M.Sc. Part-I (Sem-I to IV)  
Prospectus No. 20171217  
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SANT GADGE BABA AMRAVATI UNIVERSITY
SPECIAL NOTE FOR INFORMATION OF THE STUDENTS

(1) Notwithstanding anything to the contrary, it is notified for general information and guidance of all concerned that a person, who has passed the qualifying examination and is eligible for admission only to the corresponding next higher examination as an ex-student or an external candidate, shall be examined in accordance with the syllabus of such next higher examination in force at the time of such examination in such subjects papers or combination of papers in which students from University Departments or Colleges are to be examined by the University.

(2) Be it known to all the students desirous to take examination/s for which this prospectus has been prescribed should, if found necessary for any other information regarding examinations etc., refer the University Ordinance Booklet the various conditions/provisions pertaining to examination as prescribed in the following Ordinances.

Ordinance No. 1 : Enrolment of Students.
Ordinance No. 2 : Admission of Students
Ordinance No. 4 : National cadet corps
Ordinance No. 6 : Examinations in General (relevent extracts)
Ordinance No. 18/2001 : 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 in all the faculties prescribed by the Statute NO.18, Ordinance 2001.

Ordinance No. 9 : Conduct of Examinations (relevent extracts)
Ordinance No. 10 : Providing for Exemptions and Compartments
Ordinance No. 19 : Admission of Candidates to Degrees.
Ordinance No. 109 : Recording of a change of name of a University student in the records of the University.

Ordinance No.19/2001 : An Ordinance for Central Assessment Programme, Scheme of Evaluation and Moderation of answerbooks and preparation of results of the examinations, conducted by the University, Ordinance 2001.

Dr. Ajay P. Deshmukh
Registrar
Sant Gadge Baba Amravati University.

PATTERN OF QUESTION PAPER ON THE UNIT SYSTEM.

The pattern of question paper as per unit system will be broadly based on the following pattern

(1) Syllabus has been divided into units equal to the number of question to be answered in the paper. On each unit there will be a question either a long answer type or a short answer type.

(2) Number of question will be in accordance with the unit prescribed in the syllabi for each paper i.e. there will be one question on each unit.

(3) For every question long answer type or short answer type there will be an alternative choice from the same unit. However, there will be no internal choice in a question.

(4) Division of marks between long answer and short answer type question will be in the ratio of 40 and 60

(5) Each short answer type question shall contain 4 to 8 short sub question with no internal choice.
Examinations leading to the Degree of Master of Science (Four Semesters Degree Course), Ordinance, 2008.

Whereas it is expedient to provide an Ordinance regarding Examinations leading to the Degree of Master of Science (Four Semesters Degree Course), in the faculty of Science. The Management Council is hereby pleased to make the following Ordinance.

1. This Ordinance may be Called, "Examinations leading to the Degree of Master of Science (Four Semesters Degree Course), Ordinance, 2008".

2. This Ordinance shall come into force w.e.f. the date of its approval by the Management Council.

3. The duration of the course shall be two academic years,
   (a) M.Sc. Course is divided into Semester-I, Semester-II, Semester-III & Semester-IV.
   (b) University shall hold examinations in Winter and in Summer every year for all semesters.
   (c) The main examination of odd semesters shall be held in Winter and the main examination of even semesters shall be held in Summer every year. The supplementary examination for odd semesters shall be held in Summer and the supplementary examination for even semesters shall be held in Winter every year.

4. The period of Academic Session/Term shall be such as may be notified by the University and the Examination shall be held at such places and on such dates as may be fixed by the Board of Examinations.

5. Subject to their compliance with the provisions of this Ordinance and of other Ordinances in force from time to time, the following persons shall be eligible for admission to the examinations, namely:-
   (A) For Master of Science Part-I:
      (a) A collegiate candidate admitted to the Degree of Bachelor of Science who has prosecuted a regular course of study in a college or a University Department.
      (b) a teacher admitted to the Degree of Bachelor of Science and eligible under Ordinance No. 18;
      (c) a woman candidate admitted to the Degree of Bachelor of Science, who has not pursued a course of study in the University or a College;
      
       Provided that, applicants eligible under clauses (b) and (c) above shall, if laboratory work is prescribed in the subject which they offer for examination, attend the full course of laboratory instruction in the University Department or a College or a recognised Institution imparting instruction up to the standard of the examination:

      Provided further, that in the case of applicants under clauses (b) and (c) above, not less than one academic year shall have elapsed since the date of their passing the examination for the Degree of Bachelor of Science;

      (d) Candidate who has passed B.Sc.Examination of Sant Gadge Baba Amravati University with Chemistry as one of the optional subjects and has also passed the Diploma of Associateship of Institution of Chemists (India) Calcutta and is working as Jr/Sr.Laboratory Asstt. in National Environmental Engineering Research Institute, Nagpur (NEERI) or Council of Scientific and Industrial Research (CSIR), Nagpur or Indian Bureau of Mines (IBM) will be eligible to appear at M.Sc.Semester-I in Chemistry only, without prosecuting a regular course of study in a College/Department in the University.

      Provided he produces certificate of completion of practical course prescribed for M.Sc. Part-I (Semester-I & Semester-II) Examination in Chemistry from his employer.

       (e) any other graduate in Science not eligible under clause (a) (b) or (c) above, shall be eligible for admission to the examination in Mathematics only, after a lapse of not less than one academic year since the date of his passing the examination for the Degree of Bachelor of Science;

       (f) an applicant holding the B.Pharm or the B.Sc.Agri Degree shall be eligible for admission to the M.Sc. Course in Biochemistry only;

       (Note: The B.Sc. Degree referred to in clause (a) above, shall include the B.Sc. Degree of the University or an equivalent Degree of any other Statutory University)
(g) an applicant holding the B.Sc. (Ind.Chem.) Degree of the Banaras Hindu University;

(h) an applicant holding B.A./B.Sc. with Mathematics/Statistics or Bachelor of Computer Science Degree for admission to M.Sc. Course in Statistics or Mathematics;

(i) i) for admission to M.Sc. Microbiology a candidate shall have offered Microbiology or Industrial Microbiology or Biochemistry as a subject of study and examination at the B.Sc. degree.

ii) for admission to M.Sc. Biochemistry a candidate shall have offered Microbiology or Industrial Microbiology or Biochemistry as a subject of study and examination at the B.Sc. degree.

For admission to M.Sc. Biochemistry, in case of vacancies, a student offering Chemistry along with Biological Science shall be admitted.

(j) i) for admission to M.Sc. Electronics (Instrumentation) a candidate shall have offered Physics or Electronics (Instrumentation) or Electronics or Electronics Science or Computer Maintenance as subjects of study and examination at the B.Sc. level and B.C.S. degree of this University or any other equivalent Degree of Statutory University.

ii) A person passing B.E. (Electronics & Telecommunication or Industrial Electronics) Examination of Sant Gadge Baba Amravati University is eligible to take admission directly at the second year of M.Sc. Electronics (Instrumentation). Such a student who is admitted to the second year of M.Sc. Electronics (Instrumentation) shall be awarded M.Sc. degree on the basis of his performance at M.Sc. Part-II only.

(k) for admission to (M.Sc.) Geography a candidate shall have offered Geography as a subject to study and examination at the B.Sc. Degree.

(l) for admission to (M.Sc.) Petrochemical Science, a candidate shall have offered Petrochemical Science subject to study and examination at the B.Sc. Degree.

(m) i) for admission to M.Sc. Part-I (Environmental Science) a candidate shall have offered one of the optional subjects as Environmental Science or Botany or Zoology or Life Sciences or Microbiology or Biochemistry or Biotechnology at B.Sc. degree.

ii) Sixty percent seats of the total intake shall be reserved for students who have passed B.Sc. with Environmental Science. If students having Environmental Science as an optional subject are not available then students having other optional subjects be considered.

(n) for admission to M.Sc. Geoinformatics or Remote Sensing and GIS, a candidate shall have passed B.Sc. in any discipline of Life Sciences. Preference shall be given to graduates having passed Geology at undergraduate level.

(o) for admission to M.Sc. Bioinformatics a candidate shall have passed B.Sc. in any discipline of Life Sciences, Bio Sciences or Bachelor Degree in Agriculture, Veterinary and Fishery Sciences, Pharmacy, or Medical Sciences - Bachelor of Medicine and Bachelor of Surgery, Bachelor of Dental Surgery, B.A.M.S., B.H.M.S. or any equivalent examination recognised by Sant Gadge Baba Amravati University.

(B) For विज्ञान पारंपरिक मान-२ (M.Sc. Part-II) Examination:-

(a) a student who has been admitted to the Degree of विज्ञान विद्यालय (Bachelor of Science) and who has since passing the M.Sc. Part-I (Semester-I & II) Examinations, prosecuted a regular course of study for not less than one academic year in the University or in the College in the subject in which he offers himself for the M.Sc. Part-II Examinations;

(b) a teacher admitted to the Degree of विज्ञान विद्यालय (Bachelor of Science) and eligible under Ordinance
No. 18 and who has not less than one academic year previously, passed the M.Sc. Part-I Examination in the subject in which he offers himself for M.Sc. Part-II Examinations;

(c) a woman candidate admitted for the Degree of विज्ञान स्नातक (Bachelor of Science) and who has not less than one academic year previously, passed the M.Sc. Part-I Examination in that subject in which she offers herself for the M.Sc. Part-II Examinations;

(d) a candidate who has been admitted under Para 3 (A) (d) above and who has not less than one academic year previously, passed M.Sc. Part-I Examination in the subject Chemistry in which he offers himself for the M.Sc. Part-II Examination.

Provided he produces a certificate of completing of practical course prescribed for M.Sc. Part-II Examination in Chemistry from his employer;

(e) any other Graduate in Science not eligible under clause (a) (b) or (c) who has not less than one academic year previously, passed the M.Sc. Part-I Examination in the subject in which he offers himself for the Part-II Examination.

6. Subject to his / her compliance with the provisions of this Ordinance and other Ordinances (Pertaining to Examination in General) in force from time to time, the applicant for admission, at the end of the course of study of a particular term shall be eligible to appear at it, if,

(i) He / She satisfied the conditions in the table and the provisions thereunder.
(ii) He / She has prosecuted a regular course of study in the university / college affiliated to the university.
(iii) He / She has in the opinion of the Head of the Department / Principal shown satisfactory progress in his / her study.

7. Without prejudice to the provisions of Ordinance No.6 relating to the Examinations in General, the provisions of Paragraphs 8, 10, and 31 of the said Ordinance shall apply to every collegiate candidate.

8. The fee for each Semester Examination shall be as prescribed by the University time to time.

Provided that a non-collegiate candidate, other than an ex-student shall also pay a registration fee as prescribed by the University time to time.

