

Govt. Holkar (Model Autonomous) Science College, Indore



DETAILED ANALYSIS OF REFLECTION OF CURRICULAR RELEVANCE TO THE LOCAL, REGIONAL, NATIONAL, AND GLOBAL DEVELOPMENTAL NEEDS IN PROGRAMME OUTCOMES AT POST-GRADUATE LEVEL

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Detailed Analysis of Reflection of Curricular Relevance to the Local, Regional, National, and Global (L-R-N-G) Developmental Needs in Programme Outcomes at Post-Graduate Level

M.Sc. (Geography)

Global Relevance:

PO1: A comprehensive understanding of landforms is globally relevant as it contributes to various fields such as geology, environmental science, and urban planning. Understanding landforms helps address global challenges like natural hazards, resource management, and land use planning.

PO2: Analyzing and interpreting climatological data to understand climate patterns is crucial for addressing global climate change issues. This knowledge is relevant for global climate negotiations, climate modeling, and assessing the impacts of climate change on ecosystems and societies worldwide.

PO3: Applying oceanography and urban geography principles to analyze coastal processes, human activities, and urban development is globally significant due to the increasing coastal populations and vulnerability to climate change impacts. This understanding aids in coastal management, disaster risk reduction, and sustainable urban development, which have global relevance.

PO4: The critical analysis of population distribution, migration patterns, and demographic trends is globally relevant for understanding global population dynamics, migration flows, and demographic shifts. It contributes to research on urbanization, social development, and policy planning, addressing global population challenges.

PO5: Examining political geography and understanding the interplay between politics and geography has global relevance for understanding geopolitical issues, international relations,

and territorial disputes. It aids in comprehending global power dynamics, conflicts, and regional integration processes.

PO7: Demonstrating awareness of the geographical aspects of environmental issues is globally significant due to the interconnected nature of environmental challenges. Understanding the geographical dimensions of environmental issues, such as climate change, deforestation, and biodiversity loss, helps inform global environmental policies, conservation efforts, and sustainable development initiatives.

National Relevance:

All of the program outcomes mentioned above also hold national relevance. Here are some additional points specific to the national context:

1. The understanding of landforms (PO1) contributes to national-level geological surveys, land-use planning, and natural resource management.
2. Analyzing climatological data (PO2) helps nations understand their unique climate patterns, adapt to climate change impacts, and develop climate policies and strategies at the national level.
3. Applying oceanography and urban geography principles (PO3) is relevant for coastal management, urban planning, and sustainable development within a nation's coastal regions.
4. Analyzing population distribution, migration patterns, and demographic trends (PO4) is crucial for national-level policy planning, resource allocation, and social development strategies.
5. Examining political geography (PO5) at the national level helps understand political divisions, regional disparities, and political decision-making processes within a country.
6. Awareness of geographical aspects of environmental issues (PO7) assists nations in formulating environmental policies, managing natural resources, and addressing specific environmental challenges within their borders.

In summary, these program outcomes have both global and national relevance, as they contribute to addressing various geographical, environmental, and societal challenges at different scales.

M.Sc. (SEED TECHNOLOGY)

Program Outcome (PO1): Demonstrating a comprehensive understanding of the processes of pollination and fertilization in seed plants.

Local Relevance:

Local farmers and agricultural practitioners need to understand the processes of pollination and fertilization to effectively manage crop production and maximize yields.

Local botanic gardens and horticultural societies may require this knowledge to propagate plants through seed production.

Local educational institutions and research organizations focusing on agriculture and horticulture will benefit from this understanding for their teaching and research activities.

Global Relevance:

The understanding of pollination and fertilization processes is crucial for global food production. It helps ensure sustainable agriculture and contributes to global food security.

This knowledge is relevant to international seed banks and organizations involved in seed conservation and genetic diversity preservation.

Understanding pollination and fertilization processes is essential for global efforts in plant breeding, genetic modification, and crop improvement, addressing agricultural challenges worldwide.

Program Outcome (PO2): Applying the principles and techniques of seed production in various crops.

Local Relevance:

Local farmers and seed producers will directly apply these principles and techniques to enhance crop yields and quality.

Agricultural extension services and farm advisory agencies at the local level will use this knowledge to provide guidance and support to farmers.

Local agribusinesses and seed companies will utilize this understanding to develop improved seed varieties and commercialize seed production.

Global Relevance:

The application of seed production principles and techniques is important for global agricultural productivity and meeting the demands of a growing population.

Improved seed production practices contribute to global efforts in sustainable agriculture, crop diversification, and the development of resilient crop varieties.

This knowledge is relevant to international organizations involved in seed research, development, and distribution, aiming to improve global agricultural systems.

Program Outcome (PO3): Understanding and complying with seed legislation and certification requirements.

Local Relevance:

Farmers, seed producers, and agricultural organizations at the local level must comply with local seed legislation and certification requirements to ensure the quality and traceability of seeds.

Local seed testing laboratories and certification bodies rely on this understanding to conduct seed quality assessments and provide certification services.

Local seed trade associations and regulatory agencies require this knowledge to develop and enforce seed-related policies and regulations.

Global Relevance:

Seed legislation and certification requirements ensure the quality and integrity of seeds traded across national and international borders, maintaining global seed standards.

Compliance with seed legislation and certification is essential for the prevention and control of seed-borne diseases, safeguarding global agricultural production and preventing the spread of pests and pathogens.

This understanding is relevant to international organizations and agreements that promote harmonization of seed regulations and facilitate seed trade.

Program Outcome (PO4): Analyzing and evaluating seed pathology, including the identification and management of seed-borne diseases.

Local Relevance:

Local plant health agencies and laboratories require expertise in seed pathology for disease diagnosis, management, and prevention.

Farmers and seed producers at the local level need to identify and manage seed-borne diseases to maintain crop health and prevent yield losses.

