

HINDI COURSE OUTCOME & PROGRAMME OUTCOME

COURSE INTRODUCTION

Programme outcomes (POs):

1. साहित्य मानव संवेदना की अभिव्यक्ति का प्रमुख स्रोत रहा है। कलाओं में यह सम्पूर्ण कला है। साहित्य समाज का प्रतिदर्श है। स्नातक उपाधि में इस विषय के चयन व अध्ययन से शिक्षार्थी को साहित्य के सांगोपांग महत्व का ज्ञान होता है।
2. शिक्षार्थी को राष्ट्र की सर्वप्रमुख भाषा हिन्दी के अत्यन्त समृद्ध साहित्य के सम्पूर्ण स्वरूप का ज्ञान होता है।
3. शिक्षार्थी को हिन्दी साहित्य की सभी प्रमुख विधाओं का ज्ञान होता है, जिससे उसमें रचनात्मकता का प्रस्फुटन एवं विकास होता है।
4. शिक्षार्थी को जीवन के आजीविकोपार्जन सम्बन्धी पक्ष के रूप में हिन्दी के प्रयोजनमूलक स्वरूप व महत्व का ज्ञान एवं प्रशिक्षण होता है।
5. साहित्य के अध्ययन में अन्य अनुशासनों के सन्दर्भ यथा सामाजिक, मनोवैज्ञानिक, राजनीतिक, आर्थिक, ऐतिहासिक, पर्यावरणीय आदि समाहित होते हैं। स्नातक में हिन्दी साहित्य का चयन शिक्षार्थी को समग्र रूप से शिक्षित करता है।
6. शिक्षार्थी संघ लोक सेवा आयोग एवं प्रादेशिक लोक सेवा आयोगों के परीक्षा पाठ्यक्रम में सम्मिलित हिन्दी साहित्य की आधार व अनिवार्य शिक्षा प्राप्त करता है।

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Programme specific outcomes (PSOs): UG I Year / Certificate course Arts with Hindi
<ol style="list-style-type: none"> 1. शिक्षार्थी स्नातक प्रमाण पत्र पाठ्यक्रम के अन्तर्गत मुख्य विषय के रूप में हिन्दी की प्राचीन एवं मध्यकालीन कविता तथा कथा साहित्य का आधारभूत ज्ञान प्राप्त करेगा। 2. शिक्षार्थी स्नातक प्रमाण पत्र पाठ्यक्रम के अन्तर्गत वैकल्पिक/सहायक विषय के रूप में हिन्दी व्याकरण का ज्ञान एवं व्यावहारिक प्रशिक्षण प्राप्त करेगा। विकल्प के रूप में यह चयन प्रतियोगी परीक्षाओं में सहायक एवं उपयोगी सिद्ध होगा। 3. शिक्षार्थी प्रमाण पत्र वर्ष में एवं कौशल संवर्द्धन पाठ्यक्रम के रूप में प्रयोजनमूलक हिन्दी का ज्ञान एवं व्यावहारिक प्रशिक्षण प्राप्त करेगा। 4. प्रथम वर्ष में शिक्षा में बाधा हो जाने की स्थिति में शिक्षार्थी हिन्दी तथा अन्य विषयों के साथ स्नातक प्रमाण-पत्र प्राप्त करेगा, जिसका लाभ उसे आजीविका प्राप्त करने में प्राप्त होगा।
Programme specific outcomes (PSOs): UG II Year/ (Diploma in ARTS with Hindi)
<ol style="list-style-type: none"> 1. शिक्षार्थी स्नातक डिप्लोमा पाठ्यक्रम के अन्तर्गत मुख्य विषय के रूप में हिन्दी की रीतिकालीन कविता व काव्यांग परिचय तथा नाटक एवं स्मारक साहित्य का आधारभूत ज्ञान प्राप्त करेगा। 2. शिक्षार्थी स्नातक डिप्लोमा पाठ्यक्रम के अन्तर्गत वैकल्पिक/सहायक विषय के रूप में हिन्दी भाषा के स्वरूप का ज्ञान एवं व्यावहारिक प्रशिक्षण प्राप्त करेगा। विकल्प के रूप में यह चयन प्रतियोगी परीक्षाओं में सहायक एवं उपयोगी सिद्ध होगा। 3. शिक्षार्थी डिप्लोमा वर्ष में एवं कौशल संवर्द्धन पाठ्यक्रम के रूप में हिन्दी पत्रकारिता का ज्ञान एवं व्यावहारिक प्रशिक्षण प्राप्त करेगा। 4. शिक्षा में बाधा हो जाने की स्थिति में शिक्षार्थी हिन्दी तथा अन्य विषयों के साथ स्नातक डिप्लोमा प्राप्त करेगा, जिसका लाभ उसे आजीविका प्राप्त करने में प्राप्त होगा।

