SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE

Official Publication of Sant Gadge Baba Amravati University

PART- ONE

Thursday, the 23rd January, 2025

DIRECTION

No. : 04/2025. Date :- 23/01/2025

Subject : Examinations leading to the Degree of Bachelor of Science (B.Sc.) Data Science and Analytics Three years – Six Semester Under Graduate Degree Course) under Choice Based Credit System Direction, 2025.

Whereas, the Ordinance No. 143 and the Direction No. 58/2024 dated 22/08/2024with respect to an examination leading to the Degree of Bachelor of Science and B.Sc. (Data Science and Analytics) respectively are in existence in the University,

AND

Whereas, Maharashtra Public University Act, 2016 under Section 5(15) has prescribe provision for Diploma/Certificate,

AND

Whereas, Maharashtra Public University Act, 2016, under Section 5(16) has been incorporated the Choice Based Credit System,

AND

Whereas, Maharashtra Public University Act, 2016, under Section 5(20) has institute the Post-Graduate Diploma and its conferment under Section 5(22) ,

AND

Whereas, By taking into consideration exigency regarding preparation of syllabi and Scheme of Teaching, Learning, Examination and Evaluation, the joint Committee of Board of Studies in Computer Science (Computer Application and Computer Science (Computer Software), Computer Science and Engineering and Information Technology,

AND

Whereas, meetings of the Joint Committee was held on 01/03/2024 and 05/03/2024 for finalizing the Scheme of Teaching, Learning, Examination and Evaluation of the said programme and resolved unanimously that, the Baord of Study in Computer Science (Computer Application and Computer Science (Computer Software) will prepare the Syllabi,

AND

Whereas, the Board of Study in Computer Science (Computer Application and Computer Science (Computer Software) in its meeting dated 04/05/2024 has resolved to institute the said Degree as per Section 33(f) and 31(s) of Maharashtra Public Universities Act, 2016,

AND

Whereas, the Management Council vide its Item No. 117 dated 14/06/2024 has given approval for the institution of said Degree,

AND

Whereas, the Board of Study in Computer Science (including Computer Application and Computer Science) (Computer Software) has prepared the Draft Syllabi and Teaching, Learning, Examination and Evaluation Scheme of the said programme and recommend the same to the Faculty of Science and Technology vide Item No. 40 and 41,

AND

Whereas, the Faculty of Science and Technology in its meeting dated 09/07/2024 has approved the recommendation of the Board of Study in Computer Science (including Computer Application and Computer Science) (Computer Software) and recommend it to the Academic Council,

AND

Whereas, Hon'ble Vice-Chancellor has approved the recommendation of the Faculty of Science and Technology pertaining to the Item No. 40 and 41 under sub section (7) of Section 12 on behalf of the Academic Council on 12/07/2024,

AND

Whereas, the said programme is to be implemented from the Academic Session 2023-2024 and the Choice Based Credit System has been implemented from the Academic Session 2022-2023 to all the U.G.C. approved under Graduate and Post Graduate Courses and hence this programme also is to be governed by this system,

AND

Whereas, Maharashtra Public Universities Act, 2016 under section 33(c) provides for Choice Based Credit System for all certificates, diplomas, Degrees, post-graduate programmes and other academic distinctions,

AND

Whereas, Maharashtra Public Universities Act, 2016 under section 33(v) states that the Academic Council has to create policy, procedure and practice for Choice Based Credit System for all Academic programmes,

AND

Whereas, the Scheme of Teaching Learning, Examination and Evaluation and the Syllabi of Semester III and IV is approved under Section 12(7) of Maharashtra Public University Act, 2016 by Hon'ble Vice-Chancellor on 19/12/2024 on behalf, faculty of Academic Council.

Whereas, the Scheme of Teaching, Learning, Examination and Evaluation of Semester I to VI of the programme of B.Sc. (Data Science and Analytics) are to be regulated by issuing an Ordinance,

AND

Whereas making an Ordinance is a time consuming process.

Now, therefore I, Dr. Milind Barhate, Vice-Chancellor, Sant Gadge Baba Amravati University, Amravati in exercise of powers conferred upon me under Sub-section (8) of Section 12 of the Maharashtra Public Universities Act, 2016 do hereby direct as under :-

1. (i)This Direction may be called, "Examinations leading to the Degree of Bachelor of Science (B.Sc.) (Data Science and Analytics) Three years – Six Semester Under Graduate Degree Course) under Choice Based Credit System Direction, 2025.
   ii)The Degree of Bachelor of Science (B.Sc.) (Data Science and Analytics) shall belong to the Faculty of Science and Technology.
2. This Direction shall come into force from the Academic Session as follows :-
   i) Semester I and II – from the Academic Session 2023-2024.
   ii) Semester III and IV – from the Academic Session 2024-2025.
   iii) Semester V and VI – from the Academic Session 2025-2026.
3. The provisions of directions, eligibility criteria and other details are as follows and the Scheme of Teaching, Learning, Examination and Evaluation of Semester – I to IV are appended herewith vide Annexure A1 to A4.

Common Provisions

4. In this Direction unless context otherwise requires –

Definitions:

Choice Based Credit System (CBCS):-Choice Based Credit System means the curricular system that offers multiple Inter-disciplinary choices for students to select from the courses (core elective or minor or soft skill coursers) to accumulate credits;

Any other word and expression used herein and not defined but defined in *pari materia* such as the Maharashtra Public Universities Act, 2016, Directions and UGC regulations shall have the same meaning as assigned to them in the said enactments.

5. As per the scheme of teaching, learning, examination and evaluation, theory/practical examinations of Semester-I, II, III, IV, V & VI shall be conducted by the University (except for, SEM, GOEC, Third Semester Environmental Science & ancillary credit courses) at the end of each semester.

The theory/practical examinations of all the Semesters shall be held as per the following schedule:-

Table 1

Sr. No.	Name of the Examination	Main Examination	Supplementary Examination
1	Semester-I , III & V	Winter	Summer
2	Semester-II, IV & VI	Summer	Winter

6. The practical examination of all semesters shall be conducted by the University as prescribed. Practical examination of all the add-on papers of all semesters will be conducted by the College/Institution/University Department.

7. The examinations specified in Para 26 shall be held twice in a year at such places and on such dates as may be prescribed by the University.

8. An applicant to an examination specified in Para 26 shall pursue a regular course of study in courses prescribed for the examination concerned for not less than one semester in a particular semester in a College/Institute/University Department.

   Provided that the student shall be eligible to appear for examination if,

   a. he/she satisfies the conditions in the table and the provisions there under.
   b. he/she complies with the provisions of the Ordinance pertaining to the Examination in general from time to time.
   c. he/she has prosecuted a regular course of study in a University Department/College affiliated to the University.
   d. he/she has in the opinion of the Principal shown satisfactory progress in his/her studies.

9. Without prejudice to the provisions of Ordinance No.6 shall be applicable in *mutatis-mutandis* to every collegiate/non-collegiate student.

10. The fees for each theory examination and practical examination conducted by the University shall be as prescribed by the University, from time to time.

(A)Ability Enhancement Course :- (AEC)

1) Languages (Communication Skills) -There shall be a compulsory course of Communication Skills in English and Second Language for all students in Semester I and II as specified in the scheme of Teaching Learning Evaluation and Examination of various programmes .

2) Environment Studies: There shall be a Compulsory course titled **Environment Studies** for Semester-III and Semester-IV for all the students.

- There shall be two periods /week for this subject. There will be internal evaluation on the basis of any one or more techniques such as survey report, visit report, assignments, seminar presentations, test, open book test etc. during third semester and student will earn 2 Credits as other credit courses (as shown in Table A) for studying this subject in third semester. The college/university department shall send the credits earned by the student before start of third semester examinations to the University. It will be reflected in 3rd semester credit grade report.
- The Examination of this subject shall be conducted at the end of IV Semester. There shall be a Theory examination of 70 marks and Project Report/ Internal Work/ Survey shall be of 30 marks. The total marks for this subject shall be 100. The students will earn 2 exam credits which will be reflected in fourth semester credit grade report.

