



**UNIVERSITY OF RAJASTHAN  
JAIPUR**

**FACULTY OF EDUCATION**

**SYLLABUS**

**INTEGRATED PROGRAMME OF**

**B. Sc.-B.Ed. Degree (Four Year)**

**Annual Scheme**

**Academic Session 2023-24  
Examination B.Sc.-B.Ed. Part – IV (2024)**

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**NOTICE**

1. Change in syllabus/ordinance/rules/regulations/ syllabi and books may from time to time, be made by amendment or remaking and a candidate shall, accept in so far as the university determines otherwise comply with any change that applies to years he/she has not completed at time of change.
2. All court cases shall be subject to the jurisdiction of Rajasthan Univeristy head quarter Jaipur only and not any other place.

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UNIVERSITY OF RAJASTHAN  
B.Sc. B.Ed PART - IV

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SYLLABUS

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3. UNDERSTANDING DISCIPLINES AND SUBJECT
4. PHYSICAL EDUCATION AND YOGA (G-A)
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(CANDIDATE SHALL BE REQUIRED TO OFFER ANY TWO PAPERS FROM THE  
FOLLOWING FOR PART - 3 AND OTHER FOR PART - 4) - 08 (a/b)
  - CHEMISTRY
  - BIOLOGY
  - PHYSICS
  - MATHEMATICS
  - GENERAL SCIENCE

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## Ordinance and Regulations related to the Integrated B.Sc.B.Ed. Degree

01. The Objective and the Learning outcomes of the Integrated B.Sc.B.Ed. Degree are-

### Objectives:

- To promote capabilities for inculcating national values and goals as mentioned in the constitution of India.
- To act as agents of modernization and social change.
- To promote social cohesion, international understanding and protection of human rights and right of the child.
- To acquire competencies and skills needed for teacher.
- To use competencies and skills needed for becoming an effective teacher.
- To become competent and committed teacher.
- To be sensitive about emerging issues such as environment, population general equality, legal literacy etc.
- To inculcate logical, rational thinking and scientific temper among the students.
- To develop critical awareness about the social issues & realities among the students.
- To use managerial organizational and information & technological skills.

### Learning outcomes:

1. Competence to teach effectively two school subjects at the Elementary & secondary levels.
2. Ability to translate objectives of secondary education in terms of specific Programmes and activities in relation to the curriculum.
3. Ability to understand children's needs, motives, growth pattern and the process of learning to stimulate learning and creative thinking to faster growth and development.
4. Ability to use-
5. Individualized instruction
6. Dynamic methods in large classes.
7. Ability to examine pupil's progress and effectiveness of their own teaching through the use of proper evaluation techniques.

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8. Equipment for diagnosing pupil progress and effectiveness of their own teachings through the use of proper evaluation techniques.
9. Readiness to spot talented and gifted children and capacity to meet their needs.
10. Ability to organize various school programmes, activities for pupil.
11. Developing guidance point of view in educational, personal and vocational matters.
12. Ability to assess the all round development of pupils and to maintain a cumulative record.
13. Developing certain practical skill such as:
  - a. Black board work
  - b. Preparing improvised apparatus
  - c. Preparing teaching aids and ICT.
14. Interest and competence in the development of the teaching profession and education.
 

Readiness to participate in activities of professional organizations.

### ***Integrated Programme of B.Sc.B.Ed. Degree Shall Consist of***

- i) First Year B.Sc.B.Ed.
- ii) Second Year B.Sc.B.Ed.
- iii) Third Year B.Sc.B.Ed.
- iv) Final Year B.Sc.B.Ed.

#### **Duration of the Course - Four Years**

#### **Examination after each session in theory papers**


Scheme of Examination against each subject separately.

#### **Compulsory Papers:**

Year	Paper
I <sup>st</sup> Year	Gen. English
II <sup>nd</sup> Year	Gen. Hindi
III <sup>rd</sup> Year	Elementary Computer Application (ICT)
IV <sup>th</sup> Year	Environmental Studies

\*ELIGIBILITY CRITERION ON PASSING MARKS BUT MARKS SHALL NOT BE INCLUDED IN DIVISION.

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**Group – A: - Subject Specialisation :**

Year	Paper
I <sup>st</sup> Year	Instructional System & Educational
II <sup>nd</sup> Year	Peace Education
III <sup>rd</sup> Year	Guidance and Counselling in School
IV <sup>th</sup> Year	Physical Education & Yoga

**Group-B:** Content of Science Subject:- A Student has to opt any three optional subject (papers) from group B which two must be the school teaching subjects.

Chemistry	I, II & III
Botany	I, II & III
Zoology	I, II & III
Physics	I, II & III
Mathematics	I, II & III

**Group C: Pedagogy of School Subject 08 A/B:** Pedagogy of a School Subject IIIrd Year and IVth Year(candidate shall be required to offer any two papers from the following, for part-III&part-IV).

Pedagogy of Chemistry
Pedagogy of Biology
Pedagogy of Physics
Pedagogy of Mathematics
Pedagogy of General Science

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- ❖ In all the subjects the student has to study a minimum of 12 papers in Ist year, 12 Paper in IInd Year. 12Paper in IIIrd Year and 7 Paper in IVth Year ( Total 43Papers).
- ❖ Each theory paper will carry 100 marks and content base paper 05, 06, 07 (G-B) will carry 150 marks. (With practical part). Distribution of marks in mathematics is according to their marking scheme in page no.7.

### Scheme of Instruction for B.Sc. B.Ed Courses

Details of course and scheme of study, titles of the papers, duration etc. for B.Sc.B.Ed Course are provided in Tables given below :-

## Four Years Integrated Course Scheme of B.Sc.B.Ed. Ist Year

Theory Paper	Course Code	Title of the Paper	Evaluation			Total
			External	Internal	Practical	
I	B.Sc. B.Ed. 01	Gen. English(Compulsory)*	100	-	-	100
II	B.Sc.B.Ed. 02	Childhood and Growing Up	80	20	-	100
III	B.Sc.B.Ed. 03	Contemporary India and Education	80	20	-	100
VIII	B.Sc.B.Ed. 04 (G A)	Instructional System & Educational Evaluation	80	20	-	100
V VI & VII	B.Sc.B.Ed 05, 06 & 07 (G-B)	<b>Content (Select any Three)</b> 1. Chemistry(I,II,III) 2. Botany (I,II,III) 3. Zoology(I,II,III) 4. Physics (I,II,III) 5. Mathematics(I,II,III)	 33+33+34 33+33+34 33+33+34 33+33+34 40+40+40	   50 50 50 50 30	 150 150 150 150 150	 750

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## Four Years Integrated Course Scheme of B.Sc.B.Ed. IInd Year

Theory Paper	Course Code	Title of the Paper	Evaluation			
			External	Internal	Practical	Total
I	B.Sc.B.Ed. 01	Gen. Hindi (Compulsory)*	100	-	-	100
II	B.Sc.B.Ed. 02	Knowledge and curriculum	80	20	-	100
III	B.Sc.B.Ed. 03	Learning and Teaching	80	20	-	100
IV	B.Sc.B.Ed 04 (G A)	Peace Education	80	20	-	100
V VI & VII	B.Sc.B.Ed 05, 06 & 07 (G-B)	<b>Content (Select any Three)</b> 1. Chemistry(I,II,III) 2. Botany (I,II,III) 3. Zoology(I,II,III) 4. Physics (I,II,III) 5. Mathematics(I,II,III)	33+33+34 33+33+34 33+33+34 33+33+34 40+40+40		50 50 50 50 30	150 150 150 150 150
VIII	B.Sc. - B.Ed	<b>OPEN AIR / SUPW CAMP</b> 1. Community Service 2. Survey (Based on social and educational events) 3. Co-Curricular Activities 4. Health and Social awareness programme (DISASTER MANAGEMENT AND CLEANINESS)		25 25 25 25		100
						850