10-08-2022

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Programme specific outcomes (PSOs): <i>UG III Year / Bachelor of ARTS with Hindi</i>	
PSO 1	1. शिक्षार्थी स्नातक उपाधि वर्ष पाठ्यक्रम के अन्तर्गत मुख्य विषय के रूप में हिन्दी की द्विवेदीयुगीन, छायावादी तथा छायावादोत्तर एवं समकालीन कविता, हिन्दी निबन्ध एवं लोक-साहित्य का आधारभूत ज्ञान प्राप्त करेगा।
PSO2	2. शिक्षार्थी के पास उपाधि वर्ष में विगत वर्षों के अध्ययन से हिन्दी साहित्य के विविध पक्षों तथा उनके अकादमिक स्वरूप ज्ञान होगा, उसे हिन्दी भाषा के व्याकरण एवं स्वरूप का ज्ञान होगा, उसे कार्यालयी हिन्दी तथा पत्रकारिता जैसे रोजगारपरक विषयों का ज्ञान होगा और वह आगे की शिक्षा एवं शोध के लिए भाषा तथा साहित्य के उच्चस्तरीय आधारभूत ज्ञान व कुशलता के साथ उपाधि प्राप्त करेगा।

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ENGLISH COURSE OUTCOME & PROGRAMME OUTCOME

Programme outcomes (POs):

The programme aims to:

- Develop an appreciation of English language, its connotations and interpret and appreciate the didactic purpose of literature.
- Develop in students a deep-rooted pride in being Indian.
- Unravel the historical, social and cultural context of each literary work and thereby make connections between literature and society & appreciate literature's ability to empower us emotionally.
- Sensitize students to the aesthetic, cultural and social aspects of literature
- Present an extensive view of the cultural and social patterns of the society in the specific time and situations in which it flourished resulting in an intellectual and emotional engagement with the work.
- Make students aware of the different kinds of literature written/translated in various English-speaking countries across the world as well as the literature from Asia.
- Develop a more complex understanding of the history, literature, narrative techniques, Drama techniques, kinds of fiction and drama from Britain, America and India.
- Augment the understanding of fundamental tenets of classical literature
- Develop an understanding of the various connotations of the term 'New Literatures' and the difference from other terms like Commonwealth Literature etc.
- Develop an insight regarding the idea of world literature and the pertinent issues of feminism, racism and diasporic relocations
- Provide job opportunities through 'skill-based' courses
- Instill in students anew zeal and a new vision of life to make them better citizens.
- Recreate a response through creative indulgences like script-writing, dialogue writing, and be able to exploit his/her creative potential through digital media.
- Engage students with various strategies of drafting and revising, style of writing and analytical skills, diagnosing and developing scholarly methodologies, use of language as a means of creative expression, will make them effective thinkers and communicators.
- Empower students with knowledge of existing research methodologies and critical thinking.
- Comprehend and contextualise contemporary films adapted from literature, to describe objectively its importance and usefulness for the society while analysing its plot and characters.
- Comprehend translation as a useful bridge between various linguistic regions
- Assist students towards English language comprehension, intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning
- Acquire basic skills to pursue translation as research and career
- Introduce the learners to the nuances of the changing media scenario in terms of production of media content
- Inculcate in them the skills of reporting, editing and feature writing in print medium to have a career perspective in media and journalism.
- Strengthen their grasp of the interrelationship between Culture and Society
- Help students prepare for various national and international competitive exams
- Create a possibility for the students to emerge as prospective writers, editors, content developers, teachers, etc.

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SANSKRIT PROGRAMME OUTCOME

COURSE INTRODUCTION

Programme outcomes (POs):	
PO1	साहित्य मानव संवेदना की अभिव्यक्ति का प्रमुख स्रोत रहा है। कलाओं में यह सम्पूर्ण कला है। साहित्य- समाज का दर्पण है। स्नातक उपाधि में इस विषय के चयन से विद्यार्थी साहित्य के अध्ययन से तात्कालिक समाज एवं संस्कृति से अवगत होगा।
PO2	सहज एवं स्वाभाविक रूप से भाषा-कौशल प्राप्त कर उनमें प्रभावशाली अभिव्यक्ति की क्षमता उत्पन्न होगी।
PO3	आत्मविश्वास से युक्त एवं नेतृत्व क्षमता प्राप्त होगी।
PO4	मूल्यपरक व्यक्तित्व से युक्त होकर भारतीयता के बोध के साथ वैश्विक नागरिक के रूप में भावी चुनौतियों का सामना करने में सक्षम होंगे।
PO5	विद्यार्थी संघ लोक सेवा आयोग एवं प्रादेशिक लोक सेवा आयोगों के परीक्षा पाठ्यक्रम में सम्मिलित संस्कृत साहित्य की आधार एवं अनिवार्य शिक्षा प्राप्त कर सकेंगे।
PO6	विद्यार्थियों को लेखन, वाचन एवं अध्ययन की दृष्टि से भाषागत दक्षता प्राप्त हो सकेगी।
Programme specific outcomes (PSOs):	
UG I Year / Certificate cours Arts with Sanskrit	
1. सर्वाधिक वैज्ञानिक भाषा के रूप में संस्कृत भाषा के प्राचीन महत्व एवं उसकी वर्तमान प्रासंगिकता को जानने-समझने योग्य होंगे। 2. संस्कृत साहित्य के विभिन्न विषयों यथा नीतिसाहित्य,, व्याकरण, महाकाव्य, छन्द, अलङ्कार एवं नाटक इत्यादि से सुपरिचित होकर संस्कृत विषय के महत्त्व का बोध होगा। 3. संस्कृत भाषा अध्ययन, सम्भाषण, से जीविकोपार्जन के योग्य हो जायेंगे।	
Programme specific outcomes (PSOs):	
UG II Year/ Diploma in Arts with Sanskrit	
1. संस्कृतसाहित्य, भारतीय संस्कृति, व्याकरण का बोध हो सकेगा। 2. श्रीमद्भगवद्गीता के अध्ययन से आत्मप्रबन्धन में कुशल होंगे। 3. धर्म-दर्शन, आचार-व्यवहार, नीतिशास्त्र के मूलतत्त्वों को जानकर उत्तम चरित्रवान् मानव एवं कुशल नागरिक बनेंगे। 4. संस्कृत साहित्य के अन्तर्गत प्राचीन-अर्वाचीन संस्कृत साहित्यकारों की कृतियों में निबद्ध समसामयिक विषय का बोध होगा।	

