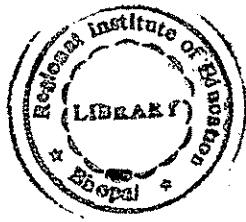


# परिशिष्ट

D- 342



## साक्षात्कार अनुसूची

---

शोधकर्ता नें अपने शोध अध्ययन में बी.एड. के अध्यापकों और विशेषज्ञों से साक्षात्कार लिया है जिसके बिंदु इस प्रकार हैं –

1. बी.एड. पाठ्यक्रम के सामान्य मुद्दे।
2. समय प्रणाली।
3. विषय वस्तु और शिक्षण विधियां।
4. शिक्षण अभ्यास अथवा इंटरर्नशिप कार्यक्रम।
5. मूल्यांकन।

## बरकतउल्लाह विश्वविद्यालय का बी.एड. पाठ्यक्रम (विज्ञान शिक्षण)

बी.एड. पाठ्यक्रम विज्ञान शिक्षण के निम्न उद्देश्य है

1. विज्ञान शिक्षण के सभी क्षेत्रों में अध्यापकों में क्षमता तथा कुशलता का विकास करना।
2. विज्ञान शिक्षण के प्रकृति के बारे में समझ को विकसित करना।
3. विज्ञान शिक्षण के क्षेत्रों तथा उद्देश्यों से अवगत कराना।
4. विज्ञान शिक्षण की विभिन्न विधियों के अवधारणा से अवगत करना।
5. विज्ञान की विषयवस्तु की अवधारणा एवं उप अवधारणा तथा उसकी विज्ञान के विभिन्न क्षेत्रों अंतः सम्बंध को विश्लेषित करना।
6. विज्ञान के पाठ्यक्रम के विभिन्न स्तर से अवगत करना तथा उन्हीं विज्ञान विषय के समीक्षा के योग्य बनाना।
7. उपयुक्त शिक्षण तकनीकी के निर्माण तथा उपयोग हेतु सक्षम बनाना।
8. न्यूनतम मूल्यों की शिक्षण सामग्री विकसित तथा उपयोग करने योग्य बनाना।

बी.एड. (विज्ञान शिक्षण) पाठ्यक्रम

इस पाठ्यक्रम को पांच इकाई में बाँटा गया है।

प्रथम इकाई

आधुनिक विज्ञान की प्रकृति एवं क्षेत्र आधुनिक समुदायों पर विज्ञान का प्रभाव इस इकाई में वैज्ञानिक विधि एवं दृष्टिकोण, विद्यालय में विज्ञान शिक्षण के लक्ष्य एवं उद्देश्य शैक्षिक उद्देश्यों का ब्लूम का वर्गीकरण एवं इसके उपयोग का वर्णन किया है।

## द्वितीय इकाई

विज्ञान पाठ्यक्रम का इतिहास एवं आधुनिक प्रवृत्तिया

दूसरी ईकाई में विद्यालय स्तर पर विज्ञान शिक्षण के पाठ्यक्रम नियोजन के सिद्धांत विज्ञान पाठ्यक्रम योजना, पाठ्योत्तर एवं अनौपचारिक दृष्टिकोण को बताया गया है।

## तृतीय इकाई

विज्ञान शिक्षण की विधियां एवं व्यावहारिक उपयोग

तीसरी इकाई में शिक्षण नियोजन, वार्षिक योजना एवं पाठ योजना तैयार करना, विषय वस्तु विश्लेषण, आधुनिक उपकरणों को तैयार करना एवं विकसित करना ।

## चतुर्थ इकाई

शैक्षिक सामग्री को तैयार करना, उनका चुनाव करना तथा उसके उपयोग, दल शिक्षा, गोष्ठी प्रस्तुतीकरण, सूक्ष्म शिक्षा तथा कम्प्युटर अनुदेशन शिक्षण, शिक्षण सामग्री का महत्व बताना।

## पंचम इकाई

मूल्यांकन एवं परीक्षा के प्रकार एवं प्रश्न पत्र

व्यापक एवं सतत मूल्यांकन, वस्तुनिष्ठ, निबंधात्मक एवं लघुउत्तरीय, निदानात्मक एवं उपचारात्मक परीक्षा, उपलब्धी परीक्षा, कसौटी संदर्भित परीक्षा तथा आधार पत्र, विज्ञान के विभिन्न प्रकार के परीक्षण के लिए प्रश्नों को तैयार करना।

# PEDAGOGY COURSE (BIOLOGICAL SCIENCE)

Paper I

1st year

Marks: 100

Internal 25, External 75

Contact hours-128

## OBJECTIVES

After completion of course the students will be able to :

1. Gain insight on the meaning, nature, scope and objectives of science education.
2. Recognize the fact that every child possesses curiosity about his natural surroundings.
3. Realize that science is a dynamic body of knowledge.
4. Identify and relate every day experiences with learning science.
5. Practice various approaches of teaching-learning of science.
6. Employ various techniques of transaction of science.
7. Use effectively different activities/ demonstrations/ laboratory experiences for teaching- learning of science.
8. Facilitate development of scientific attitudes in learners.
9. Construct appropriate assessment tools for evaluating science learning.