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## Four Years Integrated Course Scheme of B.Sc.B.Ed. IIIrd Year

Theory Paper	Course Code	Title of the Paper	Evaluation			Total
			External	Internal	Practical	
I	B.Sc.B.Ed. 01	Elementary Computer Application (ICT) (Compulsory)*	60	-	40 (30+10)	100
II	B.Sc.B.Ed. 02	Language Across the Curriculum	80	20	-	100
IV	B.Sc.B.Ed- 04 (G-A)	Guidance and Counseling in School	80	20	-	100
V VI & VII	B.Sc.B.Ed 05, 06 & 07 (G-B)	<b>Content (Select any Three)</b> 1. Chemistry(I,II,III) 2. Botany (I,II,III) 3. Zoology(I,II,III) 4. Physics (I,II,III) 5. Mathematics(I,II,III)	33+33+34 33+33+34 33+33+34 33+33+34 40+40+40		50 50 50 50 30	150 150 150 150 150
VIII	08(a,b)	Pedagogy of a School Subject (Candidate should opt any two school subject from the following i.e. one school subject for part - 3 and other school subject for Part - 4). 1. Chemistry 2. Biology 3. Physics 4. Mathematics 5. General Science	80	20		100
Practicum		<b>Special Training Programme</b>  • Micro Teaching • Practice Lesson • Observation Lesson • Technology Based Lesson • Criticism Lesson • Attendance /Seminar/			10 50 05 05 20 10	100

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		Workshop			
		Final Lesson	100		100
					950

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### Four Years Integrated Course Scheme of B.Sc.B.Ed. IVth Year

Theory Paper	Course Code	Title of the Paper	Evaluation			
			External	Internal	Practical	Total
I	B.Sc.B.Ed. 01	Environmental Studies (Compulsory)*	100	-	-	100
II	B.Sc.B.Ed. 02	Creating an inclusive school	80	20	-	100
III	B.Sc. B.Ed. 03	Understanding Disciplines and Subject	80	20	-	100
IV	B.Sc.B.Ed. 04(G-A)	Physical Education & Yoga	80	20	-	100
V	B.Sc.B.Ed. 05	Gender, School and Society	80	20	-	100
VI	B.Sc.B.Ed. 06	Assessment for Learning	80	20	-	100
VIII	B.Sc.B.Ed. 08(a/b)	Pedagogy of a School Subject (Candidate should opt any two school subject from the following i.e. one school subject for part - 3 and other school subject for Part - 4)  1. Chemistry 2. Biology 3. Physics 4. Mathematics 5. General Science	80	20	-	100
Practicum		1. Practice teaching 2. Block Teaching (Participation in		50 20		

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	School Activities Social Participation In Group)		10		
	3. Report of any feature of school / case study/action research		20		100
	4. Criticism Lesson				
	<b>Final Lesson</b>		<b>100</b>		<b>100</b>
					800

\*ELIGIBILITY CRITERION ON PASSING MARKS BUT MARKS SHALL NOT BE INCLUDED IN DIVISION.

## Four Years Integrated Course Scheme of B.Sc.B.Ed.

Compulsory Papers\*

Year	Paper
Ist Year	Gen. English
II Year	Gen. Hindi
III Year	Elementary Computer Application (ICT)
IV Year	Environmental Studies

Compulsory Paper

Year	Paper
I <sup>st</sup> Year	1. Childhood and Growing Up 2. Contemporary India and Education
II <sup>nd</sup> Year	3. Knowledge and curriculum 4. Learning and Teaching
III <sup>rd</sup> Year	5. Language Across the Curriculum
IV <sup>th</sup> Year	6. Creating and inclusive school 7. Understanding Disciplines and Subject 8. Gender, School and Society 9. Assessment for Learning

**Group – A: - Subject Specialisation :**

Year	Paper
I <sup>st</sup> Year	Instructional System & Educational
II <sup>nd</sup> Year	Peace Education
III <sup>rd</sup> Year	Guidance and Counselling in School

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IV <sup>th</sup> Year	Physical Education & Yoga
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**Group B: Select any three**

1. Chemistry (I, II, III)
2. Botany (I, II, III)
3. Zoology (I, II, III)
4. Mathematics (I, II, III)
5. Physics (I, II, III)

**Group C: Pedagogy of School Subject 08 A/B :** Pedagogy of a School Subject IIIrd Year and IVth Year (candidate shall be required to offer any two papers from the following, for part-III & part-IV). In I, II and III year students has to opt two optional paper that two optional paper had to studied at least two year from that only he/she can opt Pedagogy of school subject in Part III or IV

Pedagogy of Chemistry	
Pedagogy of Biology	
Pedagogy of Physics	
Pedagogy of Mathematics	
Pedagogy of General Science	

- ❖ In all the subjects the student has to study a minimum of 12 papers in Ist year, 12 Paper in IInd Year. 12Paper in IIIrd Year and 7 Paper in IVth Year (Total 43Papers).
- ❖ Each theory paper will carry 100 marks and content base paper 05, 06, 07 (G-B) will carry 150 marks. (With practical part). Distribution of marks in mathematics is according to their marking scheme in page no.7.

**Scheme of Instruction for B.Sc. B.Ed Courses**

Details of courses and scheme of study, titles of the papers, duration etc. for B.Sc.B.Ed Courses are provided in Tables given below :-

Years	Papers	Marks
I Year	12Paper +Practical	600 +150= 750
II Year	12Paper +Practical +Practicum	600 +150+100= 850

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III Year	12 Paper + Practical + Practicum + Final Lesson	600 + 150 + 100 + 100 = 950
IV Year	7 Paper + Practicum + Final Lesson	600 + 100 + 100 = 800
<b>Total</b>	<b>43 Papers</b>	<b>2400 + 550 + 200 + 200 = 3350</b>

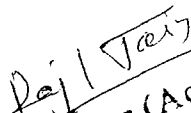
O. 321 The objectives of the practical work prescribed for the Integrated Programme of B.Sc.-B.Ed. Degree (Four Year) are follows:

**PART II**  
**Practical Work**

**Objectives:**

To develop the ability and self-confidence of pupil teachers:

1. To be conscious of sense of values and need for their inculcation in children through all available means including one's own personal life.
2. Possess a high sense of professional responsibility.
3. Develop resourcefulness, so as to make the best use of the situation available.
4. Appreciate and respect each child's individuality and treat him as independent and integrated personality.
5. Arouse the curiosity and interest of the pupils and secure their active participation in the educative process.
6. Develop in the pupil's capacity for thinking and working independently and guide the pupils to that end.
7. Organize and manage the class for teaching learning.
8. Appreciate the dynamic nature of the class situation and teaching techniques.
9. Define objectives of particular lessons and plan for their achievements.
10. Organize the prescribed subject- matter in relation to the needs, interest and abilities of the pupils.
11. Use the appropriate teaching methods and techniques.
12. Prepare and use appropriate teaching aids, use of the black board and other apparatus and material properly.
13. Convey ideas in clear and concise language and in a logical manner for effective learning.
14. Undertake action research.

  
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15. Give proper opportunity to gifted pupils and take proper care of the back-ward pupils.
16. Co-relate knowledge of the subject being taught with other subjects and with real life situations as and when possible.
17. Prepare and use assignments.
18. Evaluate pupil's progress.
19. Plan and organize co-curricular activities and participate in them.
20. Co-operates with school teachers and administrators and learns to maintain school records and registers.