Programme specific outcomes (PSOs):	
UG III Year / Bachelor of Arts with Sanskrit	
PSO1	विद्यार्थी स्नातक उपाधि पाठ्यक्रम के अन्तर्गत मुख्य विषय के रूप में साहित्य शास्त्र, दर्शन एवं व्याकरण का आधारभूत ज्ञान प्राप्त करेंगे।
PSO2	पाठ्यक्रम के अन्तर्गत, उपनिषद् पुराण एवं स्तोत्रकाव्य से परिचित होंगे।
PSO3	स्नातक उपाधि के पाठ्यक्रम में विद्यार्थी वैदिकवाङ्मय, एवं धर्मशास्त्र का ज्ञान प्राप्त करेंगे।
PSO4	पाठ्यक्रम के अन्तर्गत भारतीय ज्ञानपरम्परा के अन्तर्गत भारतीय दर्शन, एवं नीतिकथाओं के अध्ययन से विद्यार्थी का चारित्रिक उन्नयन होगा।
PSO5	पाठ्यक्रम के अन्तर्गत स्मृति साहित्य का अध्ययन कर उसके महत्व से परिचित होंगे।
PSO6	कौटिलीय अर्थशास्त्र के अध्ययन से विद्यार्थी परिचित होंगे। इस प्रकार धर्म-दर्शन, आचार-व्यवहार, नीतिशास्त्र के मूल तत्त्वों को जानकर उत्तम चरित्रवान् मानव एवं कुशल नागरिक बनेंगे। प्रस्तावित विषय-संस्कृत साहित्य की विविध विधाओं एवं वैदिक वाङ्मय पर आधारित विषय पर लघु शोध कार्य से विद्यार्थियों की शोधपरक बुद्धि का विकास होगा। सर्वेक्षण, अन्वेषण एवं मनन-चिन्तन से उनका बौद्धिक स्तर बढ़ेगा साथ ही समसामयिक समस्या के निदान का मार्ग भी प्रशस्त होगा।

GEOGRAPHY COURSE OUTCOME & PROGRAMME OUTCOME

Subject prerequisites:

Subject is open to all have passed 10+2 level in any stream

But, preference shall be given:

1. To study Geography, a student had the subject Geography learnt at 10+2 level.
2. Anyone who has mathematics, physics, biology as base subjects at 10+2 level.
3. Keen interest in Earth and its physical and social environment and maps.
4. Computer and drawing skills.
5. Creativity, sound observation and analytical aptitude while working on scientific procedures and research.

COURSE INTRODUCTION

Geography helps us to have an awareness of a place. All places and spaces have a history behind them, shaped by humans, earth, and climate. It also helps students with spatial awareness on the globe. Understanding direction and where things are in the world is still a vital skill, despite having easy access to this information online. **Physical Geography:** includes the study of the physical composition of a land which includes climate, landforms, soil and growth, bodies of waters, and natural resources. **Human Geography:** on the other hand, includes the study of people and culture and how they are distributed across the globe and are more likely to participate in the global community. Geography helps to develop factual reading skills — not only in the studying of maps, but also in the reading materials that are associated with geography. Geography often involves first-hand accounts, reading of research studies, and analysis of data sets. Geography puts history in context.

It helps us see the why, when, and how of what happened in history. One can learn History better by learning Geography.

Globalization is the process of cultures travelling globally and having an effect on others. Studying geography helps to understand where globalization might lead. Studying geography will make you better understand current events. Studying geography can enhance your navigation skills, no matter where you are. Studying geography will help you make sense of and appreciate different cultures around the globe. Learning about land, resource availability, and how that has shaped a culture to be the way it is today helps you understand the uniqueness of a culture. The study of geography helps us to understand relationships between cultures. Ultimately, this leads to a more accepting and culturally aware society.

Those who study geography have a unique outlook — one that comes with the knowledge of many cultures and spatial awareness that is not replicated in other disciplines. This mix of knowledge can help geographers come up with significant and unique solutions that others may not be able to see. Another way geography can have a positive influence in the world is by creating awareness of the effect of climate change. Geographers have intimate knowledge of weather patterns and climate changes throughout the course of history on areas of land. They also have studied how those changes have affected humans in those areas. That knowledge is shared with others to hopefully bring an understanding and global awareness of the effects of climate change on human society. Geography will help you better understand news, help fight climate change, be a part of a global community, understand cultures, and learn history. At the end of the day, geography will help to become a better overall global citizen.