## COURSE OUTLINE

### UNIT - I Nature of Biological Science

**Learning experiences of Biological science in context to life  
Nature and scope of Biological Science**

Objectives of science education, role of science in removing ignorance and superstition, bringing in socio-economic changes , aims and objectives of teaching Biological science in relation to poverty, health, equity, peace, environment and gender.

Biological Science as a domain of enquiry

Observation, process skills, steps in scientific method, developing scientific attitude.

## **UNIT - II Biological Science as a dynamic body of knowledge**

Historical and developmental perspective of Biological science, major scientific concepts and their discoveries of achievements in the biological sciences: Impact on society, and futuristic views.

## **UNIT - III Content Specific Pedagogy I**

Pedagogy in Biological Science Nature of Biological disciplines, constructivist approach in learning Biological at various levels of school education, Biological Science as a discourse of interdisciplinary learning, like relation of communication in Biological science with other sciences.

### **Pedagogy specific to disciplines**

The theoretical basis of school science education: Thematic approach at elementary and secondary stages with subjects specific examples such as Food and Nutrition, health, Air, Energy, Water ; Natural resources, Habitat; interdisciplinary approach with specific examples from textbooks diffusing disciplinary boundaries ( with specific examples like DNA, RNA, Proteins, Carbohydrate, Lipids)

## **UNIT - IV Content specific pedagogy II**

Development of analytical ability Analysis of the organization of relationships between concepts, laws and theories in Biological science, erroneous concepts in Biological and remedies: learner's preconception, sources of misconception, language and misconception, effective remedies, use of ICT in teaching- learning of Biological sciences.

## **UNIT - V Resource utilization in Biological Science**

Learning Resources

Identification of learning resource from immediate environment, formal and non-formal

channels, collection of material (school specific -rural/ urban, community), exploring alternative resources, handling hurdles in utilization of resources. Resources specific to the children with special needs  
Alternative resources for physically challenged learners; ensuring partnership in classroom  
and other activities, socio -economic considerations; resources for talented minorities.

### **Topics for Internal assessment**

#### **(i) Activity/Laboratory experiences in learning Biological Sciences**

Organizing activity based class room, use of instructional material (learner participation in developing 2D, 3D and working models of pollyination, fertilization, DNA, Plant and animal cells Human eye), use of live or preserved specimens, micro slides, dissection for activity in laboratories, field experiences, for example,

- Learning habit, habitat of different plants and animals ICT application.
- Observation of plant parts to study variations in their structure.
- Observing animals to study their habits e.g. Nest of birds, holes of animals.
- Emergence of animals from caterpillars, larvae and adults in the field study ICT application.

#### **(ii) Curricular components**

Encouraging learner to non-formal channels such as debate/ discussion project, exhibition, science and technology fair, children science congress. State and National Level Science Exhibition, nurturing creative talent at local level and exploring linkagew i t h district/ state central agencies; community participation.

# PEDAGOGY COURSE (BIOLOGICAL SCIENCE)

## Paper II

IIInd year

Marks: 100

Internal 25, External 75

Contact hours-96

### **UNIT- I Learning in Biological Process**

#### **Exploring Learner's abilities, skills and attitudes.**

Cultivating in student-teacher the habit of listening, motivating learner to bring her previous knowledge gained through class room/ environment / parents and peer group; generating discussion, involving learner in teaching - learning process, encouraging learner to raise questions, appreciating dialogue amongst peer group.

### **Unit II Evolving learning situations**

Analysis of textual and supplementary print material and suitable planning for connecting lab/ field experiences in class room interaction, identifying desired experience (i.e. what level of understandings is desired, what essential questions in biological sciences will guide teaching - learning), determining acceptable evidences that show students understand, integrating learning, experiences and instructions, steps in teaching-learning experiences that enable students to develop / demonstrate desired understanding, use of ICT experiences in classroom to enable learner to adopt new techniques in teaching - learning process.