**Practical skill to teach the two school subjects offered under Theory papers VIII A/B and the following:**

1. Observation of lesson delivered by experienced teachers and staff of the college.
2. Planning units and lessons.
3. Discussion of lesson plans, unit plans and lessons given (including criticism lesson)
4. Organization and participation in co-curricular activities.
5. Setting follows up assignment.
6. Evaluation in terms of educational objectives use of teachers made tests & administration of standardized tests.
7. Black-board work.
8. Practical work connected with school subjects.
9. Preparation and use of audio visual aids related to methods of teaching.
10. Experimental and laboratory work in chemistry, botany, zoology, physics, and mathematics subjects of experimental and practical nature.
11. Study of the organization of work and activities in the school.
12. Observation and assistance in the health education programme.
13. Observation and assistance in the guidance programme.
14. Maintenance of cumulative records.
15. Techniques of teaching in large classes.

**O. 322** A candidate has to deliver at least 40 lessons (20 Lessons of one teaching subject in 3<sup>rd</sup> year & 20 Lessons of other teaching subject in 4<sup>th</sup> year) in a recognized school under the supervision of the staff of the college shall be eligible for admission to the examination for the degree of B.Sc.B.Ed.

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**Notes :-**

- i. Teaching subject means a subject offered by the candidate at his/her running B.Sc B.Ed. course either as a compulsory subject or as an optional subject provided that the candidate studied it for at least two years. Thus the qualifying subjects like General English, General Hindi, Education and Environment Education. Prescribed for running B.Sc.B.Ed. course of the University or a subject dropped by candidates at the part I stage of the degree course shall not be treated as teaching subjects.
- ii. Only such candidate shall be allowed to offer General Science for the B.Sc B.Ed Examination who had studied Chemistry and any one subject of life science i.e. Biology, Botany or Zoology.
- iii. To maintain same sequence of papers (G.A. - IVth, G.B. 05/06/07 papers (Ist, IIInd & IIIrd year) and 8 a/b IIIrd year and IVth year) in the four years B.Sc.B.Ed itegrated course, paper no IIIrd in B.Sc.B.Ed IIIrd year and paper no VIIth in B.Sc.B.Ed IVth year were skipped.

**O.323** No candidate shall be allowed to appear in the Integrated B.Sc/B.Ed examination I, II, III & IV Year unless he/she has attended (80% for all course work & practicum, and 90% for school internship)

**O.324** The examination for Integrated B.Sc.B.Ed. for Four Year shall be in two parts- part 1<sup>st</sup> comprising theory papers & part 2 practice of teaching in accordance with the scheme of examination laid down from time to time.

**O.325** Candidates who fail in Integrated B.Sc.B.Ed examination in part 1or/ part 2 the theory of education may present themselves for re-examination there in at a subsequent examination without attending a further course at an affiliated training college.

**Provided** that a candidate who fails in any one of the theory papers and secures at least 48% marks in the aggregate of the remaining theory papers may be allowed to reappear in the examination in the immediately following year in the paper in which he/she fails only. He/she shall be declared to have passed if he secures minimum passing marks prescribed for the paper in which he appeared and shall be deemed to have secured minimum passing marks only prescribed for the paper (irrespective of the marks actually obtained by him) for the purpose of determining his division in

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accordance with the scheme of examination. The candidate shall have to repeat the whole examination in subsequent year in case he fails to clear the paper in which he failed.

**O.326** Candidates who fail in the Integrated B.Sc.B.Ed. examination part 1 and part 2 only in the practice of teaching may appear in the practical examination in the subsequent year provided that they keep regular terms for four calendar months per year and give at-least 40 lessons(20 in part 1& 20 in part 2) supervised lessons.

**O.326 A:** A candidate who complete a regular course of study in accordance with the provision laid down in the ordinance, at an affiliated teacher's training college for four academic year but for good reasons fails to appear at the Integrated B.Sc.B.Ed. examination may be admitted to a subsequent examination as an Ex-student as defined in O.325 or O.326 Above.

**O.326 B:** No candidate shall be permitted to appear as an Ex-student at more than one subsequent examination. The Integrated B.Sc.B.Ed programme shall be of duration of four academic years, which can be completed in a maximum of five years from the date of admission to the Integrated B.Sc.B.Ed. Degree.

**Regulation 42 :-**

**Scheme of Integrated B.Sc.B.Ed Four Year Examination**

The Integrated B.Sc.B.Ed. (Four years) will consist of the following components;

**Part I-** Main theory papers at **B.Sc.B.Ed. I**, In Integrated B.Sc.B.Ed I Paper nos. are 02, 03 & 04 in each session are of three hours carrying 100 marks (80 for theory + 20 for sessional) each. Compulsory paper\* 01 of 100 marks and optional Paper 05, 06, 07 (G-B). in each session are three hours carrying 150 marks (100 marks theory + 50 marks practical). Distribution of marks in mathematics is according to their marking scheme in page no.7.

**Part II-** Practice Teaching - Micro Teaching, Internship, Practice Teaching of 20 weeks (10 at B.Sc.B.Ed Year III & 10 at B.Sc.B.Ed Year IV) Block Teaching, Criticism and Final Lesson in III & IV Year per teaching subject.

**Organization evaluation of practice teaching:**

1. Every candidate will teach at-least 40 lessons (20 in III Year & 20 in IV Year) during practice teaching session. At least ten lessons in each subject should be supervised.

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2. 40 (20+20) lessons as desired in the syllabus should be completed as full period class room lesson. Micro teaching lesson to be used in addition to those 40 lessons for developing certain teaching skills.
3. A minimum of ten lessons in each subject will be supervised evaluated by the subject specialist or a team of specialists of the subjects.
4. By and large, the evaluation of the performance in the practical teaching will be based on the last ten lessons in the subject when the student has acquired some competence and skills of teaching.
5. The internal assessment in practice of teaching will be finalized by the principal with the help of members of the teaching staff and the same will be communicated to the university before the commencement of the practical each year.
6. At Integrated B.Sc.B.Ed III Year each candidate should be prepared to teach one lessons at the final practical examination. At the Integrated B.Sc.B.Ed IV Year exam candidate should be prepared to teach two lessons (one in each subject). The external examiners may select at-least 10% of the candidates to deliver two lessons in Integrated B.Sc.B.Ed IV Year.
7. There will be a board of Examiners for the external examination for each college which will examine each candidate in at-least one lesson and a minimum of 15% in two lessons (one in each of the two subjects).
8. The board of Examination will consist of:
  - (a) The principal of the college concerned.
  - (b) A principal or a senior and experienced member of the teaching staff of another training college, affiliated to University of Rajasthan.

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(c) An external examiner from outside the University of Rajasthan or a senior member of the teaching staff of an affiliated training college.

(d) The board as far as possible will represent Social science, language and science.

9. Approximately 50 lessons will be examined by the board each day.

**Working out the result and awarding the division:**

(1) A candidate in order to be declared successful at the Integrated B.Sc.B.Ed. I, II, III & IV Year Examination shall be required to pass separately in Part I (Theory) and Part II (Practice of Teaching).

(2) For a passing in Part I (Theory) a candidate shall be required to obtain at-least (a) 30 percent marks in each theory paper and sessionals (24 marks out of 80 and 6 marks out of 20); (b) 30% marks in each theory paper and sessional (11 marks out of 35 & 4 marks out of 15) (c) 36 percent marks in the aggregate of all the theory papers.

(3) For passing in Part II (school internship Practice of Teaching) a candidate shall be required to obtain separately at-least-

❖ 40 percent marks in the external examination.

❖ 40 percent marks in internal assessment.