Local agricultural research institutions and universities will use this knowledge to study and address specific seed-borne diseases prevalent in the region.

Global Relevance:

Seed-borne diseases can have significant impacts on global agricultural production and food security. Analyzing and managing seed pathology is crucial for mitigating these risks.

This knowledge is relevant to international phytosanitary agencies and organizations that promote plant health and regulate seed trade to prevent the spread of seed-borne diseases.

International collaborations in seed pathology research and disease management benefit from the analysis and evaluation of seed-borne diseases on a global scale.

Program Outcome (PO5): Demonstrating proficiency in seed marketing and management, and applying statistical and computer applications in agricultural data analysis and decision-making.

Local Relevance:

Local seed companies and agribusinesses require proficiency in seed marketing and management to effectively promote and sell their seed products.

Agricultural cooperatives and farmer organizations at the local level can utilize this knowledge to improve their seed supply chains and make informed business decisions.

Local agricultural research institutions and universities will use statistical and computer applications to analyze agricultural data and support evidence-based decision-making.

Global Relevance:

Proficiency in seed marketing and management contributes to global seed industry development, facilitating the availability and access to quality seeds for farmers worldwide.

The application of statistical and computer applications in agricultural data analysis aids in global agricultural research, crop improvement, and policy formulation.

Global agricultural organizations and initiatives rely on data analysis and decision-making skills to address global challenges, such as climate change impacts, market dynamics, and food supply chain management.

In summary, the program outcomes listed above have both local and global relevance. They contribute to improving agricultural practices, enhancing crop productivity, ensuring seed quality and traceability, addressing seed-borne diseases, and promoting sustainable agricultural development at various levels, from local farming communities to global food systems.

M.Sc. BIOTECHNOLOGY

Program Outcome (PO2): Learn genetics, genetic engineering and its techniques and tools and their uses in biotechnology.

Local Relevance:

1. Local biotechnology companies and research institutions require professionals with knowledge of genetics and genetic engineering for various applications, including the development of genetically modified organisms (GMOs) and biopharmaceutical production.
2. Local agricultural sectors may utilize genetic engineering techniques to develop crop varieties with enhanced traits, such as disease resistance or increased yield.
3. Local healthcare facilities and diagnostic laboratories may employ genetic engineering tools for genetic testing, gene therapy, and drug development.

National Relevance:

1. Understanding genetics and genetic engineering is crucial for national biotechnology research and development efforts, aimed at improving healthcare, agriculture, and environmental sustainability.
2. National initiatives in genetic engineering, such as the development of indigenous biotechnological products or the creation of genetic databases, rely on professionals with expertise in this field.
3. National regulatory bodies overseeing genetically modified organisms and biotechnological research require individuals knowledgeable in genetics and genetic engineering for policy development and implementation.

Global Relevance:

1. Genetic engineering and its applications have global significance, as they contribute to advancements in healthcare, agriculture, and industrial biotechnology.
2. International collaborations in genetic research and development rely on professionals skilled in genetics and genetic engineering techniques.

3. Understanding genetics and genetic engineering is important for addressing global challenges, such as food security, disease control, and environmental sustainability through biotechnological interventions.

Program Outcome (PO3): Know instruments like Chromatography, Electrophoresis, Centrifugation, and their principles, utility, and applications.

Local Relevance:

1. Local research laboratories and analytical facilities utilize chromatography, electrophoresis, and centrifugation techniques for sample analysis, separation, and purification.
2. Local pharmaceutical companies may employ these instruments for drug formulation, quality control, and product development.
3. Local environmental monitoring agencies may utilize chromatography and electrophoresis for the analysis of pollutants and contaminants in air, water, and soil samples.

National Relevance:

1. The knowledge of chromatography, electrophoresis, and centrifugation is essential for national scientific research and development across various disciplines, including pharmaceuticals, forensics, environmental science, and biotechnology.
2. National healthcare systems rely on these instruments for diagnostic testing, disease screening, and monitoring of biomarkers.
3. National regulatory bodies and quality control agencies require expertise in these techniques for ensuring the safety and efficacy of pharmaceuticals, food products, and environmental samples.

Global Relevance:

1. Chromatography, electrophoresis, and centrifugation are fundamental techniques used worldwide in scientific research, healthcare, and industrial applications.
2. International collaborations and research networks depend on these techniques for data generation, sample analysis, and quality assurance.
3. Global environmental monitoring efforts utilize chromatography and electrophoresis to assess pollution levels, identify contaminants, and monitor their distribution in different ecosystems.

Program Outcome (PO4): Create knowledge of plant tissue culture, media and sterilization techniques, and how to maintain various cultures in vitro.

Local Relevance:

1. Local agricultural research institutions and plant nurseries may employ plant tissue culture techniques for clonal propagation, germplasm preservation, and breeding programs.
2. Local botanical gardens and horticultural centers may utilize tissue culture methods for the conservation and multiplication of rare and endangered plant species.
3. Local biotechnology companies may use tissue culture techniques for the production of high-value plant-derived products, such as pharmaceuticals or ornamental plants.

National Relevance:

1. Plant tissue culture plays a vital role in national agricultural and horticultural sectors, contributing to crop improvement, varietal development, and conservation of plant genetic resources.
2. National initiatives for the production of elite planting materials, such as disease-free planting stocks or genetically modified crops, rely on tissue culture techniques.
3. National research programs in plant biotechnology and genetic engineering require expertise in plant tissue culture for genetic transformation and the development of transgenic plants.

Global Relevance:

1. Plant tissue culture techniques have global significance, as they contribute to crop improvement, biodiversity conservation, and the production of valuable plant-based products on a global scale.
2. International collaborations in plant research and breeding programs rely on tissue culture methods for the exchange and conservation of plant genetic resources.
3. Plant tissue culture is used worldwide for the production of disease-free planting materials, preservation of endangered plant species, and the development of transgenic crops with improved traits.