9. Every candidate for admission to the examination shall offer one of the following subjects for his examination, namely-

(1) Mathematics,
(2) Physics,
(3) Chemistry,
(4) Botany,
(5) Zoology,
(6) Geology,
(7) Statistics,
(8) Biochemistry,
(9) Microbiology,
(10) Electronics (Instrumentation),
(11) Geography,
(12) Geoinformatics,
(13) Remote Sensing & GIS,
(14) Environmental Science, and
(15) Bioinformatics.
Provided firstly, that an examinee who has passed Part-II Examination in one of the subjects listed above from 1 to 15 and is desirous of appearing.

(a) in any other subject, or
(b) in a new paper or a combination of papers in the subject in which he has passed, may, without prosecuting a regular course of study present himself in any subsequent academic year for Part-I of the Examination in that other subject or that new paper or new combination of papers, and after not less than one academic year after passing the said Part-I Examination, for Part-II Examination in the said new paper or the said new combination of papers.

Provided secondly, that a candidate eligible for appearing at a examination under the first proviso shall, in the subject or a new paper or the new combination of papers which he is offering for the examination, attend the full course of practical Training, wherever such training is prescribed in the University Department or a College or a recognised Institution imparting instruction upon the standard of the Examination.

Provided thirdly, that an examination successful under clause (b) of the first proviso shall not be awarded division nor shall he be eligible for any scholarship, medal or prize of the University.

10. An examinee at the M.Sc. Part-I or the M.Sc. Part-II Examination shall have the option of not being declared successful at the examination in case he does not secure a minimum of Second Division marks / Higher Second Division marks fifty five percent marks (55%) at the Examination. The option will have to be exercised everytime an application is submitted to any of the three examinations and shall be on the proforma printed on the application form itself. Once exercised the option shall be binding upon the examinee, and shall not be revoked under any circumstances.

11. Any person who has obtained a Third Division at the M.Sc. Examination of this University shall be eligible to take the examination again under this Ordinance in the same subject or group of subjects as the case may be for improving his division. In such a case the provisions of Ordinance No.138 relating to Improvement of Division shall apply.

12. (1) The scope of the subject shall be as indicated in the syllabus.

(2) The medium of instruction and examination shall be English.

13. The number of papers and marks allotted to each subject and the minimum marks which an examinee must obtain in order to pass the examination shall be as indicated in Appendix-68.

14. Examinees who are successful in the M.Sc. Semester-I, II, III & IV Examination and have obtained not less than 60% marks in the aggregate of the M.Sc. Semester-I, II, III & IV Examinations taken together shall be placed in the First Division, those obtained less than 60% but not less than 55% marks, in the Higher Second Division, those obtained less than 55% but not less than 48% marks, in the Second Division, and all other successful examinees, in the Third Division.

15. Provision of Ordinance No. 18 of 2001 relating to the 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 in all the faculty prescribed by the Statute No.18, Ordinance, 2001, shall apply to the examinations under this ordinance.

16. As soon as possible after the examination, but not later than 30th, June next following, the Management Council shall publish a list of successful examinees arranged in Three Divisions. The names of examinees passing the examination as a whole in the minimum prescribed period and obtaining the prescribed number of places in each subject in the First or Second Division, shall be arranged in Order of Merit as provided in the Examinations in General Ordinance No.6.

17. Save as provided in Paragraph 11 of this ordinance, no person shall be admitted to an examination under this ordinance, if he has already passed the same examination of this University or an equivalent examination in M.Sc. Part-I (Semester-I & II), and M.Sc. Part-II (Semester-III & IV) of any other Statutory University.

18. Examinees successful at the M.Sc. Part-I (Semester-I & II), and M.Sc. Part-II (Semester-III & IV) shall on payment of the prescribed fees, be entitled for the award of the respective Degree in the prescribed form, signed by the Vice-Chancellor.

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(Note :- "P.G. Workload in the faculty shall be as per Ordinance No.131.")
APPENDIX-A
SCHEME OF EXAMINATION FOR M.Sc. PART-I & II.
(For All Subjects)

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ii) For the subject Mathematics, there shall be five theory papers of sixty marks for each semester.

Notes:
(1) Minimum pass marks for theory and practical examination including internal assessment shall be 36% separately.
(2) The topic of project work shall be given by the concerned supervisor with prior approval of the Head of Department. There shall be no duplication of the topic of the project work. Project work shall be based on research in the laboratory and / or field work. Project work shall be allotted at the beginning of the third semester and the student shall have to submit it at least 15 days before the commencement of practical examination of the fourth semester. Project work will be evaluated by external and internal examiners.
(b) There should be at least 2 to 3 external examiners for a batch of 10 students or 3 to 5 external examiners for a batch more than 10 students.
(3) There shall be separate exemption in theory and / or practical on getting minimum pass marks.
(4) Internal Assessment marks for all semesters shall be granted on the basis of performance of students in any of the following activities:
(vi) Assignments, (vii) Unit test and any other co-curricular activities.
(5) The concerned Department or College shall have to maintain the record of award of internal assessment marks.

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DIRECTION
No. : 14 / 2009
Date : 29.6.2009

Subject : Examinations leading to the Degree of विज्ञान पारंगत (Master of Science) (Four Semester Degree Course), Direction, 2009.

Whereas, Ordinance No.4 of 2008 in respect of Examinations leading to the Degree of विज्ञान पारंगत (Master of Science) (Four Semester Degree Course) Ordinance, 2008 is in existence in the University.

AND

Whereas, the Board of Studies in Computer Science (including Computer Application and Computer Science (Computer Software)) in the faculty of Science in its meeting held on 5.6.2009 has resolved to accept revised syllabi of M.Sc. Semester-I to IV Computer Software, eligibility criteria and other details.

AND

Whereas, the Board of Studies further recommended that the scheme of examination will be applicable as per Ordinance No.4 of 2008 to M.Sc. Computer Software, as it is, and the revised syllabi shall be implemented from the academic session 2009-10 expeditiously in the light of advancement of knowledge in the subject.

AND

Whereas, the Hon'ble Vice-Chancellor has accepted the revised syllabi of M.Sc. Computer Software, Eligibility criteria, Scheme of examinations and other details under section 14(7) of the Maharashtra Universities Act, 1994 on behalf of the faculty of Science and Academic Council.

AND

Whereas, Original Ordinance No.4 of 2008 is required to be amended for inclusion of the above said course.

AND

Whereas, the matter for the admission to student at the examination of above said course is required to be regulated by an Ordinance, and making amendments in Ordinance is time consuming process.
Now, therefore, I, Dr. Kamal Singh, Vice Chancellor of Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act, 1994, do hereby direct as under:

1. This Direction may be called "Examinations leading to the Degree of विद्याना पारंपरिक (Master of Science) (Four Semester Degree Course), Direction, 2009.

2. This direction shall come into force from the date of its issuance.

3. Eligibility criteria for admission to M.Sc. Computer Software shall be as given below.
   - A person who has passed the Degree of Bachelor of Science with Computer Science/Vocational Computer Application Subjects
   - OR
   - A person who has passed the Degree of Bachelor of Science with Post Graduate Diploma in Computer Science of this University
   - OR
   - An Examination Recognised as an equivalent of this University or of any other statutory University.

4. The Scheme of Examination for M.Sc. Computer Software shall be as per Ordinance No.4 of 2008 as other Science subjects, as it is.

Amravati
Date : 29/6/2009

Vice-Chancellor
(No. : 26 / 2010)

Date : 24/06/2010

Subject : Scheme for Choice Based Credit System (CBCS) and Awarding Grades to the Post Graduate Students in the Faculty of Science, Direction, 2010.


AND

Whereas, the Academic Council while considering the above letter in its meeting held on 30.4.2008, vide item No.55 has resolved to refer the same to Dean's Committee, and the Dean's Committee in its meeting held on 19.07.2008 has decided to refer the matter to all Board of Studies.

AND

Whereas, the recommendations of various Board of Studies in the faculty of Science regarding Upgradation and Revision of various syllabi and introduction of choice based credit pattern Examination System at post graduate level was considered by the faculty of Science in its meeting held on 7.12.2009 and constituted a Committee of all Chairmen of Board of Studies and one member nominated by Chairmen of respective B.O.S. under the Chairmanship of Dean of faculty to decide the policy decision regarding choice based credit system examination pattern at P.G. level.

AND

Whereas, the faculty of Science in its emergent meeting held on 11th May, 2010 vide item No.27, has considered, accepted and recommended to Academic Council, the policy decision regarding introduction of Scheme for Choice Based Credit System (CBCS) and Awarding Grades to the Post Graduate Students in the Faculty of Science under ordinance No.4 of 2008. The recommendations of the faculty was approved by the Academic Council in its emergent meeting held on 28.5.2010, vide item No.36.

AND

Whereas, Ordinance No.4 of 2008 in respect of Examinations leading to the Degree of विद्याना स्नातक (Bachelor of Science) is in existence in the University as per semester pattern examination system.
AND

Whereas, it is necessary to frame the Regulation regarding the Scheme for Choice Based Credit System (CBCS) and Awarding Grades to the Post Graduate Students in the Faculty of Science which is to be implemented from the Academic Session 2010-11 of M.Sc. Semester-I & onwards to all subjects in the faculty of Science and framing of Regulation for the above examination is likely to take some time.

AND

Whereas, the admission of students in the above pattern at M.Sc. Part-I (Semester-I) of all subjects in the faculty of Science are to be made in the Academic Session 2010-11.

Now, therefore, I, Dr. Kamal Singh, Vice Chancellor of Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act., 1994, do hereby direct as under:

1. This Direction may be called "Scheme for Choice Based Credit System (CBCS) and Awarding Grades to the Post Graduate Students in the Faculty of Science, Direction, 2010.

2. This Direction shall come into force with effect from the examination as shown below for all subjects for the Examinations leading to the Degree of Master of Science in the faculty of Science-
   (i) Winter 2010 examination for M.Sc. Part-I, Semester-I,
   (ii) Summer-2011 examination for M.Sc. Part-I, Semester-II,
   (iii) Winter-2011 examination for M.Sc. Part-II, Semester-III,
   (iv) Summer-2012 examination for M.Sc. Part-II, Semester-IV.

3. The detailed Scheme for Choice Based Credit System (CBCS) and Awarding Grades to the Post Graduate students in the Faculty of Science is as given below-

I. The CBCS System
   All Programmes (named after the Core subject) mentioned in para 9 of Ordinance No.4 of 2008 shall be run on Choice Based Credit System (CBCS) and the grades in 7 point scale will be awarded to the students. It is an instructional package developed to suit the needs of students to keep pace with the developments in higher education and the quality assurance expected of it in the light of liberalization and globalization in higher education.