(B) Skills Enhancement Module (SEM):-

There shall be skill enhancement module in each Course of DSC, DSE.

These skill modules shall have 20% weightage in the total curriculum of every subject/paper/course for every semester except GOEC and environment studies. These skill modules shall be based on Learning Outcome of the course. These modules shall be used for continuous evaluation of the students. These modules will be internally assessed flexibly on the basis of Class tests, assignments, seminar, reading material, project, survey, group discussion, Study tour, MCQ, Open Book exam (OBE), etc. Marks shall be sent in the format prescribed by the University from time to time.

(C)Generic Open Elective Course :-(GOEC) 1 & 2

There shall be a course as Generic Elective I & II for the semester I and II respectively.

There will be internal assessment examination of 50 marks each for this subject (I and II). There shall be two periods /week for this course for all the students. This course will be College Level Evaluation **Course**. The evaluation of this course shall be conducted by the college at the end of each semester and the marks, credits, grade shall be communicated to the university before the start of examination.

These courses shall be as designed by the University. These courses can also be additionally provided to the students by the college as per their distinctive specialized courses after approval from the University. Some proposed courses are as follows..

A) Gender Sensitization

B) Bharat Shodh

C) Communication Skill

D) Indian Constitution

E) Personality Development & Soft skill components etc.

F) Library and information resources

G) Universal Human Values:-Understanding Harmony

H) NCC Studies

I) Intellectual Property Rights (I.P.R.)

J) Disaster Management

K) Swachha Bharat Summer Internship Programme

L) Jeevan Koushalya Shikshan (जीवन कौशल्य शिक्षण)

M) Van, Mrud, Jal Saksharata, Vishayak Babi (वन, मृद, जल साक्षरताविषयक बाबी)

N) Bal Adhikar Sanrakshan (बाल अधिकार संरक्षण)

O) Hindi Bhasha Samvardhan (हिंदी भाषा संवर्धन)

P) Case Study

Q) Artificial Intelligence Technology

R) Block Chain

S) Bhartiya Nivadnuka Ani Matdar Jagruti Karyakram (भारतीय निवडणुका आणि मतदार जागृती कार्यक्रम)

T) Skill courses approved by Sector Skill Councils (SSC) & National Skill Development Council (NSDC) with due endorsement from the University

U) Specialized Generic (Open) Skill Courses (These courses may be designed by the College/ Institute/University Department considering the local needs. After approval from the University, these courses may be offered to the students.

Further, additional courses can be suggested by the respective Boards of Studies subject to the condition

that GOEC should not be repeated from DSC, DSE & AEC

11. Ancillary Credit Courses

Induction programme :- (Semester- I)

(A) Induction Programme shall be undertaken by the College/Institute/University Department and offered to students as prescribed by the University from time to time. This course shall be organized for I Year Semester-I Students only at the beginning of the semester. It shall be evaluated on basis of 1 credit for 30 hours of Induction programme of one week. The Credit of the Induction Programme will be reflected in the Credit Grade Report of I Semester.

(B) Internship/Apprenticeship/ Field Work/ Work Experience :- (Semester- II to V)

There shall be Internship/Apprenticeship/ Field Work/ Work Experience during vacation for duration of 120 hours available to all the students, to be completed during Semester-II to V.

This will carry 04 Credits for learning of 120 hours. It should be evaluated by mentor teacher / faculty member with the help of Work Report certified by trainer where Internship/Apprenticeship/ Field Work/ Work Experience is taken and as submitted by students. It shall be completed in vacation only. The tasks to be undertaken under this component are elaborated below and students may opt for any one of these categories. The Credits of Internship/Apprenticeship/ Field Work/ Work Experience shall be reflected in the Credit Grade Report of sixth Semester. The grade and credits obtained by the students should be communicated to the University by the College/Institution/University Department before the start of VI semester examination.

i) Internship/ Apprenticeship : Internship/ Apprenticeship preferably of 120 hours in the Academic Institutes of National Importance or Research Laboratories or Institutes or Industries or companies or firms identified by the College/ Institute/University Department. The participation shall be duly certified by identified Internship / Apprenticeship provider which is to be verified by the Principal/Director/HOD/Mentor teacher / faculty member of the College/Institute/University Department.

ii) Field Work: Students can undertake fieldwork for duration preferably of 120 hours related to their subject in a broad sense. This fieldwork shall be identified by the College/Institute/University Department and to be certified by the field work organizer and verified by Principal/Director/HOD/Mentor teacher/ faculty member of the College/Institute/University Department.

iii) Work Experience: Work experience for duration preferably of 120 hours includes students participating in the regular work of any Firm/Company/Industry/Organization/ Institute/ Local Body identified by the College/Institute/University Department related to their learning subject and verified by Principal/Director/HOD/ the mentor / concerned teacher / faculty members of the College/Institute/University Department.

(D) Open Elective Course (OEC) may be opted from Semester I to Semester VI:-

There shall be Open Elective Course for the students. This will include the following types of courses. Students can select one or more of these courses. These courses shall be of Intra-disciplinary as well as Inter-disciplinary nature. Students can earn cumulatively maximum 5 Credits in this course.

i) General Interest Course (GIC):-General Interest Courses shall be from different programmes/disciplines and the curriculum of these courses shall be as prescribed by the University. This course will be evaluated by the concerned teacher / faculty member at the college level and the Credit shall be communicated to the University before the start of VI semester examination. If the concerned subject teacher / faculty member/ mentor / guide is from the College/Institute / other than the College / Institute / University Department where the student has taken admission to pursue regular course of study, then the credit earned by the student should be submitted by the teacher / faculty member / mentor / guide through the Principal of the parent institute. In such cases, the consent from the Principal of Parent Institute and the concerned teacher/ faculty member / mentor / guide should be obtained by the student before commencement of the course. The student may opt any course of any other discipline /faculty of his/her interest as GIC. The nature of these courses shall be self study under the guidance of concerned teacher/ mentor/ faculty member/guide.

ii)Skill Course:-The students will be offered Skill Courses. The courses shall be designed by respective Boards of Studies or by concerned Sector Skill Council / National Skill Development Councils (NSDC).The Skill courses may be designed by the Colleges / Institutes/University Departments and after approval of the University it may be offered to the students. This course will be evaluated by the concerned teacher / faculty member at the college level and the credit shall be communicated to the University before the start of VI semester examination. For the skill courses opted from Sector Skill Council (SSC) or NSDC, the evaluation may be done by respective council & the credit shall be communicated to the University before the start of VI Semester examination.

iii) MOOC :-The students may opt MOOC courses identified by the teacher/mentor/faculty member and maximum 5 credits may be earned by the students after successful completion of these MOOC courses with a minimum 75 hours of course for on different online training platforms. The concerned teacher / faculty member shall act as a mentor and based on the students' performance in the course, the teacher/mentor/faculty member shall award Credits in accordance with the Marks/Grades given by SWAYAM etc. After mapping with University grading system (given separately with exam scheme), the College/Institution/University Department shall communicate them to the university before the start of VI Semester examination. College/Institute/University Department can develop MOOC related to their concerned subject and after the approval of the University, these courses may be offered to the students. These courses shall be of Intra- disciplinary as well as Inter-disciplinary nature.

(E) Extra-curricular and co-curricular activities :- (In all semesters)

The students may earn maximum cumulative 5 credits from the activities as given in Table No. 2, 3 & 4 after securing rank/ participation at College / University /State/ Zone/ National / International level events. These credits shall be transferred in option to Open Elective Course (OEC) so that these performers shall be given relaxation from undertaking this course. These credits can be earned during the entire degree course period but before the start of VI Semester examination. These credits will be reflected in the final semester Grade Report. The mentor/ concerned teacher/faculty member shall award the Credits to the student based on his/her performance and College / Institution/University Department shall communicate these to the University as given in Table No. 2, 3 and 4.

