjects:**
   All HEIs affiliated to the University for offering B. Sc. Program may offer all/any of the subjects given in Table 3 (column 3) as 'MINOR' subject/s as mentioned in this scheme of examination. It is mandatory for the students to choose only one Minor subject which obviously will be other than the Major subject she/he has already chosen. Once the Minor subject is chosen, it is mandatory for a student to pursue all the courses from the basket of that Minor only.

7. All HEIs affiliated to the University offering B. Sc. Program are required to display the list of 'Major' and 'Minor' subjects offered on the Notice Board as well as on the website of HEI to make students aware about the availability of subjects. Moreover, HEIs are expected to define and display the 'Standard Operating Procedure' for their faculty members and students to facilitate the process of selecting 'Major' and 'Minor' subjects.

8. In pursuance with the National Education Policy 2020 and a Government Resolution No. NEP-2020/प्र.क्र.09/विशी-3/शिकाना dated 20th April 2023 issued by the Government of Maharashtra, the credit framework for B. Sc. Program is given in **Annexure - I.**

9. **Teaching and Examination Schemes:**
   Teaching and Examination Schemes (of eight semesters) and Syllabus of Semester I & II for all B.Sc. subjects and BCA is appended in **Annexure - II**.

10. **Credit Specifications:**
    a. Theory/Tutorial Courses: One hour/credit/week (a minimum of 15 hours of teaching per credit is required in a semester.
    b. Laboratory/Performance Based Courses: A minimum of 30 hours in laboratory or Performance Based activities is required in a semester. Performance based activities include Studio activities, Workshop based activities, internship, Apprenticeship, Field based learning, community engagement learning, etc.
    c. Each semester will consist of at least 15 weeks of Academic Work equivalent to 90 actual teaching days.

11. GRADE Conversion Table and Computation of SGPA & CGPA

Table 4: Grade Conversion Table (Theory)

SN	Letter Grade	Grade Point	Mark Range	Performance
1	O	9.00 - 10.00	90 - 100	Outstanding
2	A+	8.00 - < 9.00	80 - < 90	Excellent
3	A	7.00 - < 8.00	70 - < 80	Very Good
4	B+	6.00 - < 7.00	60 - < 70	Good
5	B	5.50 - < 6.00	55 - < 60	Above Average
6	C	5.00 - < 5.50	50 - < 55	Average
7	P	4.00 - < 5.00	40 - < 50	Pass
8	F	Below 4	Below 40	Fail
9	AB	0	-	Absent

Table 5: Grade Conversion Table (Practical)

SN	Letter Grade	Grade Point	Mark Range	Performance
1	O	9.00 - 10.00	90 - 100	Outstanding
2	A+	8.00 - < 9.00	80 - < 90	Excellent
3	A	7.00 - < 8.00	70 - < 80	Very Good
4	B+	6.00 - < 7.00	60 - < 70	Good
5	B	5.50 - < 6.00	55 - < 60	Above Average
6	P	5.00 - < 5.50	50 - < 55	Pass
7	F	Below 5	Below 50	Fail
8	AB	0	-	Absent

Computation of SGPA & CGPA:

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

i. The SGPA is the ratio of 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

$$SGPA\ (S_i) = \Sigma(C_i \times G_i) / \Sigma C_i$$

where C_i is the number of credits of the ith course and G_i is the grade point scored by the student in the ith course.

ii. The 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.

$$CGPA = \Sigma(C_i \times S_i) / \Sigma\ C_i$$

where S_i is the SGPA of the ith semester and C_i is the total number of credits in that semester.

iii. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

iv. CGPA to Percentage (%) conversion formula:

$$Percentage\ (\%) = (CGPA) * 10$$

Note: Illustration for Computation of SGPA & CGPA is given on last page

12. General Guidelines:

a. Students opting Major in the subjects Computer Application, Computer Science, Information Technology and Data Science will not be eligible to take Minor Courses offered by any of these four Major subjects. For Example, a student is opting Computer Application as Major, will not be eligible to take the Minor courses from the Minor baskets of Computer Science, Information Technology and Data Science subjects.

b. A student will be eligible to the fourth year of four year with Research Degree only when she/he scores minimum 7.5 CGPA or 75% in three-year degree.

c. For non-credit courses 'Satisfactory' or 'Unsatisfactory' shall be indicated instead of the letter grade and this will not be counted for the computation of SGPA/CGPA.

d. The baskets of Elective & Vocational Skill Courses are related to the Major, are given at the end of scheme.

e. The baskets of Open Elective Courses, Skill Enhancement Courses, Minor Courses and Co-curricular Courses being common will be available at the end (after the scheme of all Major subjects) in the form of Annexures.

f. SEE (Semester End Examination) for Theory as well as Practical examinations as mentioned in the scheme shall be conducted by the University for all EVEN semesters and by colleges on behalf of the University for all ODD Semesters.

g. In case, a student is opting out any of the course (subject to conditions of this scheme) and bringing credits from any other institutes/online courses outside the scheme, the marks/grades obtained by student shall be certified by the Principal and be submitted to the university as CIE (Continuous Internal Examination) marks.