Program Outcome (PO5): Understand the concept of Environment and environmental issues, Pollution, its types, and methods for their measurement and treatment to protect the environment.

Local Relevance:

1. Local environmental agencies and regulatory bodies require professionals with an understanding of environmental issues and pollution to assess and monitor local environmental conditions.
2. Local industries may need expertise in environmental management and pollution control to comply with environmental regulations and implement sustainable practices.
3. Local communities and non-governmental organizations (NGOs) may engage in environmental awareness and advocacy, benefiting from individuals knowledgeable about environmental concepts and solutions.

National Relevance:

1. Understanding environmental concepts and pollution control is critical for national efforts in environmental conservation, sustainable development, and policy formulation.
2. National initiatives for pollution control, waste management, and environmental impact assessment rely on professionals with expertise in environmental issues.
3. National research programs addressing environmental challenges, such as air and water pollution, climate change, or biodiversity loss, require individuals knowledgeable about environmental concepts and mitigation strategies.

Global Relevance:

1. Environmental issues and pollution have global implications, affecting ecosystems, human health, and the sustainability of the planet.
2. International collaborations and agreements on environmental conservation and pollution control require individuals with a deep understanding of environmental concepts and solutions.
3. Global initiatives addressing climate change, pollution reduction, and sustainable development rely on professionals with expertise in environmental science and management.

In summary, the program outcomes related to genetics, instrumentation, plant tissue culture, and environmental concepts have relevance at local, national, and global levels. They contribute to local industries, research institutions, and regulatory bodies, as well as national initiatives in healthcare, agriculture, biotechnology, environmental conservation, and policy formulation. At the global level, these outcomes contribute to scientific collaborations, environmental sustainability efforts, and addressing global challenges related to genetics, pollution, and environmental protection.

M.Sc. BOTANY

The principles and importance of botany, as outlined in the given program outcomes, have both local and global relevance. Here are some examples of the local, national, and global relevance of each program outcome:

PO1: Understand principles and importance of botany.

Local relevance:

Understanding the principles of botany can help students identify and appreciate the local plant species in their region and understand their ecological roles.

National Relevance: Knowledge of plant taxonomy and diversity is essential for documenting and conserving the country's native plant species.

Global Relevance:

Botanical knowledge contributes to global efforts in biodiversity conservation, plant conservation, and understanding the impacts of climate change on plant ecosystems worldwide.

PO2: Techniques of plant tissue culture and molecular biology.

Local relevance

: Students with skills in plant tissue culture can contribute to local agricultural practices, such as crop improvement and disease resistance in plants.

National Relevance: Research in molecular biology and plant tissue culture can help improve crop yields, develop new varieties, and address agricultural challenges specific to the country.

Global Relevance:

Advances in plant tissue culture and molecular biology have global implications for food security, sustainable agriculture, and the development of disease-resistant and climate-resilient crop varieties.

PO3: Application of botany in agriculture and palaeobotany.

Local relevance:

Understanding plant pathology can help local farmers identify and manage plant diseases, leading to improved crop productivity.

National Relevance: Studying the evolution of plants through palaeobotany provides insights into the country's geological history, ancient ecosystems, and evolutionary adaptations.

Global Relevance:

Knowledge of plant pathology contributes to global efforts in disease control and management in agriculture, while palaeobotany helps scientists understand the evolution and diversification of plant life on Earth.

PO4: Understand the relationship between plant and society.

Local relevance:

Recognizing the relationship between plants and society can promote sustainable practices, such as community gardening, urban greening, and conservation efforts at the local level.

National Relevance:

Discussions on scientific and ethical issues related to botany can influence national policies on environmental conservation, land use, and plant-based industries.

Global Relevance:

Understanding the relationship between plants and society is crucial for addressing global challenges, including sustainable development, conservation of natural resources, and the ethical considerations surrounding biotechnology and genetic engineering.

PO5: Understand environmental issues and sustainable development.

Local relevance:

Assessing and conserving floral diversity locally contributes to the preservation of native ecosystems, restoration efforts, and sustainable land management practices.

National Relevance:

Knowledge of environmental issues and sustainable development is important for national policies on protected areas, land-use planning, and environmental impact assessments.

Global Relevance:

Conservation and sustainable utilization of floral diversity are global concerns, as they contribute to the preservation of biodiversity, ecosystem services, and the mitigation of climate change impacts.

PO6: Gain knowledge about various plants and develop entrepreneurship skills.

Local relevance:

Understanding plant resources and developing entrepreneurship skills can support local initiatives in sustainable agriculture, herbal medicine production, and eco-friendly businesses.

National Relevance:

Knowledge of plant resources and entrepreneurship skills can contribute to the growth of national industries related to plant-based products, agroforestry, and eco-tourism.

Global Relevance:

Developing entrepreneurship skills using plant resources aligns with global trends towards sustainable businesses, green economies, and the utilization of natural products in various sectors.

These examples demonstrate the relevance of the program outcomes in both local and global contexts, highlighting the importance of botany in various aspects of society, the environment, and sustainable development.

M.Sc. COMPUTER SCIENCE

The program outcomes in the field of computer science and software engineering have relevance at the local, national, and global levels. Here are examples of the local, national, and global relevance of each program outcome:

PO1: Implement effective solutions for need-based problems using programming knowledge.

Local relevance:

Students equipped with programming skills can address local community needs by developing software solutions for local businesses, organizations, or government agencies.

National Relevance: The ability to implement effective solutions using programming languages and tools is valuable for national technological advancements, innovation, and the growth of the IT industry.

Global Relevance: Software solutions developed by students can have global applicability, contributing to advancements in various fields such as healthcare, finance, communication, and automation.