II. Credits and Degrees
   i) A candidate who has successfully completed all the core courses Compulsory, Elective/ Specialised courses and project prescribed and optional approved by the University for the programme and accumulated not less than 72 (52 core and elective) Credits and who has put in the minimum residence time shall be eligible to receive the degree.

   ii) One Credit shall mean one teaching period per week for one semester (of 16 weeks) for theory courses and one laboratory session of two periods / week for one semester. One teaching period shall be of 60 minutes duration including 10 minutes for discussion / movement.

III. Courses
   (i) Core Course :- A core course is a course that a student admitted to a particular programme must successfully complete to receive the degree. There may be two kinds of core courses: The hard-core courses which cannot be substituted by any other course and which must be successfully completed and soft-core courses which may be substituted by equivalent courses from the same department. In all P.G. programmes a project with 03 credits shall be included. The project may include a viva-voce examination with a credit of 1. Normally no theory course shall have more than 4 credits.

   (ii) Elective Course : Means a optional course from the basic subject or specialization.

   (iii) General Interest Course (GIC)

   The General Interest Course shall be the choice of student. The student who choose the GIC shall have to register for it on payment of fees as prescribed by the University.

   The Departmental Committee shall follow a selection procedure on a first come first served basis, fixing the maximum number of students, after counselling to the students etc. to avoid overcrowding to particular course(s) at the expense of some other courses.

   (iv) Each Course is designed such that it includes lectures / tutorials / laboratory or field work / Seminar / Practical training / Assignments / Term paper / Report writing or review of literature and any other innovative practice etc., to meet effective teaching and learning needs.
(v) **Attendance :-** Students must have 75% of attendance in each Core and Elective course for appearing the examination. However, student having attendance less than 75% may apply to the H.O.D. for condonation of attendance upto 15% under the provision of para 6-A (i) of Ordinance No.6.

**IV. Registration for General Interest Course :-**

i) Each student, on admission shall be assigned to a faculty advisor who shall advise the student about the academic programme and counsel him on the choice of courses listed in Appendix-Q depending on his general interest, academic background and objective.

ii) With the advice and consent of the faculty advisor, the student shall register for courses he plans to take for the semester before classes start. No student shall be permitted to register for courses exceeding 30 credits per semester including those of repeat courses nor shall any student be permitted to register for any course without satisfactorily completing the prerequisites for the course except with the permission of the concerned teacher in the prescribed format.

iii) If the student feels he has registered for more courses than he can handle, he shall have the option of dropping one or more of the courses he has registered for, with the consent of his advisor before the end of 3rd week of the semester. However, a student, to retain his status, should have registered at least for core course and elective course of that semester.

iv) Students, other than those freshly admitted, shall register for the courses of their choice in the preceding semester by filling in the prescribed forms.

v) The University shall prescribe the maximum number of students in each General Interest Course taking into account the teachers and Physical facilities available in the Department.

vi) The University may make available to all students a listing of all the courses offered in every semester specifying the credits, the prerequisites, a brief description or list of topics the course intends to cover, the instructor who is giving the courses, the time and place of the classes for the course. This information shall be made available on the University website.

vii) Normally no course shall be offered unless a minimum of 10 students are registered.

viii) The student shall have to pay the prescribed fee per course for the registration.

**V. Programme Committee :-**

There shall be the programme committee at the University level constituted as under-

i) Dean of the faculty (Chairman)

ii) Heads of all the Departments (Member)

iii) Three teachers from the affiliated colleges having post graduate courses other than University Department nominated by the Vice-Chancellor. (Member)

iv) Deputy Registrar (Acad) (Secretary)

**Duties and responsibilities of the Programme Committee shall be as under:-**

i) To identify the General Interest Courses (GIC) as per the need of the student and availability of teachers in the Departments.

ii) To approve the time table of GIC and make it available to the students before the commencement of respective semester. This time table also be made available on the University website.

iii) To consider and approve the report of grievance redressal committee.

iv) To remove the difficulties if any faced during implementation of the CBCS and report it to Hon’ble Vice-Chancellor for further action.

v) Any other matter as it think fit for the effective implementation of CBCS.

**VI. Departmental Committee**

1. Every P.G. programme of the University/College shall be monitored by a committee constituted for this purpose by the Department. The Committee shall consist of H.O.D. as a Chairman and all the teachers of the Deptt. of its members including one student members per class. There shall be atleast one student member on the committee.

**VII. Grievances Redressal Committee**

The University or College shall form a Grievance Redressal Committee for each course in each department with the Course Teacher and the HOD. This Committee shall solve all grievances relating to the Internal Assessment marks of the students.
VIII. Total credits per semester :-

### Table-I
For all subjects other than Mathematics, Biotechnology & Computer Science

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem-I</td>
<td>Sem-II</td>
</tr>
<tr>
<td>Core</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Elective</td>
<td>04</td>
<td>04</td>
</tr>
<tr>
<td>GIC</td>
<td>00</td>
<td>04</td>
</tr>
<tr>
<td>Lab. Course</td>
<td>06</td>
<td>06</td>
</tr>
<tr>
<td>I.A.</td>
<td>04</td>
<td>04</td>
</tr>
<tr>
<td>Project</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>26 or 30</td>
</tr>
</tbody>
</table>

### Table-II
For Mathematics

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem-I</td>
<td>Sem-II</td>
</tr>
<tr>
<td>Core courses</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>08</td>
<td>08</td>
</tr>
<tr>
<td>GIC</td>
<td>δ</td>
<td>04</td>
</tr>
<tr>
<td>I.A.</td>
<td>05</td>
<td>05</td>
</tr>
<tr>
<td>Project</td>
<td>δ</td>
<td>δ</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td>25 or 29</td>
</tr>
</tbody>
</table>

### Table-III
For Biotechnology

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sem-I</td>
<td>Sem-II</td>
</tr>
<tr>
<td>Core courses</td>
<td>16</td>
<td>12</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>δ</td>
<td>9</td>
</tr>
<tr>
<td>Lab courses</td>
<td>24</td>
<td>18</td>
</tr>
<tr>
<td>Seminar</td>
<td>δ</td>
<td>01</td>
</tr>
<tr>
<td>Project</td>
<td></td>
<td>06</td>
</tr>
<tr>
<td>Assignment</td>
<td></td>
<td>02</td>
</tr>
<tr>
<td>Internal Assessment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>40</td>
<td>40</td>
</tr>
</tbody>
</table>

IX. Grade Awards :-

(i) A seven point rating scale is used for the evaluation of the performance of the student to provide letter grade for each course and overall grade for the Master's Programme. Grade points are based on the total number of marks obtained by him/her in all the heads of examination of the course. These grade points and their equivalent range of marks are shown separately in Table-I. The performance of the student in theory, practical, internal assessment, subjects shall be evaluated in accordance with following Table-I.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Range of Marks obtained out of 100 or Equivalent fraction</th>
<th>Grade Points</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>O</td>
<td>90-100</td>
<td>10</td>
<td>Outstanding</td>
</tr>
<tr>
<td>A+</td>
<td>80-89</td>
<td>9</td>
<td>Excellent</td>
</tr>
<tr>
<td>A</td>
<td>70-79</td>
<td>8</td>
<td>Very Good</td>
</tr>
<tr>
<td>B+</td>
<td>60-69</td>
<td>7</td>
<td>Good</td>
</tr>
<tr>
<td>B</td>
<td>55-59</td>
<td>6</td>
<td>Fair</td>
</tr>
<tr>
<td>C+</td>
<td>50-54</td>
<td>5</td>
<td>Average</td>
</tr>
<tr>
<td>C</td>
<td>40-49</td>
<td>4</td>
<td>Below Average</td>
</tr>
<tr>
<td>F</td>
<td>Below 40</td>
<td>0</td>
<td>Fail</td>
</tr>
</tbody>
</table>
TABLE-II: Final Grade Points for SGPA and CGPA

<table>
<thead>
<tr>
<th>Grade Points</th>
<th>Final Grade</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00-10.00</td>
<td>O</td>
<td>Outstanding</td>
</tr>
<tr>
<td>8.00 – 8.99</td>
<td>A+</td>
<td>Excellent</td>
</tr>
<tr>
<td>7.00-7.99</td>
<td>A</td>
<td>Very Good</td>
</tr>
<tr>
<td>6.00-6.99</td>
<td>B+</td>
<td>Good</td>
</tr>
<tr>
<td>5.50 – 5.99</td>
<td>B</td>
<td>Fair</td>
</tr>
<tr>
<td>5.00 – 5.49</td>
<td>C+</td>
<td>Average</td>
</tr>
<tr>
<td>4.00 – 4.99</td>
<td>C</td>
<td>Below Average</td>
</tr>
</tbody>
</table>

Equivalence of the conventional division/class with the CGPA is in accordance with the following table no. 4.

Table III. Equivalence of Class/Division to CGPA

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>CGPA</th>
<th>Class/Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8.00 or more</td>
<td>First Class – Exemplary</td>
</tr>
<tr>
<td>2</td>
<td>7.50 or more but less than 8.00</td>
<td>First Class with Distinction</td>
</tr>
<tr>
<td>3</td>
<td>6.00 or more but less than 7.49</td>
<td>First Class</td>
</tr>
<tr>
<td>4</td>
<td>5.50 or more but less than 5.99</td>
<td>Higher Second Class</td>
</tr>
<tr>
<td>5</td>
<td>4.00 or more but less than 5.49</td>
<td>Second Class</td>
</tr>
<tr>
<td>6</td>
<td>Less than 4.00</td>
<td>Fail</td>
</tr>
</tbody>
</table>

X. Computation of SGPA & CGPA

Every student will be awarded points out of maximum 10 points in each subject. (based on 7 Points Scale). Based on the Grade points obtained in each subject the Semester Grade Point Average (SGPA) and then Cumulative Grade Point Average (CGPA) are computed. The computation of SGPA & CGPA, is as under:

Semester Grade Point Average (SGPA) is the weighted average of points obtained by a student in a semester and is computed as follows:

\[ SGPA = \frac{U1 \times M1 + U2 \times M2 + \ldots + Un \times Mn}{U1 + U2 + \ldots + Un} \]

Where \(U1, U2, \ldots\) are subject credit of the respective course and \(M1, M2, \ldots\) are the Grade Points obtained in the respective subject (out of 10)

The Semester Grade Point Average (SGPA) for all the four semesters is also mentioned at the end of every semester.

The Cumulative Grade Point Average (CGPA) is used to describe the overall performance of a student in the course and is computed as under:

\[ CGPA = \frac{\sum_{n=1}^{4} SGPA(n)C_n}{\sum_{n=1}^{4} C_n} \]

Where \(SGPA(n)\) is the nth Semester SGPA of the student and \(C_n\) is the nth Semester total credit. The SGPA and CGPA are rounded off to the second place of decimal.

XI. Internal Evaluation Method :-

(i) At the beginning of each course, every teacher shall inform his/her students unambiguously the method he/she proposes to adopt for the continuous assessment. Normally the teacher concerned may conduct three written sessional examinations spread periodically during the semester and select best two for contributing to the final marks.