### **Unit III Assessment and Evaluation**

Informal creative evaluation to assess creativity, problem solving, practical/ technological skills, appreciating evaluation through co-curricular channels, exploring content areas not assessed in formal examination system through performance based assessment. Participation in group; presentation and communication skills of Biological science; posing questions, interpretation and analysis of observation; Designing innovative learning situations; laboratory experience; field notes.



## **Unit IV- Formal ways to evaluate learner**

Challenges to test understanding / concept development during practice and term/terminal examination, practicing continuous and comprehensive evaluation to test regular progress/ achievement of learner, oral presentation, developing performance parameter for qualitative assessment, anecdotal records, rubric portfolio in the field of biological sciences.

## **Unit V: Formal Blue print and framing questions.**

Identifying and organizing components for developing framework of question paper at different stages of learning, percentile ranking, reporting performance of learners, framing questions based on theory, experiment/activities to discourage rote learning and promoting analysis, critical thinking and reasoning, open ended questions to evaluate creativity and expression of learner.

Topics for internal assessment

Hands-on activities and lab experiences

Encouraging learner to collect material to develop/ fabricate suitable activity prior to the class (individual or group work) and teacher facilitated activities to generate discussion; experiences on layout, setting and organizing laboratory, Developing content specific project work, projects on planning and developing instructional materials in Biological sciences.

Provide opportunities for group discussion on key themes and concepts, group/individual presentation, lecture in interactive manner providing opportunity for sharing ideas followed by group discussion, exposing to exemplar constructivist learning situations in science, designing and setting up activities/laboratory work, Making field notes/ observation , visit to State/National level science exhibition/science centre/science museum, audio visual presentation followed by its analysis and discussion, reflective written assignments, case studies in Biological Sciences.

## **READING MATERIAL**

1. NCERT, National Curriculum Framework - 2005.
2. NCERT, Position Paper of NFG on Teaching of Science -2005.

## Group B: Pedagogy Courses

Courses in Group B pertain mainly to enabling student teachers become effective teachers. For this, a few preparatory aspects are necessary to help the student teacher not only reorganize one's previous understanding of one's subject of specialization but also become conversant with necessary competencies to visualize and create enabling learning situations for learners. Further, student teacher has to try out evolving a few learning situations and carry them out both in simulated as well as real situations.

Courses in Group B are aimed at providing an understanding of the dynamics and complexities in teaching-learning situations, including familiarity with the basic terms and concepts, various alternatives possible, technical insights into putting curricular aspects in operation as well as various ways of assessing learning. In consonance with the overall framework, emphasis is laid on the constructivist views in all these dimensions, with appropriate exposure to other views, wherever necessary.

The four courses indicated as 'PC' are

PC1 and PC2 Subject Knowledge and its Pedagogic Restructuring: Part I and Part II

These Courses intends to enable student teachers to recognize the nature of knowledge in various subject areas (Science-Biological/Physical/Mathematics/Social Science/Languages-Hindi/English/Urdu/other region-specific language), and pursue efforts to keep themselves abreast with advancements in their areas of specialization. Each student teacher will take up two subject areas of his/ her own choice. In view of the requirement of actual hands on experiences, each of the Courses is

visualized in two parts - I and II - to be spread over two years. Part I will help in developing understanding of and competence to render disciplinary knowledge into forms relevant to stage specific objectives and their pedagogic requirements. Part II provides a comprehensive understanding of the teaching learning situations- gained through intensive study of conceptual explanations, observation and analysis of real life classroom situations, simulations as well as on hand experiences. In order to provide adequate exposures and internalization, the Course is spread into two parts, I and II, each to be dealt with in two consecutive years.

D- 341

### **PC 3 Assessment for Learning**

This Course intends to lead to an understanding and appreciation of the relevance of assessment- the how and why of it, as well as develop necessary competence in evolving appropriate assessment modes in line with learning objectives. It also clarifies the significant shift in emphasis of the terms 'assessment for learning' as against 'assessment of learning'.

### **PC 4 Learning to Function as a Teacher**

This 'course', as the title suggests, is visualized as essentially a school based experiential learning for the student teachers in not only aspects related to teaching learning of their subject areas in the classroom, but also to gain insight and sensitivity into the wholistic part played by teacher in sustaining and evolving school ethos. For this, it is visualized as a longer duration field experience supported by relevant interactive exposures within the school and the Institute.

### **Pedagogy Courses 1 and 2: Subject Knowledge and the related Pedagogic Dimensions**

Each Course is visualized in two parts, which are to be conducted in two successive years. The units are organized in a form indicating the continuity and sequence in which they are to be dealt with. Each institute will decide PC1 and PC2 courses as per the university requirement.