PO2: Learn about operating systems, distributed systems, and make optimized decisions.

Local relevance: Understanding operating systems and making optimized decisions can improve the efficiency of local computing systems, leading to better performance and resource utilization.

National Relevance: Knowledge of operating systems and optimized decision-making is essential for developing and managing large-scale national IT infrastructures, data centers, and cloud computing systems.

Global Relevance: Competence in operating systems and optimized decision-making has global relevance in the development and management of distributed computing systems, cloud services, and internet-based applications used worldwide.

PO3: Handle network-related problems and troubleshoot communication issues.

Local relevance:

Students skilled in network troubleshooting can support local businesses and organizations in resolving network-related problems, improving connectivity, and ensuring data security.

National Relevance:

Network knowledge and troubleshooting skills are vital for maintaining a reliable and secure national communication infrastructure, including government networks, telecommunication systems, and critical information networks.

Global Relevance:

Proficiency in network troubleshooting contributes to the global maintenance and security of internet communication, addressing global challenges such as cyber threats, data breaches, and network vulnerabilities.

PO4: Learn and apply software engineering concepts for large-scale projects.

Local relevance:

Applying software engineering principles is crucial for the successful development and management of local software projects, ensuring scalability, maintainability, and meeting specific requirements.

National Relevance:

Proficiency in software engineering is important for the national software industry, enabling the development of large-scale software systems, government projects, and enterprise applications.

Global Relevance:

Software engineering concepts are globally applicable, providing guidelines for the development of robust, scalable, and maintainable software solutions used worldwide, including critical systems in sectors like healthcare, finance, and transportation.

PO5: Apply and implement compilers and develop scalable software solutions.

Local relevance:

Developing efficient software solutions through the use of compilers and scalable applications benefits local businesses, improving productivity and competitiveness.

National Relevance:

Competence in compilers and scalable software development contributes to national technological advancement, supporting the growth of the software industry and innovation in various sectors.

Global Relevance:

Scalable software solutions and compiler development have global relevance, facilitating the creation of high-performance software, optimization of resource usage, and enabling the development of large-scale applications used internationally.

These examples highlight the local, national, and global significance of the program outcomes in computer science and software engineering, emphasizing the importance of these skills in addressing local needs, contributing to national technological growth, and participating in global advancements in the field.

M.Sc. CHEMISTRY

PO1: Creative thinking and logical inference in chemistry.

Local relevance:

Students applying creative thinking and logical inference skills in chemistry can contribute to local scientific research, innovation, and problem-solving in industries and academic institutions. This can lead to the development of new chemical products and processes that are relevant to the local market and industries.

National Relevance:

Creative thinking and logical inference skills in chemistry are essential for national scientific advancements, fostering innovation in chemical industries, and addressing local challenges related to chemistry and materials. This can drive economic growth and technological progress at the national level.

Global Relevance:

Novel ideas and solutions proposed through creative thinking in chemistry can have global significance, contributing to scientific breakthroughs, advancements in materials science, and addressing global environmental and societal challenges. Global collaboration and sharing of innovative ideas can lead to transformative changes in the field of chemistry.

PO2: Interdisciplinary approach for sustainable development.

Local relevance:

Applying an interdisciplinary approach to sustainable development can address local environmental issues, promote eco-friendly practices in industries, and support local communities in adopting sustainable lifestyles. This can lead to improved local environmental conditions and quality of life.

National Relevance:

Interdisciplinary solutions for sustainable development are crucial for addressing national environmental challenges, developing policies and strategies for sustainable resource management, and fostering collaboration between different sectors. This can contribute to the overall sustainability and resilience of the nation.

Global Relevance:

The interdisciplinary approach to sustainable development has global relevance, as it promotes international collaboration, knowledge sharing, and the implementation of sustainable practices to mitigate global environmental issues. By adopting an interdisciplinary approach, countries can work together to tackle shared challenges and achieve global sustainability goals.

PO3: Skills in research and the industrial field.

Local relevance:

Developing skills in research and the industrial field can contribute to local scientific advancements, support local industries in innovation and product development, and enhance the competitiveness of the local workforce. This can lead to the growth of local research institutions and industries.

National Relevance:

Skills in research and the industrial field are valuable for national scientific progress, technological innovation, and economic growth, driving advancements in various sectors and industries. This can contribute to job creation, increased productivity, and national competitiveness.

Global Relevance:

Proficiency in research skills and industrial practices has global significance, as it contributes to international collaborations, knowledge sharing, and technological advancements that address global challenges and foster economic development. Global cooperation in research and industry can lead to breakthrough discoveries and solutions with a worldwide impact.

PO4: Understanding environmental issues and creating awareness.

Local relevance:

Understanding environmental issues and creating awareness can lead to local initiatives for environmental conservation, waste management, and sustainable practices, improving the local environment and quality of life. Local communities can take proactive measures to protect their natural resources and ecosystems.

National Relevance: Awareness of environmental issues is essential for national environmental conservation efforts, policy development, and fostering a culture of sustainability at the national level. This can lead to the implementation of effective strategies to mitigate climate change, reduce pollution, and protect biodiversity.

Global Relevance:

Environmental awareness and action have global significance, as individuals and communities worldwide contribute to addressing global environmental issues and promoting sustainable practices to mitigate climate change and protect ecosystems. Global cooperation and collective efforts are necessary to achieve a sustainable future for all.

PO5: Development of communication skills for project and seminar activities.

Local relevance:

Effective communication skills enhance local project collaborations, facilitate knowledge sharing among local researchers, and improve the presentation of ideas and findings in local seminars and conferences. This can lead to better collaboration and dissemination of research within the local scientific community.

National Relevance:

Strong communication skills are essential for national-level collaborations, dissemination of research findings, and effective communication between researchers, policymakers, and the public. Clear and effective communication of scientific information can contribute to evidence-based decision-making and public understanding of scientific concepts.