(4) The successful candidates at Integrated B.Sc.B.Ed Four Year Examination obtaining total marks will be classified in three divisions and shall be assigned separately in theory and school internship Practice of teaching as follows:

Division	Theory	Practice of Teaching
I	60%	60%
II	48%	48%
Pass	36%	40%

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The practical work record shall be properly maintained by the college and may be made available for work satisfaction of external examiner in school internship (practice teaching), those are expected to submit a report regarding this separately.

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B.Sc. Ed Part IV

## ENVIRONMENTAL STUDIES

B.C.B.G. Examination-

### Scheme of examination

Time	Min Marks	Max.Marks
3 hrs	36	100

This paper will contain 100 multiple choice questions. Each question will carry 1 mark. Students should be encouraged to visit places of Environmental Importance including Natural and Manmade Habitat.

#### Note:

1. The marks secured in this paper shall not be counted in awarding the division to a candidate.
2. The candidates will have to clear this compulsory paper in three chances.
3. Non-appearing or absence in the examination of compulsory paper will be counted as a chance.

#### Unit.1: The Multidisciplinary nature of environmental studies

Definition, scope and importance- Relationship between Environmental Studies and other branches of science and social sciences.

Need for Environmental awareness, Environmental education in present day context.

#### Unit.2: Natural Resources and Challenges

- a. Natural resources and associated problems, Classification of resources: renewable resources, non renewable resources, classes of earth resources, resources regions: Definition and criteria, resource conservation.
- b. Forest resources: Use and over- exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
- c. Water resources: Use and over-utilization of surface and groundwater, floods, drought conflicts over water, dams-benefits and problems.
- d. Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- e. Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticides problems, water logging, salinity, case studies.
- f. Energy resources: Growing energy need, renewable and nonrenewable energy sources, use of alternate energy sources. Case studies.
- g. Land resources: Land as a resource, Land degradation man induced Landslides, soil erosion and desertification.

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- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

### Unit 3: Ecosystems, Concepts, Structure, Functions and Types

- Concept of an ecosystem
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids
- Introduction, types characteristics features, structure and function of the following ecosystem:
  - a. Forest ecosystem, Tropical Temperate and Alpine Ecosystem
  - b. Grassland ecosystem and Their Types
  - c. Desert ecosystem with emphasis on Thar Desert
  - d. Aquatic ecosystems(ponds, streams, lakes, rivers, oceans, estuaries) and Wet Lands

### Unit 4: Biodiversity and its conservation

- Introduction –Definition, genetic, species and ecosystem diversity
- Biogeographically classification of India
- Value of biodiversity :consumptive use, productive use, social ethical., aesthetic and option values
- Biodiversity at global, National and local level
- India as a mega-diversity nation
- Hot-spot of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts
- Endangered, Threatened and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity
- Red Data Book

### Unit 5 : Environmental Pollution and Control Measures

#### Definition

- Causes, effects and control measures of:
  - a) Air Pollution
  - b) Water Pollution
  - c) Soil Pollution
  - d) Marine Pollution

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- e) Noise Pollution
- f) Thermal Pollution
- g) Nuclear Hazards
  - Solid waste management: Causes, effects and control measures of urban and industrial wastes
  - Role of an individual in prevention of pollution
  - Pollution case studies
  - Disaster management: floods earthquake, cyclone and landslides

**Unit 6 : Social issues, Environment, Laws and Sustainability**

- From Unsustainable to Sustainable development
- Urban problems related to energy
- Water conservation; rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies
- Environmental ethics: Issues and possible solution.
- Climate change, global warming, acid rain ozone layer depletion, nuclear accidents and holocaust. Case studies
- Wasteland reclamation.
- Consumerism and waste product.
- Environmental Protection Act.
- Air (Prevention and Control of Pollution) Act
- Wild life protection Act
- Forest Conservation Act
- Biological Diversity Act
- Issues involved in enforcement of environmental legislation
- Public Awareness.

**Unit 7: Human Population and the Environment**

- Population growth, variation among nations
- Population explosion-Family Welfare Programme
- Environment and Human health
- Human Rights
- Value Education
- HIV/AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and human health
- Case Studies

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**B.Sc.B.Ed IV Year**

**02-Creating and inclusive school**

MARKS: 100

**Objectives**

The course will enable the student teachers to –

- To demonstrate knowledge of different perspectives in the area of education of children with disabilities.
- To reformulate attitudes towards children with special needs.
- To use specific strategies involving skills in teaching special needs children in inclusive classrooms.
- To modify appropriate learner friendly evaluation procedures.
- To incorporate innovative practices to respond to education of children with special needs.
- To contribute to the formulation of policy.
- To implement laws pertaining to education of children with special needs.

**Course:-**

**UNIT 1: PARADIGMS IN EDUCATION OF CHILDREN WITH SPECIAL NEEDS**

- Historical perspectives and contemporary trends Approaches of viewing disabilities:
- The charity model, the bio centric model, the functional model and the human rights model
- Concept of special education, integrated education and inclusive education; Philosophy of inclusive education.

**UNIT 2: LEGAL AND POLICY PERSPECTIVES**

- RTE Act, 2009.
- National Policy – Education of Students with Disabilities in the National Policy on Education, 1968, 1986,
- POA(1992); Education in the National Policy on Disability, 2006.

**UNIT 3 : SCHEME OF INCLUSIVE EDUCATION**

- Education of Special Focus Groups under the Sarva Shiksha Abhiyan (SSA, 2000);

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- MHRD, 2005, Scheme of Inclusive Education for the Disabled at Secondary School (IEDSS, 2009), National Trust and NGOs.
- Community-based education.

#### **UNIT 4: CLASS ROOM MANAGEMENT**

- Class Room management - meaning and approaches
- School's readiness for addressing learning difficulties
- Technological advancement and its application – ICT, adaptive and assistive devices, equipments and other technologies for different disabilities

#### **UNIT 5: INCLUSIVE PRACTICES IN CLASSROOMS FOR ALL**

- Pedagogical strategies to respond to individual needs of students: Cooperative learning strategies in the classroom, peer tutoring, social learning, buddy system, reflective teaching, multisensory teaching, etc.
- Documentation, record keeping and maintenance.
- Teacher role in classroom management

#### **Tasks and Assignments**

1. Class Test 10 marks
2. Any one 10 Marks

- Case study of a Learner with Special needs.
- Making a Report of Visit to a resource room of SSA.
- Interviewing a teacher working in an Inclusive School.

#### **REFERENCES:**

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### **B.Sc.B.Ed IV Year**

#### **03- Understanding Disciplines and subjects**

Marks 100

##### **Objectives:-**

After completing the course the students will be able:-

1. To develop an understanding of the nature of disciplinary knowledge in the school curriculum.
2. To acquire a conceptual understanding of the impact of school subjects on disciplines.
3. To develop interest, attitudes and knowledge about the content in respect of framing the syllabus.
4. To build up a professional, disciplinary and curriculum programme.

##### **Unit-I Meaning and concept of disciplinary knowledge**

- The Nature and role of disciplinary knowledge in the school curriculum.
- Relationship of disciplinary areas with school subject.
- Difference between disciplines & Interdisciplinary Subject.

##### **Unit -II School Subjects on Disciplines**

Impact of Social science Subject on Disciplines:-

- Social Science: Methods: Lecture method, Project method, Supervised study, Story-Telling, Biographical, Source Method, Brain-storming Dramatization, Experiential-Learning

##### **Unit - III Impact of science and maths subject on disciplines**

- Science: Methods & Techniques of Teaching Science: Brain Storming, Laboratory, Demonstration, Project & Field visit, Constructive Learning, Concept Mapping, Heuristic Learning & Problem Solving, Group Discussion & Panel Discussion
- Maths: Methods of teaching mathematics: Lecture, Inductive, Deductive, Analytic, Synthetic, Heuristic, Project, Problem solving, and Laboratory methods & techniques of Teaching Mathematics: Questioning, Brain storming, Role playing, Simulation, Non formal techniques of learning Mathematics.