Table No. 2

Comprehensive Credit Distribution

S. N.	Activities	Credits at Levels						Grade point	Minimum passing grade
		College	University	State	Zone, if exist	National	International if exist		
1	Unnat Bharat Abhiyan[UBA]	1	2	3	4	5	6	4	P
2	Sports activities (see table no. 3)	1	1 / 2	2 / 3	3 / 4	4 / 5	5 / 6	4	P
3	Cultural activities	1	2	3	4	5	6	4	P
4	N.S.S. activities Camps	1	2	3	4	5	6	4	P
5	Academic activities like review paper presentations, Aavishkar, start-up, Hackathon, Quiz competitions, other curricular, co-curricular activities, students exchange programme etc. Research Paper published/presented	1 --	2 1	3 2	4 -	5 4	6 6	**4** **4**	**P** **p**

6	**Participation in Summer school/ Winter School / Short term course** (not less than 30 hours 1 or 2 weeks duration) (not less than 60 hours 2 or 3 weeks duration) **Scientific Surveys, Societal Surveys** **Field Visits, Study tours, Industrial Visits,**	2 Credits 4 Credits 2 Credits 1 Credit	**4**	**P**
7	NCC activities	**As given in Table-4**		

Table No. 3

Credit Distribution for Sports

Sr. No.	Particulars of Sports Status (Individual/ Team)	Credits	Credit Point	Passing Grade
1	College Level Participation	1	4	P
2	University Level Participation	1	4	P
3	University Level Rank 1, 2, 3	2	4	P
4	State Level Participation	2	4	P
5	State Level Rank 1, 2, 3	3	4	P
6	Zonal Level Participation	3	4	P
7	Zonal Level Rank 1, 2, 3	4	4	P
8	National Level Participation	4	4	P
9	National Level Rank 1, 2, 3	5	4	P
10	International Level Participation	5	4	P
11	International Level 1,2,3	6	4	P

Table No. 4

Credit Distribution for NCC activities

Sr. No.	Particulars of NCC Activities	Credits	Credit Point	Passing Grade
1	Participation in NCC activities	1	4	P
2	'B' Certificate obtained	2	4	P
3	'C' Certificate obtained	3	4	P
4	State Level Participation	4	4	P
5	National level Participation	5	4	P
6	International Level Participation	6	4	P

12. In the Scheme of Teaching, learning, Evaluation & Examination, credits are to be given with the maximum marks allotted to the Semester Examination in each paper for the theory and the practical of each of the six examinations. Also Computation of SGPA and CGPA, letter grades and grade point, equivalence of class/ division to corresponding CGPA shall be indicated as given in Appendix B.
13. The system of evaluation will be as follows:

    Theory papers, practicals and internal assessment will be evaluated in terms of marks. The marks will be added together and then converted into a grade and later a grade point average. Results will be declared for each semester and the final examination will give total grades and grade point average
14. The computation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA) of an examinee of under graduate course shall be as given in Appendix B.

15. Provisions of Ordinance No. 18/2001 in respect of an Ordinance to provide grace marks for passing in a Head of passing and Improvement of Division (Higher Class) and getting Distinction in the subject and condonation of deficiency of marks in a subject shall apply to the examination under this Direction.
16. An unsuccessful examinee at any of the above examination shall carry college assessment marks (Sessional Marks) of the theory/Practical examination to the successive attempt at the examination. The examinee however can go for his/her college assessment marks in the subject or subjects in which he/she shall be examined for total marks comprising of theory and sessional together at his/her successive attempts.
17. As per Maharashtra Public Universities Act, 2016, Section 89 Chapter VIII, the results of every examination and evaluation conducted by the University will be declared within thirty days from the last date of examination for that particular course and in any case declare the results latest within forty five days. The names of the examinees passing the examination as a whole in the minimum prescribed period and obtaining the prescribed number of places in the CGPA shall be arranged in order of merit as provided in the examination in general Ordinance No.6 provided that the merit list only be published in summer examination.
18. Subject to provisions in other Ordinances, Directions , no person shall be admitted to an examination under this Direction, if he / she has already passed the same examination of this university or an equivalent examination of any other University.
19. An examinee who has completed the term satisfactorily but fails to present himself/herself for the examination shall be eligible for readmission to the same examination, on payment of fresh fees and other fees as may be prescribed by the university from time to time.
20. A Student who could not complete a semester satisfactorily or did not keep term will be eligible for readmission to the same semester. However, readmission to the semester should be allowed only in regular session of that semester. In such case, the candidate will not be eligible to get admission in higher semester.
21. A candidate/student who has successfully completed all requisite courses approved by the university and earned minimum prescribed total credits for which he/she is admitted for the under graduate degree programme and accumulated the required credits for the program and who has put in the minimum residence time prescribed for each semester of the program shall be eligible to receive the degree.
22. Examinations will be conducted in Offline mode in accordance with Ordinance No. 9. However, under special circumstances and in specific cases, those can be conducted in Online mode on the recommendations of Board of Examination & Evaluation and approval by the Academic Council.
23. Generally and preferably College / Institute internal assessment examinations & University examinations papers should be set from the Question Bank prepared by the University.

24. Power to modify and remove difficulties :-

a) Notwithstanding anything contained in the foregoing, Hon'ble Vice-Chancellor in consultation with the Dean of the faculty shall have the power to issue directions or orders to remove any difficulty,
b) Nothing in the foregoing may be construed as limiting the power of the University to amend, modify or repeal any all of the above.

25. **CBCS Working Committee** :-

A) University Level :-

There shall be a CBCS working committee in the University comprising of the following members

1.	Vice-Chancellor	-	Chairman
2.	Pro-Vice Chancellor	-	Member
3.	Deans of all faculties	-	Members
4.	Two Experts not below the rank of Professor nominated by Hon'ble Vice-Chancellor	-	Member
5.	Concerned Head of the Department	-	Member
6.	Deputy Registrar (Academic)	-	Member-secretary

B) University Department Level :-

There shall be a CBCS working committee in each University Department comprising of the following members

1.	Head of the University Department	-	Chairman
2.	One Teacher nominated by Honorable Vice-Chancellor	-	Member

C) College Level :-

There shall be a CBCS working committee in each affiliated college comprising of the following members

1.	Principal	-	Chairman
2.	HODs of Teaching Departments of a College	-	Members
3.	IQAC Coordinator	-	Member- secretary

Powers and Duties of the CBCS Working Committee

1. Committee shall take review of the Implementation of the CBCS after completion of every Semester
2. The committee shall report to the University about difficulties faced during the implementation of the CBCS to the University.
3. The committee should also consider the grievances of the students regarding the difficulties/ disadvantages put to them if any during their studies under CBCS.
4. For college level and university level, the committee will also be a grievance redressal committee for implementation of CBCS, respectively.
5. The committee may consider any other matter in the interest of the students as far as the CBCS is concerned.

Appendix - A

Table-A
Ancillary Credit courses

Sr. No	Course/Programs	Nature	Semester	Organised by	Teaching Learning Training Period (Hours)	Evaluation Authority	Performance Evaluation Mode	Min. Pass- ing Grade/ Rank	Exam or Non-exam	Credit/s Earned
1	Induction Program	Man-datory	I	College/ Institute/ Department	30	College/ Institute/ Department	Evaluation participation		Non-exam	1
2	Internship / Apprenticeship /Field work/ Work Experience	Man-datory	II to V	Organi-sation/ Industry/ College/ Institute	120	Organi-sation/ Industry/ College/ Institute	Score-sheet of Performa-nce		Non-exam	4
3	Environmental studies	Mandatory	III	College	30	College	Survey , Project report, Test etc.	-	Non-exam	2
4	Open Elective Course GIC/Skill/ MOOC	optional	I to VI	Online/ Offline Mode/ SWAYAM/SSC/NSDC/college/institut	75	SWAYAM/ NPTEL/ College/ Institute/ SSC/NSDC	Certification from concerned Authority	P	Exam or Non Exam	5
5	Co-curricular / Extra-curricular Activities	optional	I to VI	As per Table 2, 3 & 4	Adequate as per activity	Organised as per level of activity	As per Para 8(D) Table 2, 3 and 4	Not applicable	Non-exam	5

Note :-1.Minimum 11 (Serial No. 2 and 3 mandatory) credits of the programme are mandatory to be earned by all the students from Ancillary Credit Courses as mentioned in Table A.