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GEOGRAPHY COURSE OUTCOME & PROGRAMME OUTCOME

Programme outcomes (POs): (After 3 Years of Study in Geography Under Graduate Programme)	
PO 1	This course will provide students, the basic concepts of Physical & Human Geography.
PO 2	It will help in developing analytical and critical thinking based on the themes and issues of Geography.
PO 3	Students will be able to analyze the problems of present physical as well as cultural world and they will try to find out the possible measures to solve those problems.
PO 4	Students will be able to understand applied and interdisciplinary aspects of Geography.
PO 5	Students will be able to design and conduct research projects in geography.
PO 6	Students will learn how to use various surveying instruments in the field.
PO 7	Students will be equipped with various statistical techniques and their uses.
PO 8	Students will learn how to prepare maps based on toposheets as well as GIS.
PO 9	Students will be able find out an original research question appropriate for geographic analysis.
PO 10	Students will be able to design and implement legitimate geographic methodology.
PO 11	As a student of Geography, they will be capable to develop their observation power through field experience and to identify the socio-environmental problems of the areas and regions.
PO 12	Students will prepare themselves for professional careers in Geography.
PO 13	As a spatial science subject will train students to employ in the sectors of geospatial analysis, regional planning and development, tourism, mapping and surveying etc.
PO 14	Through this course students will be able to prepare themselves for Post Graduate and further Ph.D. programs in Geography.
PO 15	Students will be able to relate and use geographical knowledge and its practical aspects in their realistic life.
Programme specific outcomes (PSOs): <i>UG I Year / Certificate course Arts/Science</i>	



GEOGRAPHY COURSE OUTCOME & PROGRAMME OUTCOME

1. Student will gain the knowledge of Physical Geography. Student will have a general understanding about the geomorphological and geotechnical process and formation. They will be able to correlate the knowledge of physical geography with the human geography.
2. Imbibing knowledge, skills and holistic understanding of the Earth, atmosphere, oceans and the planet through analysis of landform development; crustal mobility and tectonics, climate change and dynamics; soil formation and classification; hydrological and oceanographic studies etc.
3. Associating landforms with structure and process; establishing man-environment relationships; and exploring the place and role of Geography vis-a-vis other social and earth sciences.
4. They will be able to acquire the knowledge of Human Geography and will correlate it with their practical life.
5. Student will be able to analyse the problems of physical as well as cultural environments of both rural and urban areas. Moreover they will try to find out the possible measures to solve those problems.
6. Students will be able to learn various Field Survey Techniques with diverse Survey Instruments.
7. Students will be able to learn the application of various modern instruments (GPS) and by these they will be able to collect primary data.
8. Applied geomorphologists working independently or serving on multidisciplinary advisory panels are well positioned to influence public policy to the benefit of society and the earth sciences.

Programme specific outcomes (PSOs):
UG II Year/ (Diploma in Arts/Science)

1. Student will have a general understanding about the Tourism Geography of any region. They will be able to correlate the knowledge of Tourism Geography with the Regional Development and Planning.
2. Students will be able analyze the prospects and potential of tourism in Uttarakhand State. Moreover they will try to find out the possible contribution of tourism development in regional development and planning.
3. Expertise in Statistical Techniques will be useful in quantitative assessment of the geographical data. The students can be able to justify their research outcomes which will ultimately contribute to the proper formulation of developmental plans.
4. The earth is three dimensional, and it is a challenge to show information in 3D to communicate with others. The map projection techniques will be helpful to put the earth on the flat surface which makes it easier for all to understand. The map projection techniques: the students will be able to map and communicate the geographical information of any region and any plans they have for solving problems that arise.

Programme specific outcomes (PSOs):
UG III Year / Bachelor of Arts/Science

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GEOGRAPHY COURSE OUTCOME & PROGRAMME OUTCOME

PSO 1	Inculcating a tolerant mindset and attitude towards the vast socio-cultural diversity of India by studying and discussing contemporary concepts of social and cultural geography. Understanding and accounting for regional disparities, poverty, unemployment and the impacts of globalization. Explaining and analyzing the regional diversity of India through interpretation of natural and planning regions.
PSO 2	Understanding the role and functioning of global economies, industrial locations; and the use and exploitation of resources with impacts.
PSO 3	Understanding the history of the subject; over viewing ancient and contemporary geographical thought and its relationship with modern concepts of empiricism, positivism, radicalism, behaviouralism, idealism etc.
PSO 4	Students correlate activity of agriculture and its determinants, Classify various types of agriculture in the world and differentiate, Discuss the problems and prospects of agriculture, Acquire new methods, techniques and trends used in agriculture, Understand the concept of sustainable agricultural development.
PSO 5	Conduct Social Survey Project: They will be eligible for conducting social survey project which is needed for measuring the status of development of a particular group or section of the society
PSO6	Training in practical techniques of mapping, cartography, softwares, interpretation of maps, photographs and images etc; so as to understand the spatial variation of phenomena on the Earth's surface.
PSO7	Students will learn how to prepare map based on GIS by using the modern geographical map making techniques.
PSO8	Development of Observation Power: As a student of Geography Course they will be capable to develop their observation power through field experience and in future they will be able to identify the socio-environmental problems of a locality.
PSO9	After the completion of the project they will be efficient in their communication skill as well as power of social interaction. Some of the students are being able to understand and write effective reports and design credentials, make effective demonstrations, and give and receive clear instructions.
PSO 10	Demonstrate knowledge and understanding of the management principles and apply these to their own work, as a member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PSO 11	Employment Opportunities: Many geography grads go into urban and regional planning, a

CHEMISTRY COURSE OUTCOME & PROGRAME OUTCOME

Purpose of the Program

The Importance of chemistry arises because so many other disciplines draw on certain chemical principles and concepts. The purpose of the undergraduate chemistry program at the university and college level is to prepare our students for all those fields where basic knowledge of chemistry is required including academia for careers as professionals in various industries and research institutions.