(ii) At the end of each semester the Departmental Committee shall assign grades to the students.

(iii) The Departmental Committee shall prepare the copies of the result sheet in duplicate.
(iv) Every student shall have the right to scrutinize answer scripts of sessional/end-semester examinations and seek clarifications from the teacher regarding evaluation of the scripts immediately thereafter or within 3 days of receiving the evaluated scripts.

(v) The Department shall display the grade points and grades for the notice of students.

(vi) The department shall send all records of evaluation, including sessional evaluation, for safekeeping to the Controller of Examinations as soon as all the formalities are over.

XII. Grade Card

The University shall issue at the beginning of each semester a grade card for the student, containing the grades obtained by the student in the previous semester and his Semester Grade Point Average (SGPA).

The grade card shall list:
(a) the title of the courses along with code taken by the student
(b) the credits associated with the course,
(c) the grade and grade points secured by the student,
(d) the total credits earned by the student in that semester.
(e) the SGPA of the student,
(f) the total credits earned by the students till that semester and
(g) the CGPA of the student (At the end of the IVth Semester)

XIII. At the end of the IVth semester, the University shall issue the statement of marks to the Students showing details of marks obtained by the student in each Head in each semester along with grade total marks.

XIV. Power to modify and remove difficulties :-

1. Not withstanding anything contained in the foregoing, Hon’ble V.C. in consultation with the Dean of the faculty shall have the power to issue directions or orders to remove any difficulty.
2. Nothing in the foregoing may be construed as limiting the power of the University to amend, modify or repeal all of the above.

sd/-

Amravati

Date: 2/6/2010

Vice-Chancellor
Appendix-C

Examination Scheme under C.B.C.S. for the subject other than Mathematics, Biotechnology and Computer Science in the faculty of Science
M.Sc. Part-II
Semester-III

SA-Subject abbreviation; C-Core; E-Elective; GIC-General Interest Course

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Paper / Code</th>
<th>Course</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Code</td>
<td></td>
<td>Max. Marks (Credits)</td>
<td>Min. Pass Marks (Min. Grade Pt.)</td>
</tr>
<tr>
<td>1</td>
<td>3SA-1</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>2</td>
<td>3SA-2</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>3</td>
<td>3SA-3</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>4</td>
<td>3SA-4</td>
<td>E</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td></td>
<td>Or 2GIC-X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3SA-5</td>
<td>Lab-III</td>
<td>δ</td>
<td>δ</td>
</tr>
<tr>
<td>6</td>
<td>3SA-6</td>
<td>Lab-IV</td>
<td>δ</td>
<td>δ</td>
</tr>
</tbody>
</table>

Total Marks : 600; Minimum Total Credits : 26

Note :-
1. If the student has scored minimum marks or minimum grade points mentioned in Column No.8 out of the sum of total marks of theory and internal assessment taken together then he/she will be declared to have cleared with (04+01) 05 credits.
2. If the student has scored minimum marks or minimum grade points in either theory or in internal assessment then he/she will be declared to have cleared in that particular head.

Appendix-B

Examination Scheme under C.B.C.S. for the subject other than Mathematics, Biotechnology and Computer Science in the faculty of Science
M.Sc. Part-I
Semester-II

SA-Subject abbreviation; C-Core; E-Elective; GIC-General Interest Course

<table>
<thead>
<tr>
<th>Sr.No</th>
<th>Paper / Code</th>
<th>Course</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Code</td>
<td></td>
<td>Max. Marks (Credits)</td>
<td>Min. Pass Marks (Min. Grade Pt.)</td>
</tr>
<tr>
<td>1</td>
<td>2SA-1</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>2</td>
<td>2SA-2</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>3</td>
<td>2SA-3</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>4</td>
<td>2SA-4</td>
<td>E</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td></td>
<td>Or 2GIC-X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2SA-5</td>
<td>Lab-III</td>
<td>δ</td>
<td>δ</td>
</tr>
<tr>
<td>6</td>
<td>2SA-6</td>
<td>Lab-IV</td>
<td>δ</td>
<td>δ</td>
</tr>
</tbody>
</table>

Total Marks : 600; Minimum Total Credits : 26

Note :-
1. If the student has scored minimum marks or minimum grade points mentioned in Column No.8 out of the sum of total marks of theory and internal assessment taken together then he/she will be declared to have cleared with (04+01) 05 credits.
2. If the student has scored minimum marks or minimum grade points in either theory or in internal assessment then he/she will be declared to have cleared in that particular head.
### Examination Scheme under C.B.C.S. for the subject other than Mathematics, Biotechnology and Computer Science

**in the faculty of Science**

**M.Sc. Part-II**

**Semester-IV**

SA-Subject abbreviation;  C-Core;  E-Elective; GIC-General Interest Course

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Paper / Code</th>
<th>Course</th>
<th>Theory</th>
<th>Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Max. Marks (Credits)</td>
<td>Min. Pass Marks (Min. Grade Pt.)</td>
<td>Int. Ass. (Credits)</td>
</tr>
<tr>
<td>1</td>
<td>4SA-1</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>2</td>
<td>4SA-2</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>3</td>
<td>4SA-3</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>4</td>
<td>4SA-4</td>
<td>E</td>
<td>80 (04)</td>
<td>32 (04)</td>
</tr>
<tr>
<td>5</td>
<td>4SA-5</td>
<td>Lab-V</td>
<td>δ</td>
<td>δ</td>
</tr>
<tr>
<td>6</td>
<td>4SA-6</td>
<td>Project</td>
<td>δ</td>
<td>δ</td>
</tr>
</tbody>
</table>

Total Marks : 600;  Minimum Total Credits : 26

**Note** :- (1) If the student score Minimum Marks or Minimum Grade Points mentioned in Column No.8 out of the sum total marks of theory and internal assessment taken together then he/she will be declared to have clear (04+01) 05 credits.

(2) If the student score Minimum Marks or Minimum Grade Points in either theory or in internal assessment then he/she will be declared to have clear in that particular head.

---

### Examination Scheme under C.B.C.S. for the subject Mathematics in the faculty of Science

**M.Sc. Part-I**

**Semester-I**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Paper / Code</th>
<th>Course</th>
<th>Max. Marks (Credits)</th>
<th>Min. Pass Marks (Min. Grade Pt.)</th>
<th>Int. Ass. (Credits)</th>
<th>Min. Pass Marks (Min. Grade Pt.)</th>
<th>Th + Int. Ass. Min.Pass Mar (Grade Pt.)</th>
<th>Max. Marks (Credit)</th>
<th>Min. Pass Marks (Min. Grade Pt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1MTH-1</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
<td>20 (01)</td>
<td>08 (04)</td>
<td>40 (04)</td>
<td>δ</td>
<td>δ</td>
</tr>
<tr>
<td>2</td>
<td>1MTH-2</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
<td>20 (01)</td>
<td>08 (04)</td>
<td>40 (04)</td>
<td>δ</td>
<td>δ</td>
</tr>
<tr>
<td>3</td>
<td>1MTH-3</td>
<td>C</td>
<td>80 (04)</td>
<td>32 (04)</td>
<td>20 (01)</td>
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Total Marks : 500;  Total Credits : 25

**Note** :- (1) If the student score Minimum Marks or Minimum Grade Points mentioned in Column No.8 out of the sum total marks of theory and internal assessment taken together then he/she will be declared to have clear (04+01) 05 credits.

(2) If the student score Minimum Marks or Minimum Grade Points in either theory or in internal assessment then he/she will be declared to have clear either of the head.
### Appendix-F

**Examination Scheme under C.B.C.S. for the subject Mathematics in the faculty of Science**

**M.Sc. Part-I**

**Semester-II**

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**Note :-**

1. If the student score Minimum Marks or Minimum Grade Points mentioned in Column No.8 out of the sum total marks of theory and internal assessment taken together then he/she will be declared to have clear (04+01) 05 credits.
2. If the student score Minimum Marks or Minimum Grade Points in either theory or internal assessment then he/she will be declared to have clear either of the head.

---

### Appendix-G

**Examination Scheme under C.B.C.S. for the subject Mathematics in the faculty of Science**

**M.Sc. Part-II**

**Semester-III**

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**Note :-**

1. If the student score Minimum Marks or Minimum Grade Points mentioned in Column No.8 out of the sum total marks of theory and internal assessment taken together then he/she will be declared to have clear (04+01) 05 credits.
2. If the student score Minimum Marks or Minimum Grade Points in either theory or internal assessment then he/she will be declared to have clear either of the head.
**Appendix-H**

**Examination Scheme under C.B.C.S. for the subject**  
**Mathematics in the faculty of Science**

**M.Sc. Part-I**  
**Semester-IV**

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| Total Marks : 500; Min. Total Credits : 25 |

**Note :-**  
(1) If the student score Minimum Marks or Minimum Grade Points mentioned in Column No.8 out of the sum total marks of theory and internal assessment taken together then he/she will be declared to have clear (04+01) 05 credits.

(2) If the student score Minimum Marks or Minimum Grade Points in either theory or internal assessment then he/she will be declared to have clear either of the head.
### Appendix-I

#### Scheme of Teaching and Examination under C.I.C.S. for the Subject Biotechnology

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<th>Max. Internal Marks</th>
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Total Credits: 40

### Appendix-J

#### Scheme of Teaching and Examination under C.I.C.S. for the Subject Biotechnology

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Total Credits: 40
### Appendix-K

**Scheme of Teaching and Examination under C.B.C.S. for the Subject Biotechnology**

**M.Sc. (Biotechnology) SEMESTER PATTERN**

**M.Sc. Part-II (SEMESTER-III)**

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**Total Credits: 35**

### Appendix-L

**Scheme of Teaching and Examination under C.B.C.S. for the Subject Biotechnology**

**M.Sc. (Biotechnology) SEMESTER PATTERN**

**M.Sc. Part-II (SEMESTER-IV)**

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**Total Credits: 35**
### Appendix-M

**Scheme of Teaching and Examination under C.B.C.S. for the subject Computer Science**

**M.Sc. (Computer) SEMESTER PATTERN**

**M.Sc. Part-I (SEMESTER-I)**

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<td>5</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>1MCS-5</td>
<td>V</td>
<td>C</td>
<td>5</td>
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</tr>
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<td>6</td>
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<td>-</td>
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<td>-</td>
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</table>