##### **Unit - IV Impact of Language subject on disciplines**

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- Language: Story, Novel, Poetry, Personal Essay, Pen Portrait. Travelogue, Self Narration, Memories
- Redefinition of the school subject with concern to social Justice
- Meaning of Social cultural perspective in context of Universal education

#### Unit - V Process and framing of disciplines and subjects

- Recognized the theory of content, Principles and process of Preparing the syllabus and content
- Practical Knowledge ,Community & Co-curricular activity knowledge with reference to Disciplinarily and Relation with School Curriculum
- Creativity development of learning through horticulture and hospitality

#### Test and Assignment:-

1. Class Test 10 Marks
2. Any one of the following 10 Marks
  - Prepare charts with related language ( Hindi, English, or Sanskrit)
  - Preparation of a talk with related social justice.
  - Collection of news papers cutting related with horticulture and hospitality.
  - Prepare a lab with related science and maths tools and their operation.
  - Life sketch and contribution of any two Indian scientists and socialistic.
  - Study of any one aspect of social issues and prepare a report.
  - Preparation of Five (5) word cards, 5 picture cards and cross word puzzles (Language)
  - 5 microteaching skills & 5 macro- teaching (based on different innovative methods)

#### References:-

1. Apple :- M.W (2008) can school contribute to a more just society education citizenship and social justice, 3 (3) 239-261
2. Brantom F.K. : The teaching of Social studies in changing world
3. Chash, S.C (2007) history of education in India, NCERT (2005) National Curriculum fram e work .NCERT
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8. Freeman Diane-Larsen (2000) Techniques and Principles in language teaching. Oxford :049
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10. Wesley, Edgar Brose : Social Studies for School.

### B.Sc.B.Ed IV Year

#### 04-PHYSICAL EDUCATION AND YOGA

OBJECTIVES:-

MARKS-100

The course will enable the student teachers to –

- To enable them to understand the need & importance of Physical Education.
- To acquaint them to allied areas in Physical Education.
- To sensitize the student teacher towards physical fitness & its importance.
- To make them aware of the benefits of physical fitness & activities for its development.
- To help them acquire the skills for assessment of physical fitness.
- To introduce them to the philosophical bases of Yoga.
- To introduce them to types of Yoga & its importance.
- To motivate them to resort to physical activity for the fitness development.
- To help them understand the procedure of health related fitness evaluation

#### Unit 1. PHYSICAL EDUCATION

- Introduction, Definition and Meaning of physical education
- Objectives of physical education
- Scope of physical education & allied areas in Physical Education

#### Unit 2. PHYSICAL EDUCATION AND METHODS

- Need & importance of physical education in different levels of school(sec. and sr. sec.level)

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- Training methods:- Development of components of physical fitness and motor fitness through following training methods ( continuous method, interval method, circuit method, fettle/speed play and weight training)

- Development of Techniques and Tactics

### Unit 3. PHYSICAL FITNESS

- Definition, Meaning, Types and factors of physical fitness
- Factors affecting physical fitness
- Benefits Physical Fitness

### Unit 4:- PHYSICAL FITNESS AND YOGA ACTIVITIES

- Need of physical activities at school level
- Importance of physical activities at school level
- Assessment of physical fitness
- Introduction, Meaning and mis-concepts of Yoga
- Ashtang Yoga (8 stages of Yoga)
- Types of Yoga
- Importance of Yogasanas, Pranayama and Shudhikriya
- Importance of Meditation in school

### Unit 5 :- Human abilities and Yoga in Indian context

- Education and Yoga - Promotion of intelligence, awareness and creativity through Yoga, Yoga in Class – rooms (Primary , Secondary and Higher education levels).
- Stress and Yoga: Stress – Definition, Causes, Symptoms, Complications in life ; Yogic management of stress related disorders – Anxiety, Depression and Suicidal tendencies.

### Tasks and Assignments

1. Class Test - 10 Marks
2. Any one following : 10 marks
  - Learning and performing of basic yogic activities
  - Health and physical education relationship with other subject areas like science, social science and languages.
  - Fundamental skill of games/sports and yoga

### REFERENCES:-

- Kuvalayananda, Swami, Pranayama,(1983) , Popular Prakashan Bombay.
- Kuvalayananda, Swami,Asanas,(1983) Popular Prakashan Bombay, English/Hindi.
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- Niranjananada, Swami. (1998). Yoga Darshan. Deoghar, Panchadashanam Paramahansa Alakh Bara.
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- Reyna, Ruth. (1971). Introduction to Indian Philosophy. New Delhi, Tata McGraw-Hill Publishing Co. Ltd.

### B.Sc.B.Ed IV Year

## 05- Gender, School and Society

MARKS: 100

### Objectives:

After completing the course the students will be able:-

- To develop basic understanding and familiarity with key concepts-gender, gender bias, gender stereotype, empowerment, gender parity, equity and equality, patriarchy and feminism and transgender.
- To understand some important landmarks in connection with growth of women's education in historical and contemporary periods.
- To learn about gender issues in school, curriculum, textual materials across disciplines, pedagogical processes and its intersection with class, caste, religion and region;
- To understand the need to address gender based violence in all social spaces and evolves strategies for addressing it.

### Unit 1: Gender Issues: Key Concepts

- Gender, Sexuality, Patriarchy, Masculinity and Femininity
- Gender Bias, Gender Stereotyping and prejudices
- Equity and Equality in Relation with Caste, Class, Religion, Ethnicity, Disability and Region.

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- Issues and Concerns of Transgender

## Unit 2: Socialization Processes in India: Family, School and Society

- Gender Identities and Socialization Practices in different types of families in India.
- Sites of Conflict: Understanding the Importance of addressing sexual abuse in family, Neighborhood and School and in other formal and informal institutions.

## Unit 3: Gender Issues in Curriculum

- Gender, Culture and Institution: Intersection of class, caste, Religion and Region - Construction of gender in curriculum Frameworks since Independence : An Analysis - Gender and the hidden curriculum
- Gender in Text and classroom processes - Teacher as an agent of change - Life skills and sexuality.
- Institutions redressing sexual harassment and abuse.

## Unit 4: Gender Studies: Historical Perspectives on Education

- Historical Backdrop: Some Landmarks in Socio-Economic and Educational upliftment of Status of Girls and Women.
- Women empowerment : Meaning, Definition, Needs, Obstacles in the path of women empowerment, Role of Government and institutions for women empowerment

## Unit 5: Constitutional Commitments

- Reports of Commissions and Committees, Policy initiatives,
- Schemes and Programmes on Girls Education and Overall Development of Women for Addressing Gender Discrimination in Society.

### Tasks and Assignments

1. Class Test 10 marks
2. Any one 10 Marks

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- Preparation of Project on Key Concepts and its operational definitions relating it with the Social Context of the Teachers and Students.
- Analyses Textual Materials from the Perspective of Gender Bias and Stereotype.
- Organize Debates on Equity and Equality cutting across Gender, Class, Caste, Religion, Ethnicity Disability and Region.
- Prepare a project on Issues and Concerns of Transgender.
- Project on analyzing the growing up of Boys and Girls in different types of family in India.