Program Outcomes

- PO 1.** Students will have a firm foundation in the fundamentals and applications of chemical and scientific theories including those in analytical, inorganic, organic and physical chemistry.
- PO 2.** Students will be able to design and carry out scientific experiments as well as accurately record and analyze the data of such experiments.
- PO 3.** Students will develop skill in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
- PO 4.** Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
- PO 5.** Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.
- PO 6.** Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.
- PO 7.** Students will be able to function as a member of an interdisciplinary problem-solving team.

PROGRAM SPECIFIC OUTCOMES (PSOS)	
CERTIFICATE IN INTRODUCTORY CHEMISTRY	
First Year	Certificate in Introductory Chemistry will give the student a basic knowledge of all the fundamental principles of chemistry like atomic structure, molecular polarity, bonding theories of different molecules, resonance concept, hyperconjugation, field effects, periodic properties of more than 111 elements, mechanism of organic reactions, stereochemistry, detailed study of states of matter including kinetic theories of gases, solid and liquid states, chemistry of aliphatic and aromatic compounds, chemical kinetics, its scope and first law of thermodynamics. Student will be able to understand the qualitative and quantitative chemical analysis of the compounds in the laboratory. This certificate course is definitely going to prepare the students for various fields of chemistry and will give an insight into all the branches of chemistry. It will enable students to join the diploma course (semester III and IV) in any University or College of Higher education in Uttarakhand
Second Year	DIPLOMA IN CHEMICAL SCIENCE
	Diploma in Chemical Science will provide the theoretical as well as practical knowledge of handling chemicals, apparatus, equipment and instruments. The knowledge about second law of thermodynamics, chemical equilibrium, phase equilibrium, electrochemistry, coordination chemistry, acid-base theories, chemistry of transition elements, halides, alcohols, phenols, aldehydes, ketones and carboxylic acids will enable the students to work as chemists in various industries. The experimental work during the diploma course will enhance the skill of the students regarding chemical and physical tests of inorganic as well as organic compounds along with some physical experiments which will be beneficial to achieve their goals in industrial sectors. It will enable students to join the Bachelor of Science course (semester V and VI) in any University or College of Higher education in Uttarakhand
Third Year	DEGREE IN BACHELOR OF SCIENCE
	Degree in Bachelor of Science programme aims to introduce very important aspects of modern-day course curriculum, namely, chemistry of nitrogen containing compounds, organometallic, lipids, fats, dyes, paints, reagents in organic synthesis, carbohydrates, proteins, biomolecules, data analysis, nano-chemistry, green chemistry, stability of coordination compounds, cement, paint, ceramics, glass, inorganic fertilizers, radioactivity, corrosion, magnetic behaviour of transition metal complexes, surface chemistry, quantum mechanics, solutions, third law of thermodynamics, photochemistry, and spectroscopic techniques. This knowledge will make the students skilled to work in various chemical industries like cement industries, agro product, paint industries, rubber industries, petrochemical industries, food processing industries, fertilizer industries, pollution monitoring and control agencies etc. It will also enable the students to understand the importance of the biomolecules in biological science and related fields. Upon completion of a degree, chemistry students will be able to employ critical thinking and scientific inquiry in the performance, design, interpretation and documentation of laboratory experiments. It will help a candidate to succeed at an entry-level position in chemical industry or a chemistry postgraduate program.

COURSE INTRODUCTION

The new curriculum of B.Sc. in Science (Botany) offers essential knowledge and technical skills to study plants in a holistic manner. Students would be trained in all areas of plant biology using a unique combination of core, elective and vocational papers with significant inter-disciplinary components. Students would be exposed to cutting-edge technologies that are currently being used in the study of plant life forms, their evolution and interactions with other organisms within the ecosystem. Students would also become aware of the social and environmental significance of plants and their relevance to the national economy.

B.Sc. Botany Programme covers academic activities within the classroom sessions along with practical concepts at laboratory sessions. Infield, outstation activities and projects would also be organized for real-life experience and learning. Candidates who have curiosity in plants kingdom, ecosystem, love exploring exotic places and wish to work as researchers or professions like Botanist, Conservationist, Ecologist, etc. can choose B.Sc. Botany course.

Programme outcomes (POs):

Transformed curriculum shall develop educated outcome-oriented candidature, fostered with discovery- learning, equipped with practice & skills to deal practical problems and versed with recent pedagogical trends in education including e-learning, flipped class and hybrid learning to develop into responsible citizen for nation-building and transforming the country towards the future with their knowledge gained in the field of plant science.