Total Credits: 40

### Appendix-N

**Scheme of Teaching and Examination under C.B.C.S. for the subject Computer Science**

**M.Sc. (Computer) SEMESTER PATTERN**

**M.Sc. Part-I (S-M: S1+S2+R-I)**

<table>
<thead>
<tr>
<th>S No</th>
<th>Subject Code</th>
<th>Paper</th>
<th>Course</th>
<th>Hrs/ Week</th>
<th>Credits</th>
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<tr>
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<td>T</td>
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<td>C</td>
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<td>5</td>
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<td>-</td>
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<td>5</td>
</tr>
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<td>4</td>
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<td>5</td>
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<tr>
<td>5</td>
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<td>X or</td>
<td>E or</td>
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<td></td>
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<td>GIC</td>
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<td>2MCS-7</td>
<td>Lab-IV</td>
<td>-</td>
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Total Credits: 40
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<th>Course</th>
<th>Hrs/ Week</th>
<th>Credits</th>
<th>Theory</th>
<th>Pract.</th>
<th>Examination Scheme</th>
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<td>5</td>
<td>3MCS-5 Or 5JGC-Y</td>
<td>XV</td>
<td>F or GIC</td>
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<td>-</td>
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<td>Lab-V</td>
<td>-</td>
<td>-</td>
<td>7</td>
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<td>03</td>
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<td>-</td>
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<td>03</td>
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<td></td>
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<td>25 14 25 06 Max Theory</td>
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Total Credits: 35

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<tr>
<th>S N</th>
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<th>Paper</th>
<th>Course</th>
<th>Hrs/ Week</th>
<th>Credits</th>
<th>Theory</th>
<th>Pract.</th>
<th>Examination Scheme</th>
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Total Credits: 35
## List of General Interest Courses (GIC) to be opted by the student/s in Semester-II

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<tr>
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<th>Equivalent General Interest Course Code</th>
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<td>2GIC3</td>
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<td></td>
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<td>2ZOO4</td>
<td>2GIC8</td>
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<td>Statistics</td>
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<td>2GIC-D</td>
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<td></td>
<td></td>
<td>2BIT4</td>
<td>2GIC-Q</td>
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<td>2GIC-R</td>
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<td>2ENV4</td>
<td>2GIC-S</td>
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<td></td>
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<td>2GIC-V</td>
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<td>Remote Sensing and GIS</td>
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<td>2GIC-1B</td>
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<td></td>
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<td>2GIC-1D</td>
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<tr>
<td></td>
<td></td>
<td>2PCH4</td>
<td>2GIC-1E</td>
</tr>
</tbody>
</table>

**Note**: Title of the paper shall prescribed in the respective prospectuses.
(a) for admission to M.Sc. Pharmaceutical Chemistry a candidate shall have offered Chemistry or Industrial Chemistry or Biochemistry as a subject of study and examination at the B.Sc. Degree.

(b) following shall be the eligibility for admission to M.Sc. Semester-I (Biotechnology) -
   (i) B.Sc. in any discipline of Life Sciences, Bio Sciences or Bachelorâ€™s Degree in Agriculture, Veterinary and fishery Sciences, Pharmacy, or Bachelor of Medicine and Bachelor of Surgery (M.B.B.S.) or Bachelor of Dental Surgery or equivalent examination recognized by Sant Gadge Baba Amravati University are eligible to appear in entrance test as given in para (iii) below.
   (ii) The student should have minimum 50% marks as aggregate in the degree course.
   (iii) The student will have to pass entrance examination for admission in M.Sc. Semester-I (Biotechnology) as per the Sant Gadge Baba Amravati University rules.

(c) following shall be the eligibility for admission to M.Sc. Semester-I (Computer Science) -
   i. A person who has passed the Degree of Bachelor of Science of this university with Computer Science / Computer Application (Vocational) as on the subjects.
      OR
   ii. A person who has passed B.A. / B.Sc. with Mathematics plus Post Graduate Diploma in Computer Science of this University.
      OR
   iii. A person who has passed a Degree of Bachelor of Computer Science.

6. The following subject be inserted in para 9) of the Ordinance after Sr.No. 5. Bioinformatics.
   6. Computer Software,
   17. Computer Science
   18. Biotechnology, and

7. A person who desire to improve the division obtained by him/her at M.Sc. examination shall be eligible for improvement of division under the provision of Ordinance No.6 of 2008. However, for improvement of division he/she shall have to offer the core courses only. In no case he/she shall be allowed for improvement of division/grade/CGPA by offering General Interest Course.

8. The number of papers and marks allotted to each subject and the minimum marks which an examinee must obtained in order to pass the examination shall be as indicated in Appendices, appended with the Regulation.

9. The classification in reference to the class/division/grade to be awarded to the examinee shall be as per the Table-III (Equivalence to Class / Division to CGPA) of para No.IX, appended to the Regulation.

10. As soon as possible after the examination, but not later than 30th June following, the B.O.E. shall publish a list of successful examinees arranged in Division as mentioned in Table-III (Equivalence to Class / Division to CGPA) of para No.IX, appended to the Regulation. The names of examinees passing the examination as a whole in the minimum prescribed period and obtaining the prescribed number of places in each subject in the division as per Table-III of the Regulation shall be arranged in order of merit as provided in the Examinations in General Ordinance No.6.

Sd/-
Amravati
Date: 21/6/2010

Vice-Chancellor

*****
DIRECTION


Subject : Corrigendum to Direction No. 26/2010

Whereas, the Direction No.26 of 2010 in respect of Scheme of Choice Based Credit System (CBCS) and awarding Grades to the Post Graduate students in the faculty of Science is in existence.

AND

Whereas, the Academic Council in its emergent meeting held on 28.5.2010 vide item No.36 has approved the decision regarding introduction of scheme for C.B.C.S. and Awarding grades to the P.G. students in the faculty of Science under Ordinance No.4 of 2008..

AND

Whereas, in sub-para V of para 3, under Direction No.26 of 2010, there shall be Programme Committee and the duties of the Programme Committee shall be to remove the difficulties if any faced during implementation of C.B.C.S. and report it to Hon'ble Vice-Chancellor for further action and any other matter as it think fit for the effective implementation of C.B.C.S.

AND

Whereas, the Programme Committee in its meetings held on 14.7.2011, 20.7.2011, 30.7.2011 & 9.8.2011 has recommended necessary corrections in the above Direction which will be effective from the academic session 2011-12. The minutes of the Programme Committee was accepted by Hon'ble Vice-Chancellor on dated 22.8.2011.

AND

Whereas, it is necessary to carry out the corrections in the above said Direction immediately.

Now, therefore, I, Dr. Mohan K. Khedkar, Vice Chancellor of Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act, 1994, do hereby direct as under:

1. This Direction may be called "Corrigendum to Direction No.26/2010.
2. This direction shall come into force from the date of its issuance.
3. (A) In Direction No.26/2010 in respect of Scheme of Choice Based Credit System (CBCS) and awarding Grades to the Post Graduate students in the faculty of Science following paras be corrected as follows:

i) In para II, sub para (i) of para 3 in the fifth line after the words 'less than' the figure, sign, and words '2 (52 core and elective)' be substituted by the figures, sign, and words '8 (64 core and elective).

ii) In para VI: the title 'Departmental Committee' be replaced as 'Programme Monitoring' and Para 1 be completely deleted. Instead of this, the new para should be 'Every P.G. programme of the University/College shall be monitored by the Head of the Department of the University/College of the concerned subject.'

iii) The para VII shall be substituted as given below -

VII. Grievance Redressal
All the grievances regarding Internal Assessment shall be settled by H.O.D. or the teacher of the department nominated by H.O.D. / Principal.

iv) In para IX: Table I: the grades in column No.2 shall be substituted as under -

"O by AA
A+ by AB
A by BB
B+ by BC
B by CC
C+ by CD
C by DD"

v) In para X:

i) In the first line the word 'Grade' be added after the word 'awarded' and before the word 'points'.

ii) In third line the words 'obtained in each subject' be substituted by the words 'obtained in Core and Elective courses of the subject'.

vi) In para XI:

- In sub para (i) in the first line the word 'Head' of the Department be inserted after the words 'each course,' and before the words 'every teacher'.
- The sentence 'Normally the teacher concerned may conduct three written sessional examinations spread periodically during the semester and select best two for contributing to the final marks' shall be deleted.
- Sub para (ii) & (iii) be deleted completely.
Sub para (iv) be renumbered as sub para (ii) and the word "teacher" in the second line of the original sub para (iv) be substituted by the words "Head of Departments".

Sub para (v) be renumbered as sub para (iii). In original sub para (v) the words "grade points and grades" be deleted.

Sub para (vi) be deleted completely.

vii) The word "Minimum" printed below the table in Appendix A, B, C, D, G and H, shall be deleted.

viii) Following special explanatory Note be added below the table in Appendix-D, H, L, and P respectively.

**Special Explanatory Note**: At the end of IVth semester, the students/examinee who accumulated at least 88 credits (out of these 88 credits, 64 credits must be on core and elective course) and who has put in the minimum residence time shall be eligible to receive the degree in the subject he/she has admitted.

(B) The students should have accumulated 28 credits of M.Sc. Part-I, Sem-I & II taken together for admission to III Semester and should have completed the term of M.Sc. Part-I (Semester-I & II) satisfactorily.

Sd/-

Amravati

(Mohan K. Khedkar)

Date: 22/8/2011

Vice-Chancellor

DIRECTION

No. : 25 / 2012

Date : 29/6/2012

Subject : Corrigendum to Direction No.26/2010 and 39/2011

Whereas, the Direction No.26 of 2010 in respect of Scheme of Choice Based System (CBCS) and awarding Grades to the Post Graduate Students in the faculty of Science is in existence.

AND

Whereas, University has issued corrigendum to Direction No.26 of 2010 vide Direction No.39 of 2011 on dated 23.8.2011.

AND

Whereas, in sub-para V of para 3, under Direction No.26 of 2010, there shall be Programme Committee and the duties of the Programme Committee shall be to remove the difficulties if any faced during implementation of C.B.C.S. and report it to Hon’ble Vice-Chancellor for further action and any other matter as it think fit for the effective implementation of C.B.C.S.

AND

Whereas, the Programme Committee in its meeting held on 1st March, 2012 and 18th April 2012 has recommended necessary corrections in the above said Directions which shall be effective for 2011-12 session and the minutes of the Programme Committee was accepted by the Hon’ble Vice-Chancellor.

AND

Whereas, the Academic Council in its meeting held on 13.1.2012, vide item No.14(5) F) R-3, I) R-2 & R6 has accepted additional eligibility criteria for Admission to M.Sc. (Zoology), Direct admission to M.Sc. Part-II (Computer Science) for the students who have passed the degree of M.Sc. (Computer Software), and revised syllabi of M.Sc. (Computer Science), which is to be implemented from the Academic Session 2012-13.

AND

Whereas, it is necessary for carryout the corrections in the above said Direction immediately.