Global Relevance:

Communication skills are universally valuable, enabling researchers, scientists, and professionals to communicate their ideas, findings, and solutions globally. This fosters international collaboration, enhances scientific knowledge sharing, and promotes innovation and progress on a global scale. Effective communication is crucial for addressing global challenges and finding solutions collectively.

M.Sc. FISHERIES

PO1: Conceptual understanding of fish diversity, fish breeding, and culture technology.

Local relevance:

Understanding fish diversity, breeding techniques, and culture technology is relevant for local fish farmers, aquaculturists, and fisheries researchers. It can contribute to the development of sustainable fish farming practices, preservation of local fish species, and enhancing local fish production.

National Relevance:

Knowledge of fish diversity, breeding, and culture technology is important for India's fisheries sector, which plays a significant role in the country's economy and food security. It can contribute to the development of innovative aquaculture techniques, conservation of indigenous fish species, and promoting sustainable fisheries practices at a national level.

Global Relevance:

Fish diversity, breeding, and culture technology have global relevance as they contribute to global food security, sustainable aquaculture practices, and conservation of fish species worldwide. Sharing knowledge and best practices globally can help address global challenges related to fisheries and promote responsible fish farming.

PO2: Planning scientific research using different fisheries resources with special reference to India.

Local relevance:

Planning scientific research using local fisheries resources is essential for understanding and addressing specific challenges faced by the local fisheries industry and ecosystem. It can lead to the development of region-specific strategies, sustainable fishing practices, and conservation efforts.

National Relevance:

Planning scientific research on fisheries resources in India is crucial for the sustainable management and utilization of the country's vast coastal and freshwater resources. It can contribute to evidence-based decision-making, policy formulation, and the development of effective fisheries management strategies at the national level.

Global Relevance:

Research on fisheries resources in India has global significance as India is one of the largest fish-producing countries. Sharing research findings and collaborating with the international scientific community can contribute to global understanding of fisheries management, conservation practices, and sustainable resource utilization.

PO3: Knowledge of fish feed nutrition technology and different integrated farming systems with fish farming.

Local relevance:

Understanding fish feed nutrition technology and integrated farming systems can help local fish farmers optimize their production, improve feed efficiency, and adopt sustainable farming practices. This can enhance local fish farming productivity and profitability.

National Relevance:

Knowledge of fish feed nutrition technology and integrated farming systems is relevant for India's aquaculture sector, which faces challenges related to feed availability, sustainability, and environmental impact. Developing and implementing advanced feed and farming systems can contribute to the growth and sustainability of the national aquaculture industry.

Global Relevance:

Fish feed nutrition technology and integrated farming systems have global relevance as they can contribute to sustainable aquaculture practices, efficient resource utilization, and reduced environmental impact worldwide. Sharing best practices and innovative techniques globally can lead to the development of a more sustainable and responsible aquaculture industry.

PO4: Knowledge about fish marketing, fisheries economics, and extension methodology in the fisheries sector.

Local relevance:

Knowledge of fish marketing, fisheries economics, and extension methodology is important for local fishery enterprises, traders, and policymakers. It can contribute to the development of effective marketing strategies, economic analysis of the fisheries sector, and the dissemination of information and best practices to local stakeholders.

National Relevance:

Understanding fish marketing, fisheries economics, and extension methodology is crucial for India's fisheries sector, which involves multiple stakeholders and diverse fishery resources. It can inform policy decisions, market interventions, and extension services aimed at improving the economic viability and sustainability of the national fisheries industry.

Global Relevance:

Fish marketing, fisheries economics, and extension methodology have global relevance as they contribute to international fish trade, economic analysis of fisheries resources, and the transfer of knowledge and technologies across countries. Global cooperation and sharing of expertise can enhance the economic performance and sustainability of fisheries worldwide.

PO5: Improvement of skills for academic, scientific, and industrial positions.

Local relevance: Improving skills for academic, scientific, and industrial positions can enhance the employability and career prospects of local individuals in the fisheries sector. It can contribute to the development of a skilled workforce, research capacity, and technological advancements in the local fishery industry.

National Relevance:

Skill development for academic, scientific, and industrial positions is important for India's fisheries sector, which requires qualified professionals and researchers. It can support the growth of the national fishery industry, innovation, and scientific advancements in the field.

Global Relevance:

Enhancing skills for academic, scientific, and industrial positions has global relevance as it contributes to the development of a competent and knowledgeable workforce in the fisheries sector worldwide. Collaboration and exchange of expertise at the international level can promote global advancements, research collaboration, and sustainable fisheries management.

M.Sc Forensic Science

PO1: Identify and recognize the scientific facts and knowledge of natural or unnatural phenomena.

Local Relevance:

By understanding scientific facts and knowledge, individuals in the local community can make informed decisions about various aspects of their daily lives. For example, knowledge about natural phenomena such as weather patterns can help farmers plan their agricultural activities, while awareness of the impact of unnatural phenomena like pollution can encourage communities to take actions to protect the environment.

National Relevance:

Recognizing scientific facts and knowledge at the national level is crucial for making evidence-based policies and decisions. Governments can rely on scientific information to address issues such as climate change, public health, energy resources, and technological advancements. It also promotes a scientifically literate society that can engage in informed discussions and debates on important matters.

Global Relevance:

In an increasingly interconnected world, understanding scientific facts and knowledge on a global scale is essential. Global challenges such as climate change, pandemics, and sustainable development require a collaborative approach that draws upon scientific expertise from different regions. Recognizing and sharing scientific knowledge globally fosters cooperation, innovation, and the development of effective solutions to complex problems.

PO2: Relate the theory and practical education to puzzle out problems of society.