PO1	CBCS syllabus with a combination of general and specialized education shall introduce the concepts of breadth and depth in learning.
PO2	Shall produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development.
PO3	Will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, enhance communication skill, social interaction, and increase awareness in judicious use of plant resources by recognizing the ethical value system.
PO4	The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.

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PO5	Certificate and diploma courses are framed to generate self- entrepreneurship and self- employability, if multi exit option is opted.
PO6	Lifelong learning is achieved by drawing attention to the vast world of knowledge of plants and their domestication.

Programme specific objectives (PSOs): B.Sc. I Year Certificate Course in Basic Botany

- This certificate course will provide knowledge on various fields of basic Botany.
- The syllabus is prepared to enable students for competitive exams in frontier areas of plant sciences.
- Students will be able to know about habit, habitat, morphology, anatomy and reproduction of various plant groups.

Programme specific outcomes (PSOs): B.Sc. II Year/ Diploma Course in Developmental Botany

- This programme will provide knowledge on plant anatomy, embryology and cytogenetics.
- Laboratory sessions following theory will provide easy understanding of internal structure of various plant parts, structural organization, reproductive biology and genetics.
- This course will help students to become a plant morphologist.

Programme specific outcomes (PSOs): B.Sc. III Year/ Bachelor of Science

- The three year learning outcome of graduation will provide understanding of plant systematic, developmental biology, ecology, statistics, physiology, biochemistry, anatomy, and plant genetics.
- It will provide expertise in conservation biology and reproduction biology.
- After completing this course successfully students will be able to contribute in the field of plant sciences. The research project will help to develop research aptitude for higher education and scientific research.

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Introduction

Zoology is one of the most fundamental branches of biology studied at undergraduate level. Zoology is a broad subject encompassing classical and modern systemic aspect of animal diversity as well as contemporary subjects like molecular biology, bioinformatics, biotechnology etc. The scope of zoology as a subject is wide-ranging. The major areas of study within the discipline of zoology are: Diversity of Non-chordates and chordates; Comparative Anatomy of Vertebrates; Cell Biology; Developmental biology; Biochemistry; Molecular Biology; Evolutionary Biology; Principle of Genetics; Principles of Ecology and Physiology etc. Degree course in Zoology deals with other topics that overlap with the area mentioned above (Immunology; Parasitology; Basics of Neurosciences; Animal Behaviour and Chronobiology; Animal Biotechnology; Biology of insects; Endocrinology; Computational Biology; Fish and Fisheries; Reproductive Biology and Wildlife Conservation and Management) and that address the topics related to applied fields (such as Apiculture; Aquarium Fish Keeping; Med Diagnostics; Research Methodology and Sericulture).

This will provide them ample opportunities to explore different career avenues. The course has been designed to provide in-depth knowledge of applied subjects to develop various skills to make a career and become an entrepreneur in the field of aquatic biology, sericulture, apiculture etc. After completion of this course students will be able to contribute as policy makers in wild life conservation animal preservation and environment protection.

Aim of Bachelor Degree Programme

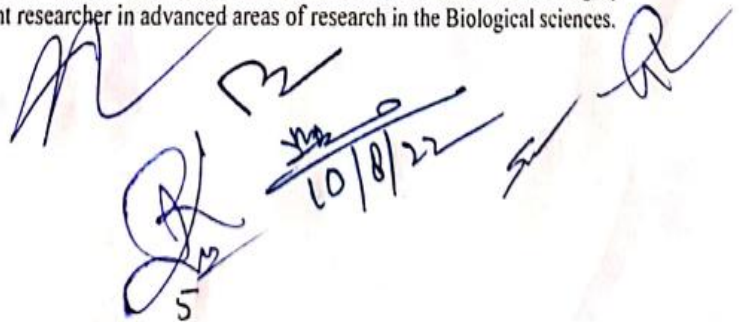
The aim of zoology degree programme is to provide platform to learn and understand the concepts regarding animal diversity to appreciate the variability in relation to their morphology, anatomy and behaviour among different animals. After studying this course our students will be equipped to learn and know about different human systems, their coordination and control. This course will also provide an opportunity to understand their own evolution along with other animals. They will be able to qualitatively and quantitatively analyse evolutionary parameters using various bioinformatics and computational tools used in modern sciences. This will provide them ample opportunities to explore different career avenues.


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Course Objective (CO):

- The programme in Zoology aims to equip students with recent advances in Zoology from organismic to reductionist biology.
- It also aims to empower students to understand the challenges of society and the country that falls into the realms of Zoology, such as Aquaculture, Reproductive health, Behavior and Biological time keeping, Cancer Biology, Microbiome and their roles in health and diseases, Bioremediation of pollutants and pesticides, etc.
- It also offers students to a series of elective courses so that they can choose to specialize in the specific area of their interests in Zoology.
- The open elective has been chosen to attract students from diverse interdisciplinary areas of sciences, such as Anthropology, Environmental studies, Biomedical Sciences, etc.
- This course is designed to ignite the inquisitive mind to enter in to research in interdisciplinary areas. The fourth semester offers a total of 16 elective courses, which for logistics of programme management, are divided in to four streams, where a student has to choose a stream.
- In the entire course, the major emphasis is on skill-based training into socially relevant areas of Zoology.
- It is expected that a student after successfully completing the programme would sufficiently be skilled and empowered to solve the problems in the realms of Zoology and its allied areas.
- They would have plethora of job opportunities in the education, environment, agriculture-based, and health related sectors.
- The bright and ignited mind may enter into research in the contemporary areas of Zoological/Biological Sciences.
- The broad skills and the deeper knowledge in the field would make them highly successful and excellent researcher in advanced areas of research in the Biological sciences.