Now, therefore, I, Dr. Mohan K. Khedkar, Vice Chancellor of Sant Gadge Baba Amravati University, in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act., 1994, do hereby direct as under:

1. This Direction may be called "Corrigendum to Direction No.26/2010 and 39/2011".

2. This direction shall come into force from the date of its issuance.
3. In Direction No.26/2010 in respect of Scheme of Choice Based System (CBCS) and awarding Grades to the Post Graduate Students in the faculty of Science, following corrections shall be carried out:

A) i) In para 5th, the words and brackets "Degree of विद्यालय रुतालक (Bachelor of Science)" shall be substituted as "Degree of विद्यालय पर्याप्त (Master of Science)"
   
   ii) The clause (i) of sub-para (II) of para 3 shall be deleted.
   
   iii) The clause (i), of sub-para (II) of para 3 shall be renumbered as para (a) and new para (ii) shall be added as follows.

   Minimum total credits that students shall have to accumulate in all four semesters for receiving the M.Sc. degree core subject shall be as shown in the table given as under:

<table>
<thead>
<tr>
<th>Subject/s</th>
<th>Minimum total credits (Core Elective and GIC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All subjects other than Mathematics,</td>
<td>104</td>
</tr>
<tr>
<td>Computer Science &amp; Biotechnology</td>
<td></td>
</tr>
<tr>
<td>Computer Science</td>
<td>119</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>150</td>
</tr>
<tr>
<td>Mathematics</td>
<td>100</td>
</tr>
</tbody>
</table>

B) i) Under Table-III (Equivalence of Class/Division of CGPA) of Para IX,

   (a) the figures shown 49, 99 and 49 against Sr.Nos.3, 4 & 5 in Column No.2 (CGPA) be substituted by the figures 50, 00 and 50 respectively.

   (b) Following sub-para be added before the para "Declaration of Merit List :- Merit list of M.Sc. (C.B.C.S.) examination shall be prepared from the examinee who have successfully cleared minimum total credits including GIC as shown in the table assigned in the first attempt.

   ii) Special Explanatory note shown under Appendix-D, H, I, L and P shall be deleted.

   The note No.(2) printed under Appendix-A, B, C, D, E, F & H shall be substituted as follows-

   If the student has not scored minimum marks or minimum grade points mentioned in column No. 8 and if the student scores minimum marks or minimum grade points in either theory or internal assessment then he/she will be declared to have cleared either of the head.

4. In Direction No.39 of 2011, under para IX), in Table-I & II, under column No.2, i.e. "Grade Points" and "Final Grade" shall be substituted respectively as under.

   O by AA
   A+ by AB
   A  by BB
   B+ by BC
   B  by CC
   C+ by CD
   C  by DD

5. As the revised syllabi has been accepted by the Academic Council, for the subject Computer Science of four theory papers to each semester therefore the Scheme of Examination for M.Sc. Semester-I to IV shall be as per Appendices-A, B, C & D appended to Direction No.26 of 2010, which is to be implemented for Semester-I from Winter-2012, Semester-II from Summer-2013, Semester-III from Winter-2013 & Semester-IV from Summer-2014 respectively.

6. The students passing B.Sc. Agriculture with specialization Antomology and Fisheries shall be eligible for admission to M.Sc. Zoology with specialization Antomology and Fisheries respectively.

7. The student having Degree of M.Sc. (Computer Software) shall be eligible for directly admission to M.Sc. Part II (Semester III) (Computer Science) in the faculty of science within the jurisdiction of Sant Gadge Baba Amravati University, Amravati. The average percentage of Marks of M.Sc. (Computer Software) and percentage of marks of M.Sc. (Computer Science) shall be considered to award class / Grade for awarding the degree of M.Sc. (Computer Science).

Sd/-
Amravati
(Mohan K. Khedkar)
Date: 28/6/2012
Vice-Chancellor
*****
SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

DIRECTION

No. : 7 of 2014 Date: 07/05/2014

Subject: Corrigendum to Direction No.25 of 2012

 Whereas, Direction No.25 of 2012 in respect of Corrigendum to Direction No.26/2010 and 39/2011 in the Faculty of Science is in existence in the University.

AND

Whereas, the Academic Council in its meeting held on 17.2.2014 vide item No.22 2) E) R-2 while considering the recommendations of Faculty of Science has approved the recommendation regarding award of M.Sc. (Computer Science) degree.

AND

Whereas, the matter is required to be regulated by framing the Ordinance and making of an Ordinance may likely to take some time.

AND

Whereas, the changes are to be made applicable from the Academic Session 2014-15.

Now, therefore, I, Dr. J.A. Tidke, Vice-Chancellor of Sant Gadge Baba Amravati University, Amravati in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act, 1994, do hereby direct as under:

1) This Direction may be called, "Corrigendum to Direction No.25 of 2012, Direction, 2014".

2) This Direction shall come into force w.e.f. the date of its issuance.

3) In Direction No.25 of 2012, in Para 7., the lines "The average percentage of Marks of M.Sc. (Computer software) and percentage of marks of M.Sc. (Computer Science) shall be considered to award class / Grade for awarding the degree of M.Sc. (Computer Science)" be substituted by the lines "The class / Grade for awarding the degree of M.Sc. (Computer Science) shall be awarded on the basis of performance at M.Sc. Part-II (Computer Science) only."

Date : 3/5/2014

Sd/-

(Dr. J.A. Tidke)
Vice-Chancellor
Sant Gadge Baba Amravati University

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SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI

DIRECTION

No. : 8 of 2014 Date: 07/05/2014

Subject: Corrigendum to Direction No. 14 of 2009 in respect of Examinations leading to the Degree of बिज्ञान पारंपरित (Master of Science) (Four Semester Degree Course).

 Whereas, Ordinance No.4/2008 in respect of Examinations leading to the Degree of बिज्ञान पारंपरित (Master of Science) (Four Semester Degree Course), Ordinance, 2008, in the Faculty of Science is in existence in the University.

AND

Whereas, Direction No. 14 of 2009 in respect of Examinations leading to the Degree of बिज्ञान पारंपरित (Master of Science) (Four Semester Degree Course) in the Faculty of Science is in existence in the University.

AND

Whereas, the Academic Council in its meeting held on 17.2.2014 vide item No.22 2) E) R-1 while considering the recommendations of Faculty of Science has approved the B.C.A. degree holders of this University are eligible for admission to M.Sc. (Computer Software) course.

AND

Whereas, the matter is required to be regulated by framing the Ordinance and making of an Ordinance may likely to take some time.

AND

Whereas, the changes are to be made applicable from the Academic Session 2014-15.

Now, therefore, I, Dr. J.A. Tidke, Vice-Chancellor of Sant Gadge Baba Amravati University, Amravati in exercise of powers conferred upon me under sub-section (8) of section 14 of the Maharashtra Universities Act, 1994, do hereby direct as under:

1) This Direction may be called, "Corrigendum to Direction No. 14 of 2009 in respect of Examinations leading to the Degree of बिज्ञान पारंपरित (Master of Science) (Four Semester Degree Course) Direction 2014.6"

2) This Direction shall come into force w.e.f. the date of its issuance.
3) In Direction No. 14 of 2009 in respect of Examinations leading to the Degree of विज्ञान पालक (Master of Science) (Four Semester Degree Course), in para 3., after the lines एक person who has passed the Degree of Bachelor of Science with Post Graduate Diploma in Computer Science of this University OR एक following lines be inserted

एक The Candidates having B.C.A. degree of this University shall be eligible to take admission to M.Sc. Part-I (Computer Software) course OR एक

Date: 3/5/2014
Sd/-
(Dr. J. A. Tidke)
Vice-Chancellor
Sant Gadge Baba Amravati University
### Syllabus Prescribed for M.Sc. Semester-I to IV (Geology)

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Paper No.</th>
<th>Name of the Theory Paper</th>
<th>Clock Hrs/week</th>
<th>Marks</th>
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<tr>
<td><strong>Semester-I</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>I</td>
<td>Mineralogy</td>
<td>4</td>
<td>100 (80+20*)</td>
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<tr>
<td>2</td>
<td>II</td>
<td>Structural Geology and Tectonics</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>3</td>
<td>III</td>
<td>Geochemistry and Analytical Techniques</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>4</td>
<td>IV</td>
<td>Palaeobiology</td>
<td>4</td>
<td>100 (80+20*)</td>
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<tr>
<td><strong>Semester-II</strong></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>1</td>
<td>V</td>
<td>Igneous Petrology</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>2</td>
<td>VI</td>
<td>Metamorphic Petrology</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>3</td>
<td>VII</td>
<td>Sedimentology</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>4</td>
<td>VIII</td>
<td>Geomorphology and Field Geology</td>
<td>4</td>
<td>100 (80+20*)</td>
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<tr>
<td><strong>Semester-III</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>1</td>
<td>IX</td>
<td>Stratigraphy</td>
<td>4</td>
<td>100 (80+20*)</td>
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<tr>
<td>2</td>
<td>X</td>
<td>Ore Geology and Mining Geology</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>3</td>
<td>XI</td>
<td>Hydrogeology</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>4</td>
<td>XII</td>
<td>Exploration Methods</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td><strong>Semester-IV</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>XIII</td>
<td>Remote Sensing and GIS</td>
<td>4</td>
<td>100 (80+20*)</td>
</tr>
<tr>
<td>2</td>
<td>XIV</td>
<td>Environmental Geology and Engineering Geology</td>
<td>4</td>
<td>100 (80+20*)</td>
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<tr>
<td>3</td>
<td>XV</td>
<td>Indian Mineral Deposits and Mineral Economics</td>
<td>4</td>
<td>100 (80+20*)</td>
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<tr>
<td>4</td>
<td>XVI</td>
<td>Petroleum and Coal Geology</td>
<td>4</td>
<td>100 (80+20*)</td>
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*Internal assessment marks for theory paper

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<tr>
<th>Sr. No.</th>
<th>Practical No.</th>
<th>Practical</th>
<th>Clock Hrs/week</th>
<th>Marks</th>
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<tbody>
<tr>
<td>1</td>
<td>I</td>
<td>Mineralogy and Structural Geology (40+40) + Practical Record (7) + Viva-Voce (5) + Assignment (8)</td>
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<td>100</td>
</tr>
<tr>
<td>2</td>
<td>II</td>
<td>Geochemistry, Palaeobiology (40+40) + Seminar (8) + Practical Record (7) + Viva-Voce (5)</td>
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<td>100</td>
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<tr>
<td>3</td>
<td>III</td>
<td>Igneous and Metamorphic Petrology (50+30) + Practical Record (7) + Viva-Voce (5) + Seminar (8)</td>
<td>09</td>
<td>100</td>
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<tr>
<td>4</td>
<td>IV</td>
<td>Sedimentology, Geomorphology and Field Geology (30+25+25) + Field Tour &amp; submission of Report (8) + Practical Record (7) + Viva-Voce (5)</td>
<td>09</td>
<td>100</td>
</tr>
<tr>
<td>5</td>
<td>V</td>
<td>Stratigraphy, Ore Geology and Mining Geology (25+30+25) + Practical Record (7) + Viva-Voce (5) + Assignment (8)</td>
<td>09</td>
<td>100</td>
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<td>6</td>
<td>VI</td>
<td>Hydrogeology and Mineral Exploration (45+25) + Seminar (8) + Practical Record (5) + Viva-Voce (5)</td>
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<td>100</td>
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<tr>
<td>7</td>
<td>VII</td>
<td>Remote Sensing, Engineering and Environmental Geology (25+25+30) + Practical Record (7) + Viva-Voce (5) + Field Tour &amp; submission of Report (8)</td>
<td>09</td>
<td>100</td>
</tr>
<tr>
<td>8</td>
<td>VIII</td>
<td>Project Work (40) + Submission of Report (20) + Presentation (20) + Seminar (8) + assignment (7) + Viva-Voce (5)</td>
<td>09</td>
<td>100</td>
</tr>
</tbody>
</table>
SYLLABUS PRESCRIBED FOR M.Sc. PART-I
SEMESTER - I
PAPER - I
MINERALOGY

Unit-I: Chemistry of Minerals: elements, compound, mixture; atoms and molecules, atomic structures, atomic number, atomic weight, atomic binding valency; physical, electrical, magnetic and radioactive properties of minerals; Silicate structures.