Local Relevance:

Relating theory and practical education to local societal problems empowers individuals to apply their knowledge in real-world contexts. It enables them to identify and address local challenges, such as inadequate healthcare services, education gaps, unemployment, or urban planning issues. By connecting education to problem-solving, communities can work towards sustainable development and improvement of their quality of life.

National Relevance:

Linking theory and practical education to national societal problems can drive innovation, economic growth, and social progress. By equipping individuals with problem-solving skills, a country can address various issues, including poverty, infrastructure development, social inequality, and technological advancements. Integrating theory and practice ensures that education is relevant and responsive to the needs of the nation.

Global Relevance:

In a globally interconnected society, relating theory and practical education to global societal problems is crucial. Challenges like poverty, climate change, human rights, and technological advancements require a multidisciplinary approach. By incorporating practical problem-solving into education, individuals can develop the skills needed to contribute to global solutions and collaborate across borders for the betterment of humanity.

PO3: Develop and train successful pro masters of different areas.

Local Relevance:

Developing and training successful professionals in various fields benefits the local community by creating a pool of skilled individuals who can contribute to the local economy and societal needs. For instance, nurturing professionals in healthcare, engineering, education, business, and other sectors can address specific local demands, improve services, and enhance the overall development of the community.

National Relevance:

Developing successful professionals at a national level is essential for the overall growth and progress of a country. By providing quality education and training in diverse areas, a nation can build a workforce that is equipped to address national challenges, drive innovation, and contribute to economic development. Successful professionals can play pivotal roles in sectors like research, governance, industry, and academia.

Global Relevance:

Developing successful professionals with expertise in different areas contributes to the global talent pool. This enhances cross-border collaboration, exchange of knowledge, and global competitiveness. Successful professionals can lead international organizations, engage in

research and development, contribute to global policymaking, and drive innovation in various fields, thereby benefiting humanity as a whole.

PO4: Employ the knowledge to make the surrounding of people healthy and beautiful.

Local Relevance:

Employing knowledge to create healthy and beautiful surroundings positively impacts the local community. This can involve initiatives such as urban planning, environmental conservation, waste management, and promoting public health. By applying knowledge effectively, communities can enhance the aesthetics, livability, and well-being of their surroundings, leading to an improved quality of life for residents.

National Relevance:

Employing knowledge to create healthy and beautiful surroundings at a national level benefits the entire population. This can involve policies and initiatives related to environmental sustainability, preservation of natural resources, promotion of public health, and urban development. By prioritizing the well-being and aesthetics of the nation's surroundings, a country can enhance its overall attractiveness, tourism potential, and the physical and mental health of its citizens.

Global Relevance:

Employing knowledge to create healthy and beautiful surroundings globally is crucial for the well-being of the planet and its inhabitants. Issues such as environmental conservation, sustainable development, and public health have global implications. By applying knowledge to address these challenges, societies can contribute to the preservation of ecosystems, the mitigation of climate change, the promotion of well-being, and the creation of a more beautiful and sustainable world for future generations.

PO5: Carry out internship programs and research projects to develop scientific skills and ground-breaking ideas.

Local Relevance:

Conducting internship programs and research projects at a local level provides opportunities for individuals to develop scientific skills and generate innovative ideas. This can involve collaborations between educational institutions, local businesses, and community organizations. By engaging in practical experiences and research, individuals can gain valuable

insights, contribute to local problem-solving, and foster a culture of innovation within the community.

National Relevance:

Carrying out internship programs and research projects at a national level contributes to the development of a skilled and innovative workforce. It facilitates knowledge transfer, promotes scientific research, and encourages collaboration between academia, industry, and government sectors. These initiatives help address national challenges, drive technological advancements, and enhance the country's competitiveness on a broader scale.

Global Relevance

Undertaking internship programs and research projects globally fosters the exchange of scientific skills, ideas, and knowledge. It enables individuals to contribute to cutting-edge research, address global challenges, and collaborate with international partners. By engaging in global scientific initiatives, communities can benefit from diverse perspectives, accelerate innovation, and contribute to the advancement of science and technology for the betterment of humanity.

PO6: Face and succeed in high-level competitive examinations like NET, FACT, STATE PSC, UPSC.

Local Relevance:

Individuals who face and succeed in high-level competitive examinations locally can become assets to the community. By passing such exams, individuals can qualify for positions in government, public service, and other prestigious roles. This can lead to effective governance, better public services, and the availability of qualified professionals to address local challenges and contribute to the development of the community.

National Relevance:

Success in high-level competitive examinations at a national level ensures a qualified and competent workforce for various sectors. It enables individuals to serve in important roles within the government, civil services, public institutions, and other fields crucial for national development. By having individuals who succeed in these exams, a nation can strive for good governance, efficient public services, and the implementation of effective policies.

Global Relevance:

Success in high-level competitive examinations globally signifies the presence of highly skilled individuals who can contribute to international organizations, diplomacy, policymaking, and research. It allows individuals to represent their countries and contribute to global problem-solving and decision-making processes. Success in these examinations demonstrates a country's ability to produce capable professionals who can engage in global affairs and contribute to global progress and cooperation.

M.Sc. GEOLOGY

PO1: The program in Geology will provide knowledge in the field of earth science to the students.

Local Relevance:

The program equips students with local geological knowledge and understanding, which is crucial for addressing region-specific geological challenges. This knowledge can be applied in areas such as natural resource exploration, environmental management, hazard assessment, and land-use planning within the local community.

National Relevance:

The program contributes to national geological knowledge by producing geologists who can contribute to the exploration and management of the country's natural resources. They can also play a vital role in understanding geological hazards, groundwater resources, and the environmental impact of various industries, thereby contributing to national development and sustainability.

Global Relevance:

The program provides students with a broad understanding of earth science, enabling them to contribute to global geological research and exploration efforts. Geologists with a global perspective can contribute to addressing global challenges such as climate change, natural resource management, and geohazard assessment. Their expertise is valuable in collaborative international research and exploration projects.