2. Record of student's Performance cum Evaluation (containing attendance, concept knowledge, intellectual/ decision making ability, handling skill, sense of responsibility, co-operative/leadership quality, presentation/demonstration) related to Internship /Apprenticeship/Field work/Work Experience shall be maintained by the College/Institute/University Department.

3. For allotment of Internship /Apprenticeship/Field Work/Work Experience, the College/ Institute/University Department shall follow standard operating procedures (SOP) with concerned College/Institute/University Department/Organisation/ Industry on the basis of Memorandum Of Understanding (MOU) /Letter of Intent and Joining letter. Further, for validation, progress records, Evaluation Sheet etc. shall be maintained by the College/Institute/University Department.

a. College/ Institute/University Department shall submit credit report for Ancillary Credit Courses as per Table A to the University.

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Appendix B

COMPUTATION OF SGPA AND CGPA AND AWARD OF DEGREE

1) Marks of each paper/subject shall be converted into grades as given in the table No.5.

Grades and Grade Points

TABLE – 5

Grade	Description	Range of Marks obtained out of 100 or equivalent fraction	Grade point
O	Outstanding	90-100	10
A+	Excellent	80-89	9
A	Very Good	70-79	8
B+	Good	60-69	7
B	Above average	55-59	6
C	Average	50-54	5
P	Pass	40-49	4
F	Fail	Below 40	0
Ab	Absent	Ab	0

A student obtaining Grade F or Ab shall be considered failed and will be required to reappear in the examination.

2) Based on the grade points obtained in each course /Subject/Paper Semester Grade Point Average (SGPA) and then Cumulative Grade Point Average (CGPA) are computed as follows :

i) Computation of SGPA:

Semester Grade Point Average (SGPA) is the weight age average of point obtained by a student in a semester and computed as follows.

SGPA (Si) = $\sum Ci \; x \; Gi \; / \sum Ci$

Where Ci denotes the number of credits of the i^{th} course and G_i denotes the grade points scored by a student in the i^{th} Course.

ii) Computation of CGPA :

The CGPA is computed as follows

CGPA = $\sum (Ci \; x \; Si) \; / \sum Ci$

Where Si denotes the SGPA of the i^{th} Semester and C_i denotes the total number of credits in that Semester. The SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.

3) Equivalence of the conventional division/class to the corresponding C.G.P.A. in final semester is in accordance with the following table

Equivalence of Class/Division to C.G.P.A.

Sr. No.	C.G.P.A.	Class/Division
1.	7.5 or more than 7.5	First Class with Distinction
2.	6.00 or more but less than or equal to 7.49	First Class
3.	5.50 or more but less than or equal to 5.99	Higher Second Class
4.	5.00 or more but less than or equal to 5.49	Second Class
5.	4.00 or more but less than or equal to 4.99	Pass

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GUIDELINES TO PAPER SETTERS — Appendix C

1. Medium of Instructions and for examination shall be as prescribed by the BOS.
2. For the internal assessment & University end semester theory examinations, the paper should be set preferably from the question bank prepared by the University.

The question should be based on bloom's Taxonomy levels of (a) Remembering (b) Understanding (c) Application (d) Analysis.

Remember: -

Skill Demonstrated	Question Ques / Verbs for tests
• Ability to recall of information like, facts, conventions, definitions, jargon, technical terms, classifications, categories, and criteria ability to recall methodology and procedures, abstractions, principles and theories in the field • Knowledge of dates, events, places. • Mastery of subject matter	List, define, describe, state, recite, recall, identify, show, label, tabulate, quote, name, who, when where, etc.

Understand: -

Skill Demonstrated	Question Ques / Verbs for test
• Understanding information grasp • meaning • translate knowledge into new context • interpret facts, compare, contrast order, • group, infer causes predict consequences •	Describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss.

Apply: -

Skill Demonstrated	Question Ques / Verbs for test
•• Use information use methods, concepts, laws, theories in new • situations solve problems using required skills of knowledge • Demonstrating correct usage of method or procedure	Calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify.

Analysis: -

Skill Demonstrated	Question Ques / Verbs for test
• break down a complex problem into parts. Identify the relationships and interaction • between the different parts of complex problem.	Classify, outline, break down, categorize, analyse, diagram, illustrate, infer, select.

Evaluation (Judging)Analysis: -

Skill Demonstrated	Question Ques / Verbs for test
Evaluation questions encourage students to develop opinions and make value decisions about issues based on specific criteria	. Assess, Critique, Determine, Evaluate, Judge, Justify, Measure & Recommend **Examples of questions:** • "How could you select...?" • "How could you prove...?" • "How would you prioritize...?" • "What information would you use to support...?"

Synthesis (Creating)

Skill Demonstrated	Question Ques / Verbs for test
These questions encourage students create something new by using a combination of ideas from different sources to form a new whole	. Arrange, Combine, Create, Design, Develop Formulate, Integrate & Organize **Examples of questions:** • "What could be changed to improve...?" • "How would you test...?" • "What way would you design...?" • "What outcome would you predict for...?"

The Weightage of marks should be given preferably in the range of :

(a)	Remembering	10 to 20%
(b)	Understanding	30 to 45%
(c)	Application	30 to 45%
(d)	Analysis	10 to 20%
(e)	Evaluation (Judging)	10 to 15%
(f)	Synthesis (Creating)	10 to 15%
		100 to 160%

Types of Questions: -

a) Multiple Choice Question (M.C.Q.) as an when applicable: -

1. **Relevant content:** The question should be based on the relevant and important content.
2. **Application of knowledge, not only theory:** The question tests the application of knowledge, does not only test how the candidate recalls isolated theoretical facts.
3. **Focused questions and homogeneous answers:** The question focuses on one relevant aspect of the topic, all proposed answers belong to the same content dimension (i.e., diagnosis, or causes, or managements decisions etc.)
4. **Clear and unambiguous answer:** The best answer clearly stands out. Avoid "correct" answers with existing controversial doctrines.
5. **Appropriate level of difficulty (50% -90% correct answers):**

   Too difficult - even the best candidates need to guess
   Too easy - weak candidates get a "present"
6. **Unambiguous, concise and simple phrasing:** Avoid trick questions, double negatives.

   Use only common abbreviations, short sentences etc.
   Avoid imprecise qualifications (often, usually etc.
7. **Avoid clues:**

   Clues can help candidates guess the correct answer. Examples are:

- One answer is much more detailed than the others
- Only one answer follows grammatically from the stem •Non logical order of the answers

General strategies

- **Test comprehension and critical thinking, not just recall**
  Ask MCQ so as to interpret facts, evaluate situations, explain cause and effect, make inferences, and predict results.
- **Use simple sentence structure and precise wording**
  Write test questions in a simple structure that is easy to understand. And try to be as accurate as possible in your word choices. Words can have many meanings depending on colloquial usage and context.
- **Use familiar language.**
  The question should use the same terminology that was used in the course. Avoid using unfamiliar expressions or foreign language terms, unless measuring knowledge of such language is one of the goals of the question. Students are likely to dismiss distracters with unfamiliar terms as incorrect.
- **Place most of the words in the question stem**
  While using a question stem, rather than an entire question, ensure that most of the words are in the stem. This way, the answer options can be short, making them less confusing and more legible.
- **Avoid giving verbal association clues from the stem in the key.**
  If the key uses words that are very similar to words found in the stem, students are more likely to pick it as the correct answer.
- **Avoid trick questions**
  Questions should be designed so that students who know the material can find the correct answer. Questions designed to lead students to an incorrect answer, through misleading phrasing or by emphasizing an otherwise unimportant detail of the solution, violate this principle.
- **Avoid negative wording**
  Students often fail to observe negative wording and it can confuse them. As a result, students who are familiar with the material often make mistakes on negatively worded questions. In general, avoid having any negatives in the stem or the options. In the rare cases where you use negatives be sure to emphasize the key words by putting them in upper case, and bolding or underlining them.
- **Avoid double negatives**
  Don't use combinations of the words like not, no, nor, the un prefix, etc. in the same question.