**References:-**

- Desai, Neera and Thakkar, Usha. (2001). Women in Indian Society. National Book Trust, New Delhi
- Dunne, M. et al. (2003). Gender and Violence in Schools. UNESCO.
- Kirk Jackie e.d. , (2008), Women Teaching in South Asia, SAGE, New Delhi
- Leach, Fiona. (2003). Practising Gender Analysis in Education, Oxfam
- National Curriculum Framework 2005: Position Paper, National Focus Group on Gender Issues in Education, 3.2, NCERT, 2006.
- Nayar, Sushila and Mankekar Kamla (ed.) 2007, 'Women Pioneers in India's Renaissance, National Book Trust, New Delhi, India.
- Sherwani, Azim. (1998). the girl child in crisis. Indian Social Institute, New Delhi.
- Srivastava Gouri, (2012), Gender and Peace in Textbooks and Schooling Processes, Concept Publishing Company Pvt. Ltd, New Delhi
- UNICEF (2005). 2005 and Beyond – Accelerating Girls' Education in South Asia. Meeting Report.
- Unterhalter, Elaine. (2007). Gender, Schooling and Global Social Justice, Routledge.

**B.Sc.B.Ed IV Year**

**Assessment for Learning**

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## Objectives

The course will enable the student teachers to –

- understand the process of evaluation.
- develop the skill in preparing, administering and interpreting the achievement test.
- understand and use different techniques and tools of evaluation for learning.
- comprehend the process of assessment for learning
- develop skills necessary to compute basic statistical measures to assess the learning.

## Unit 1: Basic Concepts and Overview

- Basic Concepts: assessment, evaluation, measurement, test, examination, formative and summative evaluation, continuous and comprehensive assessment mandated under RTE, and grading.
- Purpose of assessment in different paradigms: (a) behaviourist (with its limited view on learning as behaviour), (b) constructivist paradigm and (c) socio-culturalist paradigm; distinction between 'assessment of learning' and 'assessment for learning'; assessment as a basis for taking pedagogic decisions .
- Significance of assessment for learning
- Self assessment and peer assessment

## Unit 2: Analysis of Existing Practices of Assessment

- Records used in Assessment: a) Profiles: Meaning, Steps involved and criteria for developing and maintaining a comprehensive learner profile. b) Evaluation rubric: Meaning , Construction and Uses c) Cumulative records : Meaning, Significance
- Ethical Principles of Assessment Examination Reforms a. Continuous and Comprehensive Evaluation (CCE) b. Choice Based Credit System (CBCS) c. Open Book Examination

## Unit 3: Assessment in the Classroom and Record Keeping

- Expanding notions of learning in a constructivist perspective.
- Ability to develop indicators for assessment.

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- Tasks for assessment: projects, assignments.
- Formulating tasks and questions that engage the learner and demonstrate the process of thinking.
- Scope for original responses, observation of learning processes by self, by peers, by teacher.
- Organizing and planning for student portfolios and developing rubrics for portfolio assessment, teachers' diaries, and group activities for assessment.

#### **Unit 4: INTERPRETING TEST SCORES**

- Presentation and Organization of data : Frequency distribution
- Graphical representation of data, Histogram, Frequency polygon
- Measures of Central Tendency : Mean, Median, Mode
- Measures of Variability : Quartile Deviation, Standard Deviation
- Percentile and Percentile Rank
- Rank difference method by spearman's, Co-efficient of correlation, Types of correlation
- Normal Probability Curve : Properties, Uses

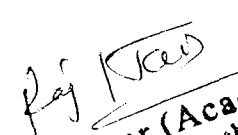
#### **Unit 5: Feedback**

- Feedback : meaning, importance and types
- Feedback as an essential component of assessment; types of teacher feedback (written and oral).
- Feedback to students and feedback to parents; peers' feedback, scores, grades and qualitative descriptions, developing and maintaining a comprehensive learner profile.
- Challenges of assessment.

#### **Tasks and Assignments**

1. Class Test 10 marks
2. Any one 10 Marks
  - Developing an achievement test with its Blue Print, Answer Key and Marks Distribution.
  - Developing a Portfolio / Profile / Evaluation Rubric (format).
  - Evaluation of available Unit test and reformation of the same.
  - Designing Questionnaire / Interview Schedule on a given topic
  - Preparing any four evaluation tools for Formative Assessment.

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2. Re-thinking Assessments in Schools, Economic & Political Weekly, Jan 17, Vol L, No.
3. Nawani, D (2012), Continuously and comprehensively evaluating children, Economic & Political Weekly, Vol. XLVIII, Jan 12, 2013.
4. NCERT(2007) National Focus Group Paper on Examination Reforms S. K. (1994).
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6. Garrett, H.E. (2008). Statistics in Psychology and Education. Delhi: Surjeet Publication.
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## B.Sc.B.Ed IV Year

### PEDAGOGY OF SCHOOL SUBJECT

#### PAPER:-VIII A / B

#### CHEMISTRY TEACHING

Marks-100

#### Objectives -

To enable student teacher to:

1. Understand the Nature, Place, Values and Objectives of teaching chemistry at secondary/senior secondary level.
2. Understand correlation with other subjects
3. Evaluate critically the existing syllabus of chemistry
4. Develop understanding of various objectives of teaching Chemistry in Secondary Schools.
5. Understand and adopt proper methods of teaching various topics of Chemistry.
6. Appreciate the usefulness of various co-curricular activities for fostering interest of pupils in Chemistry.

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7. Get acquainted with various methods of evaluation of the progress of pupils in Chemistry.
8. Prepare and use different types of instructional material for teaching Chemistry.
9. Understand the difficulties faced in teaching and learning Chemistry and suggest remedial measures.
10. Evaluate critically the existing syllabus of Chemistry prescribed for Secondary/Senior Secondary level in the State of Rajasthan.
11. Provide training in scientific method and develop scientific temper among their students.

#### **Unit - I: The Nature of Science**

- Definition of Science, Scientific Method, Scientific Literacy with suitable examples from Chemistry,
- Nature of science with special reference to chemistry
- Instructional Objectives, General and Specific Objectives of Teaching Chemistry
- Correlation of chemistry with other subjects.

#### **Unit - II: Curriculum and Planning**

- Chemistry Curriculum, Place of Chemistry in School Curriculum
- Principles of Curriculum Construction, Difference between Curriculum and Syllabus,
- Co-curricular activities, factors influencing curriculum of chemistry.
- Modern trends in Chemistry Curriculum CBA, Chemical- Education Material Study, Nuffied- O & A level.
- Critical appraisal of Chemistry syllabus at Secondary/Senior Secondary level prescribed by Board of Secondary Education, Rajasthan.
- Planning- Daily lesson plan, unit plan & yearly plan.

#### **Unit - III: Methods of Teaching Chemistry**

- Micro Teaching, Skills of teaching Lesson Planning ,
- Methods of Teaching Chemistry- Lecture Method, Demonstration Method. Discussion Method, Problem Solving Method, Project Method, Inductive-Deductive Method, Co-operative method, Constructivism method.

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- Teaching Models-Concept Attainment Model, Inquiry Training Model
- Qualities of chemistry teacher.

#### UNIT-IV Instructional Support System

- Teaching Aids in Chemistry Audio Aids, A-V Aids, Educational Broadcasts, Television and Teleconferencing, Charts, Models, Low Cost Teaching Aids, Improvised Apparatus.
- Chemistry Lab: Layout Plans, Equipments, Furniture, Maintenance of records, repair, care and improvisation of apparatus, safety measures in Lab.
- Role of State & National Level Institutions & Laboratories like DST, NCL, Fertilizer, Pesticide & Chemical Companies like Hindustan Zinc Ltd.
- Characteristics of a good text book and evaluation of a Text Book

#### Unit - V: Evaluation of Chemistry

- Difference between Measurement, Assessment and Evaluation,
- Characteristics of good Measurement, Diagnostic Test and Remedial Teaching,
- Criterion Referenced Testing and Norm Referenced Testing, Different types of items, Essay type, Short types objective type
- Development and Standardization of Achievement Test in Chemistry.