PO2: Will develop an understanding of the fundamental laws in earth sciences and capability of developing ideas based on them.

Local Relevance:

A strong understanding of the fundamental laws in earth sciences enables students to develop ideas and solutions for local geological issues. This understanding can be applied to local challenges such as groundwater management, soil erosion, geological hazards, or the sustainable utilization of local mineral resources.

National Relevance:

A sound grasp of the fundamental laws in earth sciences allows graduates to contribute to national geological research and development efforts. They can develop innovative ideas and solutions to address national challenges, such as energy resource exploration, climate change mitigation, environmental impact assessment, and sustainable land use planning.

Global Relevance:

Understanding the fundamental laws in earth sciences equips students to contribute to global research and development in geology. They can develop ideas and solutions for global challenges like sustainable resource management, climate change adaptation, geological hazard mitigation, and the preservation of geological heritage sites. Their expertise can contribute to international collaborations and scientific advancements.

PO3: Students apply theoretical, conceptual, and observational knowledge to the analysis and will be able to interpret geological data.

Local Relevance:

The ability to apply theoretical, conceptual, and observational knowledge to the analysis of local geological data is crucial for understanding and managing local geological features. Students can contribute to mapping geological formations, evaluating geological hazards, and interpreting data relevant to local environmental studies, infrastructure development, and land-use planning.

National Relevance:

Applying theoretical, conceptual, and observational knowledge to the analysis of geological data enables students to contribute to national geological mapping projects, resource exploration initiatives, and environmental impact assessments. They can interpret geological data to understand subsurface structures, mineral deposits, and geological hazards, providing valuable insights for national development and decision-making.

Global Relevance:

The ability to analyze and interpret geological data is relevant on a global scale. Graduates can contribute to international research projects, geological surveys, and exploration efforts. They can interpret global geological data to understand tectonic processes, climate change impacts,

and the distribution of mineral resources. Their contributions are crucial for global scientific advancements and collaborative efforts.

PO4: Students will be able to make use of geological data for environmental studies of the earth.

Local Relevance:

The ability to utilize geological data for environmental studies is important for local communities. Students can contribute to local environmental impact assessments, water resource management, and the identification of potential geohazards. They can provide valuable insights into the interaction between geological factors and local ecosystems, informing sustainable development and conservation initiatives.

National Relevance:

The application of geological data for environmental studies is significant at the national level. Students can contribute to national-level environmental assessments, pollution remediation projects, and the preservation of biodiversity. Their understanding of geological factors can help assess the impact of human activities on the environment and guide policies for sustainable resource management and conservation.

Global Relevance:

Utilizing geological data for environmental studies has global relevance. Graduates can contribute to global initiatives such as climate change impact assessments, land degradation monitoring, and the evaluation of geological contributions to global ecosystems. Their expertise is valuable for understanding the complex interactions between geological processes and environmental changes on a global scale.

PO5: Promotes the interest of the student to take up higher studies in the field of earth sciences.

Local Relevance:

Promoting students' interest in higher studies in earth sciences encourages the local community to invest in educational institutions, research facilities, and programs related to earth sciences. This can foster the development of local expertise, research initiatives, and collaboration between academia and local industries.

National Relevance:

Encouraging students to pursue higher studies in earth sciences contributes to the national pool of geologists and researchers. This strengthens the country's capacity for geological research, resource exploration, environmental management, and geohazard assessment. It promotes the growth of national institutions and supports the development of a knowledgeable workforce.

Global Relevance:

Nurturing students' interest in higher studies in earth sciences contributes to the global advancement of geological research and knowledge. Students who pursue higher education in this field can contribute to international research collaborations, scientific discoveries, and technological advancements. Their expertise is valuable for addressing global challenges related to natural resource management, climate change, and sustainable development.

PO6: Makes the students fully competent to undertake any job in the field of Geology.

Local Relevance:

Producing competent graduates who can undertake any job in the field of geology enhances the local workforce's capacity in various industries. Graduates can pursue careers in environmental consulting firms, mining companies, government agencies, or educational institutions within the local community, contributing to local economic development and sustainability.

National Relevance:

Developing students' competency to undertake any job in the field of geology strengthens the national workforce's expertise in geological research, exploration, and environmental management. They can contribute to national resource industries, geological surveys, disaster management agencies, and educational institutions. Their competence supports national development and the effective utilization of geological resources.

Global Relevance:

Students who are fully competent to undertake any job in the field of geology contribute to global geological endeavors. They can work for multinational mining companies, international research organizations, or participate in global initiatives related to climate change, hazard assessment, and sustainable resource management. Their competence enhances global scientific collaborations and promotes the responsible utilization of earth's resources.

M.Sc. MATHEMATICS

PO1: Develop need-based mathematics teaching-learning resources.

Local Relevance:

Developing need-based mathematics teaching-learning resources caters to the specific educational needs of the local community. It helps address local challenges in mathematics education, such as inadequate resources, diverse student populations, or curriculum gaps. By creating resources tailored to the local context, educators can enhance the quality of mathematics instruction and improve student learning outcomes.

National Relevance:

Need-based mathematics teaching-learning resources contribute to the national education system by ensuring that students across the country have access to effective mathematics education. These resources can align with national curriculum standards, address specific areas of improvement in mathematics education, and support the professional development of mathematics teachers. By improving mathematics education at the national level, the program enhances the mathematical skills of the workforce and promotes national development.

Global Relevance:

In an increasingly interconnected world, the development of need-based mathematics teaching-learning resources has global relevance. Sharing innovative teaching resources and approaches with educators worldwide promotes best practices in mathematics education. It contributes to global efforts to improve mathematical literacy, bridge educational gaps, and enhance the quality of mathematics education in diverse contexts.