- **Make the choices grammatically consistent with the stem.**
  Read the stem and each of the choices aloud to make sure that they are grammatically correct.
- **As far as possible, keep all answer choices of the same length.**
  This can be difficult to achieve, but expert test-takers can use answer length as a hint to the correct answer. Often the longest answer is the correct one. When one can't get all four answers to the same length, two short and two long can be used.
- **Place the choices in some meaningful order.**
  When possible, place the choices in numerical, chronological or conceptual order. A better structured question is easier to read and respond.
- **Randomly distribute the correct response.**
- The exam should have roughly the same number of correct answers that are a's, b's, c's and d's (assuming there are four choices per question)
- **Avoid using "all of the above"**
  If "all of the above " is an option and students know two of the options are correct, the answer must be "all of the above". If they know one is incorrect, the answer must not be "all of the above". A student may also read the first option, determine that it is correct, and be misled into choosing it without reading all of the options.
- **Avoid using "none of the above"**
  The option "none of the above" does not test whether the student knows the correct answer, but only that he/she knows the distracters aren't correct.
- **Refrain from using words such as always, never, all, or none.**
  Most students know that few things are universally true or false, so distracters with these words in them can often be easily dismissed.
- **Avoid overlapping choices**
  Make the alternatives mutually exclusive. It should never be the case that if one of the distracters is true, another distractor must be true as well.
- **Avoid questions of the form "Which of the following statements is correct?"**
  There is no clear question being asked, and the choices are often heterogeneous. Such questions are better presented in the form of True/ False questions.
- **Instruct students to select the "best answer" rather than the "correct answer"**
  By doing this, you acknowledge the fact that the distracters may have an element of truth to them and discourage arguments from students who may argue that their answer is correct as well.

Designing stems

- **Express the full problem in the stem.**

When creating the item, ask yourself if the students would be able to answer the question without looking at the options. This makes the purpose of the question clear.

- **Put all relevant material in the stem.**
  Do not repeat in each of the alternatives information that can be included in the stem. This makes options easier to read and understand, and makes it easier for students to answer the question quickly.
- **Eliminate excessive wording and irrelevant information from the stem.**
  Irrelevant information in the stem confuses students and leads them to waste time.

Designing alternatives

- **Limit the number of alternatives.**
  Use between three and five alternatives per question. Research shows that three choice items are about as effective as four or five-choice items, mainly because it is difficult to come up with plausible distracters.
- **Make sure there is only one best answer.**
  Avoid having two or more options that are correct, but where one is "more" correct than the others. The distracters should be incorrect answers to the question posed in the stem.
  Make the distracters appealing and plausible.

  All of the wrong answer choices should be completely reasonable. If the distracters are farfetched, students will too easily locate the correct answer, even if they have little knowledge. When testing for recognition of key terms and ideas keep the distractors similar in length and type of language as the correct solution. When testing conceptual understanding, distractors should represent common mistakes made by students.

b) Short Answer (SA) descriptive .....marks as applicable)

A short answer question as the term indicate is one to which a brief answer can be given. When the students are required to give a brief and precisely defined response, the suitable type is the restricted response questions. The specific form of the answer should also be indicated, e.g., List, Define, Give reason etc.

While framing a question requiring short answer it should be ensured that:

1. The statement constituting the question is simple, clear and unambiguous.
2. The scope of the answer is limited.
3. The direction given in the question is clear.
4. The question constitutes a valid testing situation for the ability under consideration
5. The question is likely to be interpreted in the same way by teachers/ students/ examiners.
6. The question does not require further restructuring.

c) Long Answers (LA) ……marks as applicable)

Long Answer (LA)

As the term indicates a long answer question is the one that needs a comprehensive explanation incorporating different ideas. The question should require the student to organise his ideas, choose the form of his answer and answer in his own words.

While framing a question requiring a long answer it should be ensured that:

1. The situation presented in the question is not new to most of the students.
2. The student will not be able to produce in the full, memorized answer.
3. The question involves the use of judgment on the part of student.
4. The answer can be completed within the limited time given.
5. The length and the scope of the answer is specified.

***

Appendix D

Instruction to the BOS

Curriculum / syllabus shall be modified/prepare for the courses/subjects prescribed as in CBCS direction.

The Programme Educational Objectives (PEOs), Program Outcomes (POs), Programme Specific Outcomes (PSOs) should be well defined.

For each course of the Program, learning objectives and learning outcomes: Course Outcomes (COs) should be defined carefully in accordance with Bloom's Taxonomy.

A comprehensive note on employability potential of the program should be added separately at the Preface/Preamble of the Program Curriculum

Bloom's hierarchy takes students through a process of synthesizing information that allows them to think critically. Students start with a piece of information and are motivated to ask questions and seek out answers.

Not only does Bloom's Taxonomy help teachers understand the process of learning, but it also provides more concrete guidance on how to create effective learning objectives.

Table 6 Bloom's Taxonomy

Bloom's Level	Key Verbs (keywords)	Example Learning Objective
Create	design, formulate, build, invent, create, compose, generate, derive, modify, develop.	*By the end of this lesson, the student will be able to design an original homework problem dealing with the principle of conservation of energy.*
Evaluate	choose, support, relate, determine, defend, judge, grade, compare, contrast, argue, justify, support, convince, select, evaluate.	By the end of this lesson, the student will be able to determine whether using conservation of energy or conservation of momentum would be more appropriate for solving a dynamics problem.
Analyze	classify, break down, categorize, analyze, diagram, illustrate, criticize, simplify, associate.	*By the end of this lesson, the student will be able to* differentiate between potential and kinetic energy.
Apply	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, perform, present.	*By the end of this lesson, the student will be able to* calculate the kinetic energy of a projectile.
Understand	describe, explain, paraphrase, restate, give original examples of, summarize, contrast, interpret, discuss.	*By the end of this lesson, the student will be able to* describe Newton's three laws of motion to in her/his own words
Remember	list, recite, outline, define, name, match, quote, recall, identify, label, recognize.	*By the end of this lesson, the student will be able to* recite Newton's three laws of motion.

This also reminds teachers that learning is an active process, stressing the importance of including measurable verbs in the objectives. And the clear structure of the taxonomy itself emphasizes the importance of keeping learning objectives clear and concise as opposed to vague and abstract.

OBE (Outcome Based Education) starts with a clear statement on what Knowledge, Skills and Attitudes, the Student will be able to demonstrate as having acquired on successful completion of a program of study. These should be clearly measurable.

Program Educational Objectives (PEOs):

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

GRADUATE ATTRIBUTES

Knowledge :Graduates have comprehensive knowledge and understanding of their subject area, the ability to engage with different traditions of thought, and the ability to apply their knowledge in practice including in multi-disciplinary or multi-professional contexts.

Critical and Analytical Thinking :Graduates are effective problems-solvers, able to apply critical, creative and evidence-based thinking to conceive innovative responses to future challenges.

Communication : Graduates convey ideas and information effectively to a range of audiences for a variety of purposes and contribute in a positive and collaborative manner to achieving common goals.

Team Work, Leadership : Graduates engage in professional behaviour and have the potential to be entrepreneurial and take leadership roles in their chosen occupations or careers and communities.

Ethics : Graduates are responsible and effective global citizens whose personal values and practices are consistent with their roles as responsible members of society.

Digital Competencies :Graduates are well prepared for living, learning and working in a digital society.

Life Long Learning: Graduates are self-aware and reflective; they are flexible and resilient and have the capacity to accept and give constructive feedback; they act with integrity and take responsibility for their actions.

Program Outcomes (POs):

Program outcomes: Describe what students are expected to know and would be able to do by the time of graduation. These relate to the skills, knowledge, and behaviors that students acquire as they progress through the program.

Program outcomes basically describe knowledge, skills and behavior of students as they progress through the program as well as by the time of graduation and must reflect all GAs (Graduate Attributes).

Program Specific Outcomes (PSOs):

Program Specific Outcomes are statements that describe what the graduates of a specific program should be able to do.