#### Assignments :-

1. Class Test 10 marks

2. Any one of the following :- 10 marks

- Planning and Conducting Experiments.
- Preparation of models and charts.
- Preparation of Chemistry Projects.
- Criticals analysis of chemistry textbooks.
- Preparation of design, blue print for teacher made test.
- Development of self-instructional material on any one topic of Chemistry
- Life sketch & contribution of any one prominent Indian Chemist.
- Preparation of scrap book containing original science (Scientific cartoon) Stories/article
- Life sketch & contribution of any one prominent Indian Chemist.

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- Conducting & reporting two experiments useful at secondary/senior secondary level (other than those in syllabus).
- A critical study of any one senior secondary Lab of chemistry.
- Preparation of 10 frames of Linear or Branching type programmes on any topic of Chemistry.

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**B.Sc.B.Ed IV Year**

**PEDAGOGY OF SCHOOL SUBJECT**

**PAPER:-VIII A / B**

**BIOLOGY TEACHING**

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**Objectives:**

To enable student Teacher to

1. Understand the Nature, Place Values and objectives of teaching Biology at Senior Secondary level.
2. Establish its correlation with other subjects
3. Evaluate critically the existing syllabus of Biology prescribed for Secondary/Senior Secondary level in the state of Rajasthan
4. Develop yearly plan unit plan and lesson plan for Senior Secondary classes.
5. Provide training in Scientific method and develop Scientific temper among their students.
6. Use various methods and approaches of teaching Biology
7. Acquire the ability to develop instructional support system.
8. Plan and organize chemistry practical work at the Laboaratory.
9. Organise Co-curricular activities and utilize community resoruces promoting Science learning.
10. Use most appropriate method to asses the progress and achievement of the pupil & thus prepare appropriate test for the purpose (both theoretical & practical)

**UNIT-I Nature, Scope and Objectives**

- Nature of science with special reference to Biology.
- Main discoveries and development in Biology.
- Place & values of teaching Biology at secondary/senior secondary level.
- Correlation of Biology with other subjects.
- Objectives of teaching Biology at secondary/senior secondary level.

**UNIT-II Curriculum and lanning**

- Principles of Biology curriculum at secondary/senior secondary level.
- Modern trends in Biology Curriculum : B.S.C.S.,
- Critical appraisal of Biology syllabus at secondary/senior secondary level prescribed by Board of secondary Education, Rajasthan.
- Planning- Daily lesson plan, unit plan & yearly plan.

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- Qualities & responsibilities of Biology teacher. Teacher's role in training students in scientific method and in developing creativity and scientific temper among their students.

### UNIT-III Methods and approaches

- Lecture method, Demonstration method, Lab-based methods, Inductive & deductive method, problem solving, Heuristic, Constructivism, & Project method.
- Inquiry approach, programmed instruction, Group discussion, self study, Team teaching, computer assisted learning, seminars and workshops.

### UNIT-IV Instructional Support System

- Multi sensory aids: Charts, models, specimen, bulletin - boards, flannel Board, Transparencies slides, projector, OHP, Computer, T.V., and Radio etc.
- Co-curricular Activities: Organization of science club, science fair, trips and use of community resources.
- Biology Lab: Organization of Biology Laboratory, Arrangement of Apparatus, Care & Maintenance of equipment & specimen, organization of practical work in Biology.
- Role of state & National Level Instructions & Laboratories Research centers in Botany, Zoology & Agriculture.
- Characteristics of a good text book and Evaluation of a Text Book.

### UNIT-V Evaluation in Biology

- Evaluation: Concept, Types and purposes.
- Type of test items and their construction.
- Preparation of Blue Print & Achievement Test.
- Evaluation of practical work in Biology.

### Sessional Work :(20 Marks)

(1) Class Test 10 Marks

(2) Any one of the following-- 10 Marks

- Life sketch & contribution of any one prominent Indian Biologist.
- Preparation of Herbarium (scrap book)
- Prepare any one of the following related to environment education.  
(i) Poster (miniature), (ii) Article, (iii) Story, (iv) Play

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- Description of any two teaching models.
- Prepare a Radio or T.V. script.
- Make a list of local (resources) useful in teaching Biology and prepared lesson plan using some of them.
- A case study of any one senior secondary lab of Biology.
- Preparation of 10 frames of Linear or Branching type programmes on any topic of Biology.
- Construction and administration of Diagnostic test on any one unit of Biology.

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**B.Sc.B.Ed IV Year**

**PEDAGOGY OF SCHOOL SUBJECT**

**PAPER:-VIII A / B**

**Physics Teaching**

MARKS:-100

**Objectives:-**

The student teachers will be able to:

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1. Understand the nature of Science and Physics.
2. Appreciate the contribution of Indian and Foreign scientists in the development of Physics.
3. Develop the skill of planning teaching learning activities.
4. Develop competencies in (a) Selection and use of teaching methods, approaches and devices. (b) Selection, preparation and use of cost effective teaching aids. (c) Inculcation of scientific attitude and science related values. (d) Plan, manage physics laboratory and organize physics practical work
5. Develop skill of critical appraisal of Physics text book.
6. Select and effectively make use of teaching aids.
7. Organize co-curricular activities related to physics.
8. Plan and critically appraise Physics curriculum at senior secondary level.
9. Prepare, use and analyze achievement tests for evaluation of learning outcomes of Physics.

#### Course content

##### Unit - I - Foundations of teaching physics

- Nature of Science and Physics, Major milestones in the development of physics, Contributions of Eminent Indian and foreign Physicists: C.V.Raman, Vikram Sarabhai, Homi Jehangir Bhabha, Subhramanayan, D.S. Kothari, Chadershekhar, Satyender Nath Bose, Newton, Archimedes, Alexander Graham Bell, Madam Curie, Albert Einstein.
- Relationship of science and society, impact of physics on modern Indian society with reference to issues related with Environment, Globalization, Industrialization, and Information Technology.
- Aims and objectives of teaching physics at senior secondary level, Correlation of physics with other school subjects.

##### Unit - II - Planning for Instruction and Role of Teacher

- Specific Objectives of Teaching Physics in Behavioural Terms, Content Analysis and Concept Mapping.
- Developing Yearly Plan, Unit Plan and Daily Lesson Plans.

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- Teacher's role in training students in scientific method, developing scientific attitude, critical thinking and creativity.
- Qualities, responsibilities and professional ethics of physics teacher.
- Criteria for selection of physics text book, critical appraisal of Physics Text Book

### Unit - III - Approaches and Methods of Teaching Physics

- Concept approach –Process approach – teaching science as a process,
- scientific method, problem solving method,
- Cooperative learning approach,
- Activity based approach – investigatory approach,
- project method, laboratory method,
- Demonstration-cum-discussion method ,
- Constructivist approach

### Unit IV- Instructional support system

- Multi sensory aids: Significance and Psychological Principles of using Teaching Aids, use of charts, models, overhead projectors, computers, internet, and improvised apparatus.
- Use of Community resources in teaching of physics.
- Planning, equipping and maintaining Physics Laboratory; planning and guiding practical work
- Selecting and guiding Projects in Physics.
- Planning and organization of Science Clubs, Science fairs and Field trips

### Unit -V Physics curriculum and Evaluation of Physics Learning

- Principles of developing curriculum of Physics,
- Evaluation of physics learning : formative, summative, continuous and comprehensive evaluation, types of test items and their construction, preparation of blue print and achievement test, item analysis,
- Diagnostic testing and remedial teaching in physics.. Evaluation of Practical Work