13. Assessment

- The final total assessment of examinees is made in terms of Continuous Internal Assessment (CIE) and Session End Examination (SEE) for each course/subject taken together.
- For each course mentioned in Annexures – II, III, IV and V, the examination shall be conducted at college level (Odd semesters examinations) and RTM Nagpur University level (Even semester examinations)
- For each course mentioned in annexure - VI, the examination shall be conducted at the college level according to the evaluation system prescribed in annexure – VI.

Table 6: CIE Assessment Plan

1a	Attendance of the student during a particular semester	05 Marks
1b	An assignment (min. two) based on curriculum to be assessed by the teacher concerned	05 Marks
1c	Subject wise class test (min. two) or activities conducted by the teacher concerned with proper rubrics.	10 Marks
	Continuous Internal Evaluation (CIE) marks/course	**20**

- In case of Courses having more than 20 marks for CIE, a scheme of evaluation is appended with the detailed syllabus of the course.
- Expected classroom activities shall consist of the following: (a) Group Discussion (b) Seminars (c) Power Point Presentations (d) Elocution (e) Debate (f) Role Play (g) Case Studies (h) Educational Games. The teacher is expected to undertake a minimum of four of the aforesaid activity.
- The CIE marks will be communicated to the University at the end of each semester, but before the semester end examinations / as instructed by the university. These marks will be considered for the declaration of the results.
- The record of internal marks, evaluation & results should be maintained for a min. period of three year by the respective institute/college for verification by the competent authority.

14. Standard of Passing

The scope of the course, percentage of passing in Theory and Project and Internal Assessment will be governed as per following rules:

(i) In order to pass the Bachelor of Science (B.Sc.) 1st, 2nd, 3rd, 4th, 5th, 6th, 7th and 8th Semester Examinations, an examinee shall obtain not less than 40 % (Grade 4) marks in each theory course/paper, taking CIE & SEE together. Whereas, for practical/performance-based examination an examinee shall obtain not less than 50 % (Grade 5) marks in each practical, taking CIE & SEE together.

(ii) An examinee who is unsuccessful at the examination shall be eligible for admission to the subsequent examinations on payment of a fee prescribed for the examination together with the conditions of the ordinance in force from time to time.

15. Abbreviations Used:

CIE: Continuous Internal Evaluation   SEE: Semester End Examination

OE: Generic/Open Electives, VSEC: Vocational Skills & Skill Enhancement Courses, VSC: Vocational Skill Courses, SEC: Skill Enhancement Courses, AEC: Ability Enhancement Courses, IKS: Indian Knowledge Systems, VEC: Value Education Courses, OJT: On Job Training (Internship/Apprenticeship), FP: Field Project, CEP: Community Engagement & Service, CC: Co-curricular Courses, RM: Research Methodology, RP: Research Project

16. Provision for Transfer of Credits

The B.Sc. program offered under this direction provides enhanced academic flexibility to students in terms of selecting the courses they want to learn. A student can opt for any course from any statutory/recognized University or a MOOC from SWAYAM/NPTEL in lieu of a course mentioned in this scheme of examination as 'Open Elective', 'Vocational Skill Course' and 'Skill Enhancement Course'. The mechanism for transfer of credits earned through these courses to be adhered is mentioned here:

1. Every student is mandatorily required to create an ID on Academic Bank of Credits (ABC) and shall submits her/his ID to the college.
2. Any Course mentioned in this scheme of examination under 'Open Elective', 'Vocational Skill Course', and 'Skill Enhancement Course' may be opted by a student for taking a MOOC from SWAYAM/NPTEL learning platform.
3. A student cannot opt any other course than the courses under course category mentioned in point no. 2 mentioned above.
4. If a student is willing to opt any such course, he/she will have to mention this while submitting the examination form to the University for respective semester.
5. A certificate of completion of such an ODL/Online course shall be submitted by the student to the University through college before end term evaluation.
6. Such a certificate shall mandatorily have the number of credits, duration of the course and grades/marks obtained by the student and shall preferably have a QR code for verification.
7. The college shall submit the grades and marks obtained by the student to the University along with CIE marks for the concerned examination.
8. If a student has opted for an ODL/Online course in a particular semester and failed to submit the certificate within prescribed time, the student will be marked as 'Absent' for a particular course in that examination. Such a student will be required to fill in the examination form for the next attempt and submit the passing certificate in order to get his/her corrected result.
9. A separate guideline 'Transfer of Credits' issued by the University will be applicable to the students of B. Sc. Program from the date of its issuance.

Annexure – I: Credit Structure given by Govt. of Maharashtra as per GR dated 20/04/2023
Annexure – II: Scheme of teaching & examination of all Major programs
Annexure – III: Basket of Minor Courses of all programs
Annexure – IV: Basket of Open Electives (OE)
Annexure – V: Basket of Skill Enhancement Courses (SEC)
Annexure – VI: Basket of Co-curricular courses (CC)

NOTE: This scheme of teaching and examination for Bachelor of Science program shall be effective from the academic session 2023-24 and a comprehensive direction for other regulations in this connection shall be soon issued by the University.