Unit-II: Optical properties of minerals: birefringence, pleochroism, interference figure, order of colours, extinction angle, optic axis; Uniaxial and biaxial minerals; Optic orientation, dispersion and optical anomalies; Optical accessories, and its uses.

Unit-III: Systematic mineralogy, atomic structure, mineral chemistry, physical & optical properties, and mode of occurrences of garnet, epidote, pyroxene, amphibole, mica, and feldspar groups.

Unit-IV: Systematic mineralogy, atomic structure, mineral chemistry, physical and optical properties and mode of occurrences of feldspathoid, quartz, aluminosilicate groups and carbonates, sulphates, oxides minerals.

Unit-V: Systematic mineralogy, atomic structure, mineral chemistry, physical properties, optical properties and mode of occurrences of native elements, sulphosalts, phosphates, and hydroxides; Gems and Semiprecious minerals; Radioactive minerals.

Books

14. Dexter Perkins - Mineralogy 2nd Edn PHI New Delhi

PAPER - II
STRUCTURAL GEOLOGY AND TECTONICS

Unit-I: Deformation: Mechanisms of rock deformation, Theories of rock failure, Behaviour of minerals and rocks under deformation conditions; Stress - Concept of stress, forces and stress, normal and shear stress, stress components, principal stresses, stress trajectories;
Strain - Concept of strain, measurement of strain, principal strain axes and strain ellipsoid, volume changes during deformation, relationship between stress and strain;
Effect of confining Pressure, Temperature, Pore-fluid pressure, and strain rate in rocks.

Unit-II: Faults and fractures: Rock fractures, Fault geometry and nomenclature, Classification, Mechanism of Faulting, Features associated with fault planes, Fault associations, Joints, Thrust system, Extensional fault system, Strike-slip-fault system, Shear zones.

Unit-III: Folds: Fold geometry and nomenclature, Fold orientation, Classification of folds, Mechanism of folding, and Relationship between faults, folds and ductile shears.
Classification of folds based on layer shape, Buckling, Oblique shear or flow folding, Kinking and formation of chevron folds, Foliation, Lineations and fabrics.

Unit-IV: Igneous bodies: Significance of igneous bodies in structural geology, Structures found within igneous bodies, Structural classification of igneous bodies.
Emplacement of igneous intrusions - Dilational emplacement of dikes and sills, emplacement of cone-sheets and radial dikes, Mode of emplacement of large intrusions, Large scale structures.

Unit-V : Tectonics: Major Structure of earth - continents and oceans, mountain ranges, oceanic ridges and trenches; Present day tectonic activity; Stable and unstable tectonic zones. Plate tectonics - Concept of lithosphere plates, nature of plate boundaries- constructive and destructive, subduction Zone, geometry of plate motion, driving mechanism for plate motion. Seafloor spreading and Plate Tectonics; Island arcs, Oceanic islands and volcanic arcs; Isostasy, orogeny and epeirogeny; Seismicity and plate movements.


Books :
(7) Billings M. P.: Structural Geology, CBS publication.
(25) Skinnel B.: Dynamic Earth Introduction to Physical Geology 5Ed.

PAPER - III
GEOCHEMISTRY AND ANALYTICAL TECHNIQUES


Unit-II : Geochemical composition of the Earth. Geochemical classification of elements. Weathering indices Radiogenic isotopes, radioactive decay scheme of U-Pb, Sm-Nd, Rb-Sr, K-Ar.

Unit-III : Growth of daughter isotopes, radiometric dating of single minerals, whole rocks, stable isotopes, nature, abundance.
Law of thermodynamics, concept of free energy, fugacity and equilibrium constant.

**Unit-IV**: Principles of ionic substitution in minerals, elements partitioning in mineral and rock formation. Eh-pH diagram and mineral stability in Eh-Ph diagrams, Geochemical cycle and concept of biogeochemical exploration.

**Unit-V**: Sampling techniques. Thin section and polished section making. Dissolution procedure in Geological and environmental samples; Principles and geological applications of UV-VIS Spectrophotometry, atomic absorption spectrometry, inductively coupled plasma Spectrophotometry, X-Ray diffraction, scanning electron microscopy, electron microprobe analysis.

**Practicals:**
Calculation of mineral formulae from the concentration of various oxides in minerals. Calculation of gain and loss in weathering from the chemical analysis of rocks, calculation of weathering indices in soil and sediments, graphic presentation of analytical data.

**Books:**
(9) Andre Athetaer Dynamical Theo of XRD oxford Press.
(10) Walther, Essentials of Geochemistry, HB Problem 2005

**PAPER - IV**

**PALAEOBIOLOGY**

**Unit-I**: Fossil: mode of preservation, physico-chemical condition for Fossilization, types of fossils, significance of fossils; Fossil record and geological time scale, Preparation and nomenclature of fossils, Classification of organisms

**Unit-II**: Morphology, classification, geological history and evolution of mollusca-bivalve, gastropad, cephatopod; brachiopoda, echinodermata.

**Unit-III**: Morphology, classification, geological distribution and significance of arthropoda, hemichordata, foraminifera, ostracoda and conodonts; Gondwanan flora and its significance; Geological distribution and extinction of dinosaures.

**Unit-IV**: Taphonomy, Limiting environmental factors, Modern concepts of origin of life. Chemical and biological evolution; Precambrian life.

**Unit-V**: Evolution: Mechanism of evolution - mutation, adaptation, isolation, variation; Species concept and speciation; Palaeontological evidence of evolution;

**Practical**: Identification and classification of fossils belonging to major phylums.

**Books**:
M.Sc. PART - I SEMESTER - II
PAPER - V
IGNEOUS PETROLOGY

Unit-I : Study of textures, structures and their genetic significance. Forms of igneous bodies and their mode of emplacement.

Unit-II : Criteria for classification of the Igneous rocks. Norms CIPW and Niggli values - Johanson, IUGS. Petrographic Provinces and associations.

Unit-III : Nature and evolution of magma; Introduction to mantle petrology and mantle metasomatism, Factors affecting magma and evolution of magma, Plate tectonics and generation of magmas.

Unit-IV : Phase equilibrium of single, binary and ternary silicate systems, its relation to magma genesis and crystallization in the light of modern experimental work, Partial melting, Crystal fractionation and Crustal contamination.

Unit-V : Petrogenesis of major igneous rock types such as ultramafic komatiite, basaltic, granitic and alkaline rocks, ophiolites, carbonatite, lamprophyre, and Kimberlites

Practicals: Megascopic and microscopic study of various acidic, basic and ultrabasic igneous rocks with emphasis on crystallization history, occurrence and association. Calculation of CIPW norms for various types of Igneous rocks.

Books:
(4) McBirney, A.R. 1993 : Igneous Petrology; Jones and Barlet Publ.3rd Ed
PAPER - VI
METAMORPHIC PETROLOGY

Unit-I : Agents of metamorphism, kinds of metamorphism, structure and texture of metamorphic rocks. Mineralogical phase rule of closed and open systems. Detailed description of low, medium, high and very high pressures facies.

Unit-II : Characteristic metamorphic zones and subfacies, Nature of metamorphic reactions, Pressure-temperature conditions of metamorphism, Metasomatisam

Unit-III : Isole Reaction grid, Schreinemakeâ€™s rule and construction of petrogenetic grids; Metamorphic differentiation.


Unit-V : Pressure, temperature and time paths; Ultra high temperature, ultra high pressure. Ocean floor metamorphism & its types

Practicals : Megascope and microscopic study of metamorphic rocks of different facies. Graphic construction of ACF, AKF and AFM diagrams and their interpretation

Books :

PAPER - VII
SEDIMENTOLOGY

Unit-I : Process of sedimentation - surface processes and rock weathering, mineral stability and source of sediments; Grain size analysis - phi scale, grain size measurement, sieving technique, settling technique; Graphic presentation of grain size data - histogram, frequency curve, cumulative curve; statistical parameter of grain size - mode, mean, standard deviation, skewness, kurtosis.

Unit-II : Classification and composition of sandstone, limestone, mud rock and conglomerate. Diagenesis of sandstone and limestone. Origin and significance of trace fossils - preservational and behavioral classifications; Classification and significance of sedimentary structures.

Unit-III : Sedimentary environment and facies: alluvial-fluvial, desert, aeolian, glacial, shallow marine and deep marine.

Unit-IV : Palaeocurrent and basin analysis, Stromatolite origin and significance, Heavy mineral analysis, Preparation of litho logs, Rock and thin section staining, Cathodoluminescence, X-ray identification of clay minerals.

Unit-V : Tectonics and sedimentation of sedimentary basin - down warp basin, rift basin, interior basin, foreland basin, sub-depression basin, pull apart basin, delta type of basin, composite basin.

Practicals :
- Petrography and diagenesis of arenaceous, argillaceous and calcareous rocks.
- Identification of important heavy minerals.
- Exercise on granulometric data.

Books :

PAPER - VIII
GEOMORPHOLOGY AND FIELD GEOLOGY

Unit-I: Fundamental concepts of geomorphology; Geomorphic agents and processes - exogenetic, endogenetic and extraterrestrial; Rock weathering and mass wasting; Cycle of erosion, rejuvenation and peneplaination, Karst topography.

Unit-II: Fluvial Geomorphology - Drainage system and pattern; Morphometric analysis - basic principles and techniques of river basin analysis; Stream meandering, River terraces analysis and their significance, Fluvial land forms.

Unit-III: Geomorphic features of India. Arid, eolian, glacial, volcanic and coastal land forms; Ocean floor topography. Principles and applications of GIS in geomorphology.

Unit-IV: Importance and scope of field geology, Study of outcrops, Field observations, Topographic forms, Reconnaissance survey, Topographic maps, Profile section, Interpretation of contour maps, Mapping and analysis of sedimentary, igneous & metamorphic terrains.