#### Sessional Work –

- |                              |         |
|------------------------------|---------|
| 1. Class Test                | 10MARKS |
| 2. Any one of the following: | 10MARKS |

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- Case study of any one Senior Secondary School Laboratory of Physics.
- Preparation of a diagnostic test of physics on any one unit.
- Planning activities for teaching a unit of physics using local resources.
- Conducting and reporting a practical class in Physics Laboratory


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2. Anderson R.D. (1970). Developing Children's Thinking Through Science, New Delhi: Pr
3. Chauhan, S.S. (2000). Innovation in Teaching Learning Process New Delhi: Vikas Publishing House Pvt. Ltd.
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**B.Sc.B.Ed IV Year**

**PEDAGOGY OF SCHOOL SUBJECT**

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**PAPER:-VIII A / B**  
**MATHEMATICS TEACHING**

Marks – 100

**Objectives:**

On completion of the course the future teacher educators will be able:

1. To enable prospective mathematics teachers towards the processes in which mathematics learning takes place in children's mind.
2. To enable the nature, characteristics and structure of mathematics and its correlation with other areas.
3. To enable the processes in mathematics and their importance.
4. To enable the content categories in mathematics and illustrate with examples.
5. To enable understanding of the Goals, Aims and Objectives of teaching mathematics at secondary school level.
6. To enable awareness about the objectives of teaching mathematics at secondary school level as envisaged by NCF 2005 and KCF 2012.
7. To enable understanding and skill in preparing lesson episodes based on Five E model; different approaches, methods, models and techniques of teaching mathematics.
8. To enable understanding about collaborative learning and cooperative learning strategies.
9. To enable the prospective mathematics teachers as facilitators for effective learning of mathematics.
10. To enable prospective mathematics teachers with ICT enabled skills for facilitating learning of mathematics.
11. To enable skill in assessing mathematics learning.
12. To enable prospective mathematics teachers as reflective practitioners.

**UNIT I Nature and Structure of Mathematics**

- a) Meaning and characteristics of mathematics– Science and Mathematics – Development of Mathematics: empirical, intuitive and logical
- b) History of Mathematics education: Ancient period to 21st century
- c) Contributions of eminent Mathematicians( Western & Indian-4 each)

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## MODEL OF TEACHING

- d) Branches of Mathematics: Arithmetic, Algebra, Geometry, Trigonometry -
- e) Undefined terms – Axioms – Postulates – Theorems – Proofs and verification in mathematics-Types of theorems: Existence and Uniqueness theorems – Types of proofs: Direct, indirect by contradiction, by exhaustion, by mathematical induction.
- f) Euclidean geometry and its criticisms – emergence of non Euclidean geometry.

### UNIT- II Objectives and Approaches of Teaching Mathematics

- a) Aims and Objectives of Teaching Mathematics: At primary, Secondary and Higher secondary levels – Goals of mathematics education-Mathematical skills: Calculations, Geometrical, and interpreting graphs – Mathematical abilities- Problem solving ability.
- b) Approaches to teaching Mathematics: Behaviorist approach, constructivist approach,
- c) Process oriented approach, Competency based approach, Realistic mathematics education.

### UNIT-III METHODS AND MODEL OF TEACHING MATHEMATICS:

- a) Methods of teaching mathematics: Lecture, Inductive, Deductive, Analytic, Synthetic, Heuristic, Project, Problem solving, and Laboratory methods, Co-operative, constructivism method.
- b) Techniques of Teaching Mathematics: Questioning, Brain storming, Role-playing, Simulation.
- c) Non- formal techniques of learning Mathematics
- d) Models of Teaching: Concept attainment model, inquiry training model, Inductive thinking model.

### UNIT – IV Pedagogical content knowledge of mathematics

- a) Concept of pedagogic content knowledge (PCK)
- b) Pedagogic content knowledge analysis for selected units of 8th, 9th , 10th and 11th std:-Content analysis, Listing pre-requisites, instructional objectives and task analysis
- c) Analysing and selecting suitable teaching methods, strategies, techniques, models; learning activities, Year plan (Programme of work), Unit plan and lesson plan in mathematics – their need and importance
- d) Analysing and selecting suitable evaluation strategies
- e) Identifying the misconceptions and appropriate remedial strategies

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### UNIT-V Technology in mathematics education

- a) Technology integration strategies for mathematics, web based lessons, web quest, cyber guides, multimedia presentation, Tele computing projects, online discussions
- b) E-content development concept, formats, steps for preparation.
- c) A survey of software used in mathematics teaching and learning.

#### SESSIONAL:

1. Class Tests      10 MARKS

2. Any one            10 MARKS

- b) Group puzzles activity
- c) Preparation of teaching aids
- d) Demonstration of teaching aids
- e) Collection of newspaper cuttings related to learning of a unit in mathematics.
- f) Preparing a script for radio lesson or T.V. lesson in mathematics.
- g) Visiting a mathematics lab in a school and presenting a report.

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**B.Sc.B.Ed IV Year**

**PEDAGOGY OF SCHOOL SUBJECT**

**PAPER:-VIII A / B**

**General Science Teaching**

MARKS:-100

**OBJECTIVES:-**

The Pupil- teacher will be able to-

1. Familiarize with nature of General Science.
2. Formulate instructional objectives in behavioral terms.
3. Critically evaluate the existing science curriculum at secondary level.
4. Understand the basic concepts of General Science.
5. Acquaint themselves with laboratory plan, purchase and maintenance of equipment and material.
6. Explain the concept of evaluation and construct blue print of question paper.

**Unit - 1 Teaching of General Science**

- Meaning, nature, aims and objectives of General science
- Importance of General science in Teaching
- Correlation - concept, importance and types.
- Maxims of teaching in General science

**Unit - 2 Planning in General- Science teaching**

- Curriculum - concept, methods of curriculum construction, Difference between Curriculum and Syllabus, ,

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- Place of General science in school curriculum
- Critical appraisal of General Science syllabus at secondary/senior secondary level
- Science teacher - Qualities, Competencies
- Analysis of textbook.

#### Unit - 3 Methods & Techniques of teaching in General Science

- Methods -Scientific Method, Demonstration, Laboratory, Heuristic, Project, Co-operative Learning, Constructivism, Inductive-deductive.
- Techniques:- Team teaching, Simulation, Task analysis, Cognitive psychology based technique, Technology based technique
- Year plan, Unit plan, Lesson plan - General, IT based,

#### Unit- 4 Teaching Aids and Models of teaching

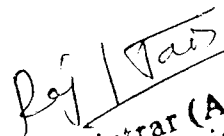
- Teaching Aids :Non-projective - chart, picture, model, Projective - Film projector, OHP, LCD, DLP,
- Science laboratory, Science- club, Science Exhibition, Field trip
- Laboratory Equipment and Material- selection, purchase, maintenance and safety measures.
- Models of teaching:- Concept Attainment Model, Inquiry training model.

#### Unit - 5 Pedagogical analysis & Evaluation in General Science

- Concept ,Approaches & importance for pedagogical analysis,
- Core elements and values, Content cum methodology approach, IT based approach
- Importance of evaluation in General Science, Evaluation according to areas - Cognitive, Psychomotor & Affective, Domain
- Use of tools and technique of evaluation:-Achievement test, Diagnostic test, Remedial teaching, Online Evaluation

#### Sessional Work –

1. Class Test 10 marks
2. Any one of the following: 10 marks
  - Preparation of a diagnostic test of Gen. Science on any one unit.
  - Analysis of syllabus.
  - Evaluation of textbook.

  
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- Content analysis of one unit.
- Conduct presentation of lesson/ Unit.

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