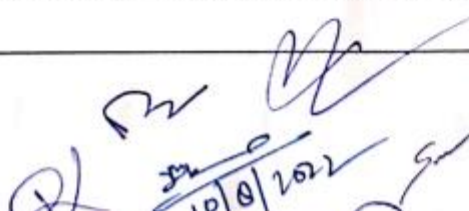
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Programme Objective (POs):

PO 1	It will enhance the basic knowledge about the different systems of an organism and the clinical study of biomolecules.
PO 2	It will help students to pursue the initial fundamentals required for future projects and higher studies.
PO 3	It will help to inculcate the evolutionary basis of various animals and their development. It will also address the present situation of animal diversity.
PO 4	It will help students to identify the concepts about various Applied sciences and Medical laboratory techniques related to concerned area.
PO 5	It will help to develop the knowledge on taxonomy of insects. Also, the conservation of wild animals to enhance the economy gained by the zoological content present in the environment.
PO 6	All the above POs will lead to a mind that can develop modern technologies to address the problems and to give solution to it.

Programme Specific Objective (PSO):

CERTIFICATE COURSE IN CLINICAL DIAGNOSTICS & BIOCHEMISTRY	
YEAR 1	This will help students to generate employment in the field of clinical & medical lab/institutions/gene bank/stem cell culture/Pharma companies etc.
DIPLOMA IN MOLECULAR SCIENCES & CLINICAL MICROBIOLOGY	
YEAR 2	This will help students to develop the scientific ability in the field of toxicological, Histological, Microbiological, Molecular labs, various Zoological Parks, National Parks, Wildlife Sanctuaries.
BACHELOR OF SCIENCE (ZOOLOGY)	
YEAR 3	This will help students to develop the basis of Animal diversity and its development, which can generate various academic/Research jobs and various other jobs in the field of In-vitro labs, case study of endocrinology in medical labs etc.


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Programme outcomes (POs):

Students having Degree in B.Sc. (with Physics) should have knowledge of different concepts and fundamentals of Physics and ability to apply this knowledge in various fields of academics and industry. They may pursue their future career in the field of academics, research and industry.

PO 1	<ol style="list-style-type: none">1. Competence in the methods and techniques of calculations using Mechanics.2. Students are expected to have hands-on experience to apply the theoretical knowledge to solve practical problems.
PO2	<ol style="list-style-type: none">1. Students are expected to have deep understanding of electricity and magnetism.2. Student should be able to make basic electrical circuits and handle electrical instruments.
PO 3	<ol style="list-style-type: none">1. Competence in the concepts of Thermodynamics and Statistical Physics.2. Students are expected to have hands on experience in Thermal and Statistical Physics Experiments.
PO 4	<ol style="list-style-type: none">1 Knowledge of different concepts in Geometrical and Physical Optics.2 Students are expected to have hands on experience of Experiments of Geometrical and Physical Optics.
PO 5	<ol style="list-style-type: none">1. Knowledge of basic concepts of solid state physics with their applications.2. Students are expected to have an insight in handling in solid state and basic electronic instruments.
PO 6	<ol style="list-style-type: none">1. Comprehensive knowledge of modern physics, elementary quantum mechanics, Analog & Digital electronics and their Applications.2. Learn the integrated approach to analog electronic circuitry and digital electronics for R&D.

**Programme specific outcomes (PSOs): UG I
Year / Certificate course in Basic Physics**

After completing this certificate course, the student should have

- Acquired the basic knowledge of Mechanics, Electricity and Magnetism.
- Hands-on experience to apply the theoretical knowledge to solve practical problems of basic physical phenomena. He should be able to carry out experiments to understand the laws and concepts of Physics.
- An insight in understanding electrical circuits and in handling electrical instruments.

**Programme specific outcomes (PSOs): UG
II Year/ (Diploma in Applied Physics)**

After completing this diploma course, the student should have

- Knowledge of different concepts in Thermodynamics, statistical physics, Geometrical and Physical Optics.
- Knowledge of different aspects of Thermal Physics and Statistical Mechanics which serves as a basis for many physical systems used in industrial applications and deals with the physics and technology of Engines and Refrigerators.
- A deeper insight in Ray Optics to understand the Physics of many optical instruments which are widely used in research and Industry, Optoelectronics, IT and communication devices, and in industrial instrumentation.
- Knowledge of basic concepts of optical instruments with their applications in technology.