Course Outcomes (COs):

Statements indicating what a student can do after the successful completion of a course. Every Course leads to some Course Outcomes. The CO statements are defined by considering the course content covered in each module of a course. For every course there may be 5 or 6 COs. The keywords used to define COs are based on Bloom's Taxonomy.

Typically 4-6 CO s should be identified /Course. COs are major domain specific outcomes written using action verbs which are specific, measurable and can be demonstrated by students on completion of the course. Course Outcomes should aim to develop higher order skills in each Domain of Learning. Evaluation, Synthesis, Analysis are typical examples in Cognitive Domain. Outcomes which can be mastered in a significantly lower no. of lessons are likely to be too trivial and more suitable for Unit or Module Outcomes. Attainment of each CO should lead to attainment of one or more PO s.

For the internal assessment & University end semester theory examinations, the paper should be set preferably from question bank. Hence question bank should be prepared. Also Board of Studies shall prepare a question bank of MCQs from units of all subjects.

Curriculum/syllabus of concern Generic Open Elective Courses (GOECs), General Interest Courses (GICs), skill courses and Modules shall be prepared by the respective BOS as prescribed in CBCS scheme.

Each BOS shall design SEM for each offered course/subject/paper except for GOEC and Environmental Science.

***

APPENDIX - E

Glossary of Terms

A. Academic Year : Academic year means academic activities of the University in a year (odd semester followed by even semester) as notified in the Academic Calendar.

B. **Semester :** It is a period of study comprising of 15 to 18 weeks of academic work equivalent to normally 90 teaching days. The odd semester may be scheduled from July to December and even semester from January to June.

C. **Programme / Programme of study** : Programme / Programme of study means a higher education programme pursued for a degree specified by the UGC under Section 22 (3) of the UGC Act;

D. Course/Subject/Paper :-Course means one of the specified units which go to comprise a programme of study. It is referred to, as a 'paper' or 'subject' which is a component of a programme. All courses need not carry the same weight. A course may include but may not be limited to lectures / tutorials / laboratory work / field work /internship/ outreach activities / project work / vocational training / viva / seminars / term papers / assignments / presentations / dissertation/self-study etc. or a combination of these. Courses in a programme may include Core, Elective and Foundation.

i) Ability Enhancement Courses (AEC):-The Ability Enhancement Courses may be of two kinds: Ability Enhancement Compulsory Courses (AECC) and Skill Enhancement Courses (SEC). "AECC" courses are the courses based upon the content that leads to Knowledge enhancement. "SEC" courses are value-based and/or skill-based and are aimed at providing hands-on-training, competencies, skills, etc.

a. Communication Skills : Abilities used when giving and receiving different kinds of information. It involves verbal, non verbal, written, visual, listening, empathizing etc. and other means of expression.

b. Environmental Studies : Deals with every issue that affects an organism. It is essentially a multidisciplinary approach that brings about an appreciation of our natural world and human impacts on its integrity. It is an applied science as it seeks practical answers to making human civilization sustainable on the earth's finite resources. Its components include Biology, Geology, Chemistry, Physics, Engineering, Sociology, Health, Anthropology, Economics, Statistics, Computers and Philosophy.

ii) Discipline Specific Core (DSC) Course: There may be a Core Course in every semester. This is the course which is to be compulsorily studied by a student as a core requirement to complete the requirement of a programme in a said discipline of study.

iii) Elective Course: A course which can be chosen from pool of courses / papers and which may be very specific or specialized or advanced or supportive to the discipline / subject of study or which provides an extended scope or which enables an exposure to some other discipline / subject / domain or nurtures the students proficiency / skill is called an elective course.

An elective may be "Generic Elective" focusing on those courses which add generic proficiency to the students. An elective may be "Discipline centric" or may be chosen from an unrelated discipline. It may be called an "Open Elective."

iv) Discipline Specific Elective (DSE) Course: Elective courses offered under the main discipline/subject of study is referred to as Discipline Specific Elective. The College/ University Department/Institute may also offer discipline related Elective courses of Inter-disciplinary nature (to be offered by main discipline/subject of study). It is the specialized / emerging study area allied to the core subject.

v) Generic Elective Course (GEC) : An elective course chosen from an unrelated discipline/subject, with an intention to seek exposure beyond discipline/s of choice is called a Generic Elective. The purpose of this category of courses is to offer the students the option to explore disciplines of interest beyond the choices they make in Core and Discipline Specific Elective papers.

P.S.: A core course offered in a discipline/subject may be treated as an elective by other discipline/subject and vice versa and such electives may also be referred to as Generic Elective.

vi) Open Elective Course (OEC) : The group of different choice based courses comprising of general interest courses related to discipline specific core (DSC) subjects or of interdisciplinary nature, MOOCs offered by different authorized agencies, open skill courses.

vii) Generic Open Elective course (GOEC) : The group of different important choice based courses (may be of interdisciplinary nature) related to the fundamental growth of students as a responsible citizen of India.

viii) General Interest Course (GIC) : General interest course is a course taken out of interest rather than for academic reasons. It may be chosen from different subjects / courses from the discipline or inter-discipline and the curriculum of these courses shall be designed by respective College/Institute/University Department and approved by the respective BOS. The nature of these courses shall be of self-study nature under the guidance of teacher / mentor / faculty member concerned. The evaluation of these courses shall be done by teacher / mentor / faculty member concerned (may be in the form of assignment / written test / project etc.) and marks and grades shall be communicated to the University.

ix) **MOOCs:** Massive Open Online Courses (MOOCs) are such online courses which are developed as per the pedagogy and following the four quadrant approach consisting of video, text, self assessment and learn more.

x) **Skill Enhancement Course (SEC) :**This course may be chosen from a pool of courses designed to provide value-based and/or skill-based knowledge and should contain both theory and lab/hands-on training/field work to increase employability of the students.

xi) **Project:** A course designed to acquire special/advanced knowledge, such as supplement study/support study to a project work, and a student studies such a course on his own with an advisory support by a teacher/faculty member is called dissertation/project.

xii) **Research Project/Dissertation:** A course designed to acquire special / advanced knowledge/Research with an advisory support / guidance by a teacher / faculty member.

xiii) **Foundation Course:** The Foundation Courses may be of two kinds: Compulsory Foundation and Elective foundation. "Compulsory Foundation" courses are the courses based upon the content that leads to Knowledge enhancement. Elective Foundation courses are value-based and are aimed at man-making education.

xiv) **Skill Enhancement Module (SEM) :** The module is based on the application of the subjects discipline specific core (DSC), discipline specific elective (DSE), communication skills in English subjects to provide skills to the students for developing their employment / self-employment / entrepreneurship capabilities.

E. **Examinational Credits:** Examinational Credits allows a student to receive credit for learning by demonstrating mastery of course outcomes skills and knowledge by taking the course exam(s). Some exams may require performance of a skill set, while other exams may be written tests covering course content.

F. **Ancillary Credits :** credits earned by the students by participating in Sports / Extra-curricular Activities / Unnat Bharat Abhiyan / Internship / Field work / Work experience / Avishkar / Induction programme / NSS / NCC/ Cultural Activities / Inter University Academic Activities and other activities prescribed by the University from time to time but other than core or elective courses.

G. **Internship / Field Work / Work Experience :** The prescribed hours of practical / on field training related to any Discipline Specific Core (DSC)course with any Institute / Firm / Industry / Establishment as identified by College/Institute/University Department.

H. **Induction Programme:** A programme of prescribed duration specially designed for the first year / first semester students to make the students feel comfortable in their new environment, set a healthy daily routine, create bonding in the batch as well as between faculty members, develop awareness, sensitivity, self-exploration and understanding of society at large, and nature also to inculcate in them ethos and culture of the College/Institute/University Department.

I. **Activity:**

i. **Curricular Activity :-**Activities relating to the subjects comprising a course of study in the College/Institution/University Departments

ii. **Co-curricular Activity :-** Co-curricular refers to activities, programs and learning experience that complement in some way, what students are learning in College/Institution/University Departments. These activities are connected to the academic curriculum like Extension Activities, Debates, Quiz competition, seminars etc.

iii. **Extra-curricular Activity :-**Extra-curricular takes place in addition/outside to regular curriculum including but not limited to Sports, Start-up, Hackathon, Avishkar, Students Exchange Program, Social Activities, Volunteering, NSS, NCC, Annual Gatherings, TRDEA (Teaching, Research, Development and Extension Activities etc.)