Unit-V: Geological surveying, Plane table survey, Use of Brunton compass, Clinometer, Prismatic compass, Abney level, Dumpy level and Thedolite. Air reconnaissance. Air photography & AIV mapping, Stereoscope and stereoscopic vision.


Books:
2. Surveying, Punmia.

M.Sc. PART-II SEMESTER-III
PAPER-IX
STRATIGRAPHY

Unit-I: Nomenclature and modern stratigraphic code: lithostratigraphy, biostratigraphy, magnetostratigraphy, event stratigraphy, pedostratigraphy, sequence stratigraphy, geochronology and chronostratigraphy.

Unit-II: Stratigraphy, economic significance and correlation of Archaean and Precambrian sequences of Dharwad and Central India, Vindhyan, Cuddapah, Delhi and extra-peninsular part.

Unit-III: Stratigraphy, economic significance and correlation of Mesozoic sequences of India - Triassic of Spiti, Jurassic of Cutch and Rajasthan, Cretaceous of south India. Gondwana Super group including palaeoclimate and flora.

Unit-IV: Stratigraphy, economic significance and correlation of Tertiary group of rocks- Siwalik, Assam and Andaman-Nicobar.


Practical: Preparation of palaeogeographic and stratigraphic maps of important periods of earth history.

Books:

PAPER - X
ORE GEOLOGY AND MINING GEOLOGY


Unit-IV : Petrological ore association. Orthomagmatic ores of mafic felsic association - diamonds in Kimberlites; chromite; Cyprus type Cu-Zn; Kiruna type Fe-P; Pegmatites, Skarns. Porphyry association. Ores of sedimentary affiliation. Ores of metamorphic affiliation.


Practicals: Megascopic study of structures and fabrics of different ores with their association and uses. Mineralogical and textural studies of common ore minerals under ore-microscope. Exercise on mine sampling and determination of tenor, cut-off grades and ore reserves.

PAPER - XI
HYDROGEOLOGY

Unit-I : Hydrologic cycle and processes : Groundwater origin, types, importance. Water bearing properties of rocks - porosity, permeability, specific yeild, specific retention, hydraulic conductivity, transmissivity and storage coefficient. Water table contour maps and their interpretation, Fluctuation of water table

Unit-II : Groundwater flow - Darcyâ€™ law and its applications, formation constant, flow through aquifers, storage equation, differential equation governing groundwater flow. Evaluation of aquifer properties- aquifer test, confined, semi confined and

Books:
10. Mc Kinstry HE 1962 Mining Geology IIEd Asia Publishing House
12. Arogya Swami RPN 1996 Courses in Mining Geology IV Ed Oxford IBH

PAPER - XI
HYDROGEOLOGY
unconfined aquifers, bounded and leaky aquifers, partially penetrated aquifers; Water well technology: well types, drilling methods, construction, design and development of wells.

Unit-III: Quality of ground water - physical and chemical qualities. Presentation of the results of chemical analysis. Diagramatic representation of geochemical data. Quality standard of ground water in domestic, agriculture & industries. Sodium absorption ratio, permeability index, CPHEEO standards for drinking water.

Unit-IV: Groundwater exploration - geomorphic and geologic control on groundwater. Groundwater proveniences of India. Geologic and hydrologic methods, Surface geophysical methods, Geophysical well logging.


Practical: Hydrogeology

Books:
(10) Gunture Faure. Principals in Isotope Geology(1977) Willey
(12) W.A. Petty John Introduction to the Artificial Ground water recharge 1988 Scientific Pub Jodhpur
(13) M.L. Sharma Ground water recharge 1987 AA Balkems Austeliya
(20) S.P.Garg Groundwater & Tube wells Oxford & IBH
(22) Patel A.S. Water Management
(23) Murti J.S. Water Shade Management

PAPER - XII
EXPLORATION METHODS


and applications. Induced Polarization methods: Principles, Instruments, field procedures, interpretation and applications, self-potential method.

Unit-III: Magnetic methods: Principles, instruments, field procedures, reduction of data, preparation of magnetic anomaly maps and profiles, airborne magnetometers, data interpretation and its applications. Gravity methods: Principles, instruments, field procedures, reduction of gravity datum, gravity anomaly maps, data interpretation and its applications. Well Logging Methods: Classification of well logging methods. Electrical logging - Self potential logging, resistivity logging, induction logging; Radioactivity logging - Sonic logging Interpretations and applications of well logging methods.

Unit-IV: Seismic methods - Refraction methods - principle, instruments equipments; Operational Methods - Fan shooting, arc shooting, profile shooting, correlation method of refracted waves, reduction of data, interpretation of data and applications. Seismic surveys, velocity determination, elevation and weathering corrections, data processing, plotting of depth sections, interpretation and applications.

Unit-V: Geochemical exploration - Geochemical principles - Geochemical cycle, primary and secondary dispersion patterns, geochemical anomalies and background values, geochemical surveys. Biogeochemical prospecting. Geochemical Prospecting for minerals, oil and natural gas.

Practicals:

Books:
(2) Sharma, P.V. 1997 : Environmental and Engineering Geophysics, Cambridge University, Press.

M.Sc. PART-II SEMESTER - IV
PAPER - XIII
REMOTE SENSING AND GIS

Unit-I: Principles of remote sensing. Electromagnetic spectrum characteristics, remote sensing regions and bands; Photogrammetry. Aerial photos types, scale, resolution, properties of aerial photos, stereoscopic parallax, relief displacement Remote sensing Satellite. Global and Indian space missions. Image characters and their relations with ground object based in tone, texture and pattern.

Unit-II: Multispectral Sensors: Multispectral remote sensing, multiband cameras, opto-mechanical scanners, modular multispectral scanners, landsat multispectral scanners, thematic mapper, linear imaging self-scanning sensors. Microwave remote sensing: Microwave radiometer, sidelooking airborne radar, syntheti aperture radar, wind scatterometer, radar polarimetry, radar interferometry.


Unit-V : Geographical information system : Definition and importance of GIS; Data input and output; GIS data - Types, representation and sources; Data acquisition, verification and editing, georeferencing. GIS data base and data base management system; Spatial data analysis : Terminology, measurement of length, perimeter and area, reclassification, buffering and neighborhood functions, data interpretation map overlay, spatial interpolation, surface analysis, network analysis, digital terrain visualization.

Practical :
Interpretation of aerial photographs and satellite imageries ñ Geological structure, lithology, landforms, minerals, soils, groundwater; Application of GIS in geological studies.

Books :
(13) Verbyala: Satellite Remote Sensing of Natural Resource, T & F Publisher

PAPER - XIV
ENVIRONMENTAL GEOLOGY AND ENGINEERING GEOLOGY

Unit-I : Concept and principle of environmental geology. land capability classification; Landuse pattern. Assessment of impact of landuse & reclamation of land. Soil : Soil as a resource-nature, profile, origin and classification. Soil conservation, soil weathering; soil degradation and remedial measures. Desertification and degradation of land, causes of desertification, measures to combat desertification. Organic and inorganic contaminations of ground water and its remedial measures.


Unit-IV: Engineering Properties and Classification of Rock Masses:
Strength characteristics - unconfined compressive strength, uniaxial tensile strength, shear strength, Deformational characters - modulus of elasticity, poisson ratio., Residual stress Engineering classification of rock masses. Classification based on strength and modulus, rock quality designation, rock structure rating, rock mass rating system, rock quality index system. Susceptibility or rocks towards weathering, test for assessing weathering, Engineering classification of weathered rock masses.

Unit-V: Site Investigation and ground Improvement: Geological investigation, geophysical investigation, drilling and logging. Ground improvement - grouting, types, procedures, grouting applications.
Geology investigation for dams and reservoirs sites: types of dams, forces acting on a dam, geological consideration, geological investigation for site location, seepage problem, silting problem.
Geology investigation for tunnel alignment: types of tunnels, geological consideration, geological investigation for tunnel alignment, excavation through blasting, stress distribution during excavation, ground failure in tunnels, tunnel supports. Methods of tunnelling in hard rocks and in Soft soils.

Practicals:
Study of maps and models of importance engineering structure as dam sites & tunnels.
Interpretation of geological maps for land slide problems.
Study of properties of common rock with reference to their utility in engineering project.
Physical and chemical analysis of ground water. Piper Diagrams, SAR Problems
Classification of ground water for use in drinking, irrigation in Industrial.

Books:
(2) Keller, E.A., 1978: Environmental Geology, Bell and Howell, USA
(3) Bryant, E., 1985: Natural Hazards, Cambridge University Press.

(10) Reddi MTM A Text Book of Applied Engineering Geology
(11) Goel P.K. Water Pollution - causes, effect & Control

PAPER - XV
INDIAN MINERAL DEPOSIT AND MINERAL ECONOMICS

Unit-I: Process of formation of mineral deposits: magnetic concentration, sublimation, contact metasomatism, hydrothermal, sedimentation, bacteriogenic, submarine exhalative and volcanicogenic, evaporation, residual and mechanical concentration, oxidation and supergene enrichment.

Unit-II: Classification of mineral deposit, wall rock alteration; Mineralogy, mode of occurrence, origin, geological association, geographical distribution and use of gold, copper, lead, zinc, aluminum, magnesium, iron, manganese, chromium, nickel.

Unit-III: Mineralogy, mode of occurrence, origin, geological association, geographical distribution and use of atomic minerals, ceramic materials, metallurgical and refractory materials; Industrial and manufacturing materials; Abrasive and abrasion minerals.


Unit-V: International scenario of mineral wealth; Strategic, critical and essential minerals of India, War minerals, Internal and external mineral trade, consumption and substitution of minerals, economical mineral conservation.

Books:
(1) Sinha and Sharma: Economics Geology
PAPER - XVI
PETROLEUM AND COAL GEOLOGY


Unit-II : Hydrocarbon traps: Definition, anticlinal and trap theory, classification of hydrocarbon traps (Structural, stratigraphic and combination), time of trap formation and time of hydrocarbon accumulation, cap rock - definition and general properties. Oil reservoir fluids - water, oil and gas; Oil and source rock correlation.

Unit-III : Prospecting for oil and gas, well drilling methods and logging procedures. Coring and core analysis.

Unit-IV : Coal: Definition and origin of coal; Sedimentology of coal bearing strata. Rank, grade and type of coal. Indian and international classifications. Chemical analysis of coal (proximate and ultimate analysis). Macroscopic ingredient and microscopic constituents, Physical properties of coal. Coal Petrology and its significance in industrial and geological problems. coal carbonization (coke manufacture), coal gasification and coal hydrogenation.


Books:
(12) Leuerson, 2006: Geology of Petroleum 2nd Ed
(13) Khilyuk Gas Migration: Events Preceding Earthquakes.
(14) Chilingan Geology and Geochemistry of oil and gas. 2005.