**Programme specific outcomes (PSOs): UG
III Year / Bachelor of Science**

After completing this degree course, the student should have:

PSO 1	<i>Knowledge of Mechanics and basic properties of matter. The course will empower him to apply his theoretical knowledge in various physical phenomena that occur in day to day life and he can use this scientific knowledge for the betterment of the society.</i>
PSO2	<i>Understanding of basic concepts related to Electricity and Magnetism .He should be proficient in designing and handling different electrical circuits</i>
PSO3	Expertise in different aspects of Thermal and Statistical Physics which serves as a basis for many physical systems used in industrial applications and deals with the physics and technology of Engines and Refrigerators. <i>Proficient in the field of Optics which will increase his demand in research and industrial establishments engaged in activities involving optical instruments.</i>
PSO4	<i>Proficient in the field of Solid State Physics which will increase his demand in R & D.</i>
PSO5	<i>Basic knowledge in the field of Modern physics and Quantum Mechanics which have utmost importance at both undergraduate and graduate level.</i>
PSO6	Comprehensive knowledge of Basic Electronics, Analog & Digital Principles and their Applications. Learn the integrated approach to analog electronic circuitry and digital electronics for R&D.

**Department of Mathematics, Balganga Mahavidyalaya, Sendul, Kemar,
Ghansali**

**Programme Name: B.Sc. Mathematics
Programme Outcomes & Course Outcomes**

Programme Outcomes

- Scientific temper will be developed in Students.
- Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.
- Students will become employable; they will be eligible for career opportunities in Industry, or will be able to opt for entrepreneurship.
- Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law etc.
- Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.

Programme Specific Outcomes

- A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology.
- A student should get adequate exposure to global and local concerns that explore them many aspects of mathematical sciences.
- Student is equipped with mathematical modeling ability, problem solving skills, creative talent and power of communication necessary for various kinds of employment.
- Student should be able to apply their skills and knowledge that is translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.
- Enabling students to develop a positive attitude towards mathematics as an interesting and

valuable subject of study.

Course Outcomes

Course: Algebra

- To learn divisibility of integers and congruence relations.
- To learn operations on polynomials, finding GCD of two polynomials and roots of polynomials.
- To learn basic matrix algebra and method to find solutions to system of linear equations. Also to learn eigenvalues and eigenvectors of matrix.

Course: Calculus and Differential Equations

- To learn basic properties of real numbers and its subsets which is backbone of Real analysis.
- To study functions in detail which is a fundamental structure in all sciences, and to be able to check continuity of a function.
- To apply notion of derivative in mean value theorem and also in higher order derivatives which arise in all applied sciences
- To be able to solve first order and first degree differential equations.

Course: Mathematics Practical

- Problem solving skills of students are enhanced.
- Theoretical concepts are strengthened by solving maximum no. of problems.
- Due to one to one interaction with the teacher doubts of the students get cleared if any.
- Students learn how to apply mathematical concepts to practical (in MATLAB/MATHEMATICA) and real life problems.
- Interdisciplinary approach is developed.

Course: Linear Algebra

- To learn the importance of linear transformation in Physics, Engineering, Social sciences and various branches of Mathematics.
- To learn to find Eigen values and Eigen vectors of a matrix which is used in the study of vibrations, chemical reactions and geometry.
- To learn Inner Product spaces and Gram-Schmidt process of orthogonalization.
- To get well equipped with Mathematical Modelling abilities.

Course: Numerical Analysis

- To learn to apply the various numerical techniques for solving real life problems.
- The problems which cannot be solved by usual formulae and methods can be solved approximately by using numerical techniques.
- To fit curve to the data by using 5 different methods of interpolation as well as extrapolation.
- To find approximate solutions to difficult differential equations occurring in engineering sciences.

Course: Real Analysis

- To learn basic techniques and examples in analysis to be well prepared for courses like Topology, Measure theory and Functional analysis.
- To study various types of sets and relations, and concept of countable and uncountable.
- To study concept of sequence and series and hence find sum of infinite terms with different methods.
- To study notion of l.u.b. and g.l.b. which helps to learn integrations which helps to find

area under any functions.

Course: Group Theory

- To learn fundamental properties and mathematical tools such as closure, identity, inverse and generators.
- To study algebraic structure 'Groups' in detail which is useful in study of Rings, Modules, Algebraic topology, Analysis
- To enhance abstract thinking of students.
- To learn to compare two different algebraic structures and study transfer of properties in- between these structures through homomorphism and isomorphism.

Course: Ordinary Differential Equations

- To learn methods to solve linear differential equation with constant coefficients.
- To learn methods for solving non-homogenous differential equation.
- To learn power series solution method using ordinary and singular points.
- To solve system of first order differential equations.

Course: Complex Analysis

- To learn basic algebraic properties of complex numbers and limit and continuity of Complex functions.
- To learn analytic functions and the C-R equations as its necessary and sufficient conditions.
- To learn tools which are useful in finding integration of Complex valued functions.
- To learn sequences and series of Complex valued functions.

- To learn applications of residues and poles in integrals of complex functions.

Course: Ring Theory

- To study the algebraic structure Ring in detail through various examples.
- To learn the construction of field of quotients of an integral domain.
- To study the Rings of polynomials and its factorization over a field.
- To study the notion of ideals and factor rings with examples.
- To study Unique Factorization domain, Euclidean Domain and related results.

Course: Partial Differential Equations

- To understand the concept of Ordinary differential Equations in more than two variables.
- To learn the application of Ordinary differential Equations through method to find Orthogonal Trajectories.
- Introduction of first order Partial Differential Equations.
- Learn methods to solve first order Partial Differential Equations.



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