J. **Faculty member:** Faculty member means an individual qualified as per statutory Regulations, working on Full Time basis in an Institution/ University Department/College.

K. **Teacher :** Teacher means full time approved Professor, Associate Professor, Assistant Professor, Reader, Lecturer, Librarian, Principal, Director of institution, Director of Knowledge Resource Centre, Director of Centre of Lifelong Learning and Extension, Deputy and Assistant Librarian, in the University, College Librarian, Director or Instructor of physical Education in any University Department, conducted, affiliated, or autonomous college, autonomous institutions or department or recognized Institutions of the University**.**

L. **Student:** Student means an individual who is admitted and registered for an academic programme of the University or Affiliated, Conducted, Autonomous Colleges, Recognized Institutions and Departments of the University.

M. **Inter-disciplinary studies:** Inter-disciplinary studies mean the combined academic studies and research in different disciplines as prescribed.

N. **Multi-disciplinary studies:** Multi-disciplinary studies mean the combined academic studies and research in different streams of a particular discipline as prescribed.

O. **Level:** Level means Diploma, Post Diploma Certificate, Under Graduate Degree, Post Graduate Diploma and Post Graduate Degree Programmes.

P. **Laboratory Work (Lab):** The skill course based on the practical related to any or more Discipline Specific Core (DSC) course / Discipline Specific Elective (DSE) course as prescribed in Teaching-Learning schemes.

Q. MCQs: Multiple Choice Questions based on any / all units of a particular course of the programme.

R. **Online Learning (OL)**: Online Learning mode means a mode of providing flexible learning opportunities by overcoming separation of teacher and learner using a variety of media, including print, electronic, MOOCs in a totally online mode.

S. **MOOCs:** Massive Open Online Courses (MOOCs) are such online courses which are developed as per the pedagogy and following the four quadrant approach consisting of video, text, self assessment and learn more.

T. **SWAYAM:** SWAYAM is the indigenous platform of the MHRD, GOI providing an integrated portal and platform for hosting Massive Open Online Courses (MOOCS) developed under the aegis of NME-ICT. Government of India adopted the MOOCs concept to supplement the formal education system in the country from high school to higher education, named aptly as the "Study Webs of Active-Learning for Young Aspiring Minds" (SWAYAM). It hosts various courses based on curriculum, continuing education and skill.

U. **Credit :** Credit means the standard methodology of calculating one hour of theory, one hour of tutorial, two hours of laboratory work / practical work / field work per week for a duration of a semester resulting in the award of one credit which is awarded by College/Institute/University Department. Credit for internship shall be one credit per week of internship, subject to a maximum of six credits.

V. **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.

W. **Grade Point:** It is a numerical weight allotted to each letter grade on a 10-point scale.

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

Y. **Credit Grade Report:** It is a report showing cumulative performance of a student in a given semester of the academic program. It shall display maximum, minimum and total marks of a course as per the scheme of teaching, learning and examination, evaluation as well as it will show the obtained : marks, credits, grade points, letter grade, SGPA, CGPA, percentage of total marks, class/division, incentive marks, remarks, result, exemptions and also other requisite information as prescribed.

Z. **Semester Grade Point Average (SGPA):** It is a measure of performance of 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.

AA. **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.

BB. Transcript :-Transcript will display the program details like, all Semesters SGPA with details, Non-Examinational Credits with details as well as CGPA and Class/Division.

Programme Specific Provisions

26. The following shall be the examination leading to the Degree of Bachelor of Science (Data Science and Analytics)in the faculty of Science & Technology

(1) The B.Sc.(Data Science and Analytics) Part-I, Semester-I Examination;
(2) The B.Sc.(Data Science and Analytics) Part-I, Semester-II Examination;
(3) The B.Sc.(Data Science and Analytics) Part-II, Semester-III Examination;
(4) The B.Sc.(Data Science and Analytics) Part-II, Semester-IV Examination;
(5) The B.Sc.(Data Science and Analytics) Final, Semester-V Examination; and
(6) The B.Sc.(Data Science and Analytics)Final, Semester-VI Examination.

27. Subject to his/her compliance with the provisions of this Direction and of other Ordinances enforced from time to time, an applicant–

For admission to B.Sc.(Data Science and Analytics) Part-I (Semester- I & II) programme candidate who has **-**

Passed the 12th Standard Examination of Maharashtra State Board of Secondary and Higher Secondary Education with Mathematics or +2 level Higher Secondary Vocational Certificate (H.S.V.C.) in Electronic Technology or Computer Technology or an examination equivalent thereto.

TABLE 8

Eligibility for Admission, Examination and Promotion to Higher Classes

Sr. No.	Name of the Exam. and admission to	The student should have passed the examination of	The student should have completed the following session / term satisfactorily with minimum prescribed residence time	The student shall have earned/**accumulate** minimum Credits
1.	2.	3.	4.	5.
1	B.Sc.(Data Science and Analytics) Semester-I	As mentioned in Para 27	Semester-I	--
2	B.Sc. (Data Science and Analytics) Semester-II	--	Semester-II	--
3	B.Sc. (Data Science and Analytics) Semester-III	--	Semester-III	
4	B.Sc.(Data Science and Analytics) Semester-IV	--	Semester-IV	- -
5	B.Sc.(Data Science and Analytics) Semester-V	---	Semester-V	44 Semester I and II together for all courses
6	B.Sc.(Data Science and Analytics) Semester-VI	--	Semester-VI	--

28. An examinee for the B.Sc. (Data Science and Analytics)Semester - I to VI examination shall be examined in the following subjects namely:-

A) Discipline Specific Core (DSC)

There shall be Discipline Specific core (DSC) course for Semester I to VI. Student shall be allowed to select only three core subjects as provided in the Clause 27.

B) **Discipline Specific Elective (DSE)**

There shall be Discipline Specific Elective (DSE) course in Semester VI for each subject as prescribed by the University. Student can select any one paper out of elective papers prescribed for particular core subject by the University. This will be a specialization offered to the students in the respective core subject. The nature/pattern of these papers shall be the same as other papers of DSC

29. The scope of the subjects shall be as indicated in the Syllabus.

30 (a)The student who has minimum 132 credits out of which 11 credits are as prescribed for the award of the Degree out of which 11 credits from Ancillary Credits Course as given in Table 8 of the programme at Bachelor of Science (Data Science and Analytics) Part-I (Semester-I & II) Examination, Bachelor of Science (Data Science and Analytics) Part-II(Semester-III & IV) and Bachelor of Science (Data Science and Analytics) Part III (Semester- V & VI) out of minimum credits prescribed for B. Sc.(Data Science and Analytics) Degree Examination, shall be entitled to receive a Credit Grade report signed by the Director, Examination and Evaluation.

(b) After passing the Bachelor of Science (Data Science and Analytics) Part III (Semester-VI) Final Examination and satisfying other conditions as per Ordinance No.19 and on payment of prescribed fee, the examinee will receive a Degree in the prescribed form signed by the Vice-Chancellor.

Table 8

	Credits Offered	Credits to be earned
DSC	Up to 75	121
DSE	Up to 09	
AEC	Up to 05	
Language	Up to 38.5	
Ancillary including Internship – 04 OE/MOOc -05 And C.C. -05 GOEC – 04 AEC – 02	20	04 01 04 02
Total 14	128+0.50+20	132(121+11)

Further, on request & payment of prescribed fees, the examinee shall receive a transcript signed by the Director, Examination & Evaluation. The Degree will be awarded on the basis of CGPA.

31. There shall be no classification of examinees successful at the Bachelor of Science (B.Sc.) (Data Science and Analytics) Semester-I to V Examination.

32. Successful examinees at the Bachelor of Science (B.Sc.) (Data Science and Analytics) Final, Semester-VI Examination shall be placed in Class / Division as follows :

Equivalence of Class/Division to Corresponding C.G.P.A.

Sr. No.	C.G.P.A.	Class/Division
1	7.5 or more than 7.5	First Class with Distinction
2	6.00 or more but less than or equal to 7.49	First Class
3	5.50 or more but less than or equal to 5.99	Higher Second Class
4	5.00 or more but less than or equal to 5.49	Second Class
5	4.00 or more but less than or equal to 4.99	Pass

Note :- CGPA of B.Sc.(Data Science and Analytics) students shall be computed excluding credits and grades of Language courses.

Sd/-
(Dr.Milind Barhate)
Vice-Chancellor,
Sant Gadge Baba Amravati University,
Amravati

Date : 23/01/2025

******

Sant Gadge Baba Amravati University Amravati

B.Sc. (Data Science and Analytics) Semester I

Annexure A-1

Sr. No	Type	Subject Code	Subject	Teaching and Learning Scheme				Credits	Duration of Exam Hrs	Examination and Evaluation Scheme					
				Teaching Period per week						Maximum Marks				Minimum passing Marks	
				L	T	P	Total Hrs			External		Internal	Total marks	Marks	Grade
										th	pr				
1	AEC	1DA1	English Composition and Communication	2	-	-	2	2	2	40	-	10	50	20	P
2	AEC	1DA2	Mathematical foundations for Data Science	2	-	-	2	2	2	40	-	10	50	20	P
3	Core Skill	1DA3	Basics of Data Science	3	-	-	3	3	3	80	-	20	100	40	P
4	Core Skill	1DA4	Computer Architecture	3	-	-	3	3	3	80	-	20	100	40	P
5	Core Skill	1DA5	Structured Programming	3	-	-	3	3	3	80	-	20	100	40	P
6	SEC/LAB	1DA6	Data Analysis with Excel -LAB	-	-	2	4	2	-	-	25	25	50	20	P
7	SEC/LAB	1DA7	Structured Programming-LAB	-	-	2	4	2	-	-	25	25	50	20	P
8	SEC	1DA8	Introduction to AI	3	-	-	3	3	-	80	-	20	100	40	P
9	VEC	1DA9	Data Science Ethics	2	-	-	2	2	2	College Level Exam			50	20	P
10	Self-Learning Hrs		MOOCS/SWYAM/NEPTEL/ Courses for Core skills of Data Science	-	-	-	4	-	-	-			-	-	-
11	Assessment Hrs	-	-	-	-	-	6	-	-	-			-	-	-
	TOTAL						**36**	**22**					**650**		
Semester –I Total Credit			**22**	**Total Marks**				**650**							

B.Sc. (Data Science and Analytics) Semester II

Annexure A-2.

Sr. No	Type	Subject Code	Subject	Teaching and Learning Scheme					Duration of Exam Hrs	Examination and Evaluation Scheme					
				Teaching Period per week				Credits		Maximum Marks				Minimum passing Marks	
										External		Internal	Total marks		
				L	T	P	Total Hrs			th	pr			Marks	Grade
1	AEC	2DA1	Communication Skills	2	-	-	2	2	2	40	-	10	50	20	P
2	AEC	2DA2	Statistics for data science	2	-	-	2	2	2	40	-	10	50	20	P
3	Core Skill	2DA3	Database Management System	4	-	-	4	4	3	80	-	20	100	40	P
4	Core Skill	2DA4	Data Structure and Algorithm	3	-	-	3	3	3	80	-	20	100	40	P
5	Core Skill	2DA5	Python Programming	3	-	-	3	3	3	80	-	20	100	40	P
6	SEC/LAB	2DA6	Python-LAB	-	-	2	4	2	-	-	25	25	50	20	P
7	SEC/LAB	2DA7	DBMS-LAB	-	-	2	4	2	-	-	25	25	50	20	P
8	SEC	2DA8	Data Structure-LAB	-	-	2	4	2	-	-	25	25	50	20	P
9	VEC	2DA9	Environmental Ethics	2	-	-	2	2	2	College Level Exam			50	20	P
10	Self-Learning Hrs		MOOCS/SWYAM/Edu Hub/ Courses for Core skills of Data Science	-	-	-	2	-	-	-			-	-	-
11	Assessment Hrs	-	-	-	-	-	6	-	-	-			-	-	-
	TOTAL						**36**	**22**					**600**		
	Semester-II Total Credit		**22**	**Total Marks**				**600**							

Note: Internship will be conducted after I semester till V semester in vacations for minimum 60 Hours. It's 2 credits will be reflected in final semester creditgradereport.

B.Sc. (Data Science and Analytics) Semester- III

Annexure A-3.

Sr. No	Type	Subject Code	Subject	Teaching and Learning Scheme					Duration of Exam Hrs	Examination and Evaluation Scheme					
				Teaching Period per week				Credits		Maximum Marks				Minimum passing Marks	
				L	T	P	Total Hrs			External		Internal	Total marks	Marks	Grade
										th	pr				
1	AEC	3DA1	Introduction to Natural Language Processing	3	-	-	3	3	2	40	-	10	50	20	P
2	DSE	3DA2	E1: Big Data Technology E2: Cloud Computing	4	-	-	4	4	3	80	-	20	100	40	P
3	Core Skill	3DA3	Data Analytics using R	4	-	-	4	4	3	80	-	20	100	40	P
4	Core Skill	3DA4	Business Analytics	3	-	-	3	3	3	80	-	20	100	40	P
5	SEC/LAB	3DA5	R programming – LAB	-	-	2	4	2	-	-	25	25	50	20	P
6	SEC/LAB	3DA6	Business Analytics-LAB	-	-	2	4	2	-	-	25	25	50	20	P
7	SEC/LAB	3DA7	LAB based on 3DA2	-	-	2	4	2	-	-	25	25	50	20	P
8	VEC	3DA8	Environment Studies	2	-	-	2	2	2	College Level Exam			50	20	P
9	Self-Learning Hrs		MOOCS/SWYAM/EduHub/ Courses for Core skills of Data Science	-	-	-	2	-	-	-			-	-	-
10	Assessment Hours			-	-	-	06	-	-	-			-	-	-
	TOTAL						**36**	**22**					**550**		
Sem-III Total Credit			**22**	**Total Marks**				**550**							

SANT GADGE BABA AMRAVATI UNIVERSITY GAZETTE - 2025 - PART ONE – 60

B.Sc. (Data Science and Analytics) Semester- IV

Annexure A-4.

Sr. No	Type	Subject Code	Subject	Teaching and Learning Scheme					Duration of Exam Hrs	Examination and Evaluation Scheme					
				Teaching Period per week				Credits		Maximum Marks				Minimum passing Marks	
				L	T	P	Total Hrs			External		Internal	Total marks	Marks	Grade
										th	pr				
1	AEC	4DA1	CloudServicesforIOT	3	-	-	3	3	3	80	-	20	100	40	P
2	CoreSkill	4DA2	MachineLearning	3	-	-	3	3	3	80	-	20	100	40	P
3	DSE	4DA3	E1: Computer Vision E2:ComputerNetworks	3	-	-	3	3	3	80	-	20	100	40	P
4	CoreSkill	4DA4	DataHandlingandVisualization	3	-	-	3	3	3	80	-	20	100	40	P
5	SEC/LAB	4DA5	DataHandlingandVisualization-LAB	-	-	2	4	2	-	-	25	25	50	20	P
6	SEC/LAB	4DA6	Machinelearning–LAB	-	-	2	4	2	-	-	25	25	50	20	P
7	SEC	4DA7	OperatingSystem	3	-	-	3	3	-	80	-	20	100	20	P
8	VEC	4DA8	EthicsandEtiquette ofsocial media	3	-	-	3	3	2	CollegeLevel Exam			50	20	P
9	Self-Learning Hrs		MOOCS/SWYAM/Coursera/Coursesfor Core skills of Data Science	-	-	-	4	-	-	-			-	-	-
10	AssessmentHours		-	-	-	-	06	-	-	-			-	-	-
	TOTAL						**36**	**22**					**650**		
Sem-IVTotalCredit			**22**	**TotalMarks**				**650**							