PO2: Understand Mathematics education as an academic and research field and particularly discuss the nature of Mathematics with reference to pure and applied Mathematics.

Local Relevance:

Understanding mathematics education as an academic and research field locally enhances the capacity of educators and researchers to contribute to the improvement of mathematics education. It promotes local research initiatives, curriculum development, and pedagogical innovation. By discussing the nature of mathematics, educators can align their teaching

methods with local cultural contexts and promote a deeper understanding of mathematics among students.

National Relevance

: Recognizing mathematics education as an academic and research field is crucial for national development. It supports the training of mathematics educators, the development of research institutions, and the advancement of mathematics curriculum and teaching methodologies. By discussing the nature of mathematics, the program contributes to national efforts to strengthen mathematics education, promote critical thinking, and foster mathematical literacy among the population.

Global Relevance:

Understanding mathematics education as an academic and research field has global significance. It enables collaboration and knowledge exchange among mathematics educators and researchers worldwide. By discussing the nature of mathematics, the program contributes to global discussions on mathematics education, curriculum development, and pedagogical practices. This promotes the advancement of mathematics education globally and ensures that students develop essential mathematical skills for an interconnected world.

PO3: Define specific components of Mathematics as axioms, postulates, paradoxes, mathematical statements, theorems, and proofs.

Local Relevance:

Defining specific components of mathematics locally provides educators and students with a solid foundation for studying and understanding mathematics. It facilitates effective instruction, clarifies the logical structure of mathematical concepts, and improves the problem-solving abilities of students. Local mathematics education can benefit from a clear understanding of these components, ensuring consistency and coherence in the teaching and learning of mathematics.

National Relevance:

Defining specific components of mathematics contributes to national mathematics education standards and frameworks. It provides a common language and conceptual framework for mathematics educators across the country. By promoting the understanding of axioms,

postulates, paradoxes, mathematical statements, theorems, and proofs, the program strengthens the national mathematics curriculum and helps students develop a deep understanding of mathematical concepts.

Global Relevance:

The definition of specific components of mathematics has global relevance. It ensures a common understanding and standardization of mathematical concepts worldwide. By emphasizing the importance of axioms, postulates, paradoxes, mathematical statements, theorems, and proofs, the program contributes to global mathematical literacy and facilitates international collaboration in mathematical research and education.

PO4: Discuss, analyze, and apply the history and development of the field of Mathematics for the betterment of mankind.

Local Relevance:

Discussing and analyzing the history and development of mathematics locally helps students understand mathematical ideas' cultural and historical context. It fosters an appreciation for the contributions of mathematicians from the local region and promotes cultural heritage. By applying this knowledge, students can develop a deeper understanding of mathematics and its relevance to their lives, fostering a sense of pride and identity.

National Relevance:

The discussion, analysis, and application of the history and development of mathematics contribute to national efforts to promote STEM education and scientific literacy. By exploring the historical development of mathematics, the program highlights the role of mathematicians from the country in advancing the field. This fosters national pride, inspires future generations of mathematicians, and promotes the application of mathematical knowledge for the betterment of society.

Global Relevance:

The history and development of mathematics have global significance. Understanding the contributions of mathematicians from different cultures and time periods promotes cultural diversity and global cooperation in mathematics education and research. By applying this knowledge, mathematicians can address global challenges, develop innovative solutions, and

contribute to the betterment of mankind through advancements in science, technology, engineering, and other fields.

PO5: Choose and apply basic statistical techniques for various kinds of data collected under educational research.

Local Relevance:

The ability to choose and apply basic statistical techniques for educational research data locally is essential for evidence-based decision-making in education. It enables educators, researchers, and policymakers to analyze and interpret data collected from local educational contexts. By applying statistical techniques, they can identify patterns, trends, and correlations, leading to informed interventions and improvements in educational practices.

National Relevance:

Choosing and applying basic statistical techniques for educational research data contributes to national efforts to improve the quality of education. It supports the development of a robust educational research infrastructure and enhances the capacity of educational institutions to collect, analyze, and utilize data effectively. By applying statistical techniques, researchers and policymakers can make data-driven decisions to address educational challenges and optimize resource allocation.

Global Relevance:

The ability to choose and apply basic statistical techniques for educational research data has global relevance in the context of international education research and comparison. It ensures the use of standardized methodologies for data analysis and promotes the comparability of research findings across different countries and regions. By applying statistical techniques, researchers can contribute to global discussions on educational policies, practices, and outcomes, leading to improvements in education on a global scale.

PO6: Prepare students for pursuing research or a career in the industry, in mathematical sciences, and allied fields.

Local Relevance:

Preparing students for research or careers in mathematical sciences and allied fields locally contributes to the development of a skilled workforce in the region. It equips students with the necessary knowledge, research skills, and practical experiences to pursue higher studies or enter the job market in fields related to mathematics, such as data analysis, financial modeling, cryptography, or academic research. This enhances the local talent pool and promotes economic growth in knowledge-based industries.

National Relevance:

Preparing students for research or careers in mathematical sciences and allied fields supports national aspirations for scientific and technological advancement. It ensures the availability of skilled professionals in fields such as mathematics, statistics, computer science, and engineering. By fostering research and career opportunities, the program contributes to the national research and development agenda, promotes innovation, and strengthens the country's competitiveness in the global economy.

Global Relevance:

Preparing students for research or careers in mathematical sciences and allied fields has global significance. Graduates can contribute to global research collaborations, work for international organizations, or pursue careers in multinational corporations. Their expertise in mathematical sciences and allied fields enhances global scientific knowledge, technological advancements, and innovation. They become part of a global network of professionals, sharing ideas, collaborating on research projects, and addressing global challenges through interdisciplinary approaches.

M.Sc. MICROBIOLOGY

PO1: Understand the basic and advanced concepts in Microbiology.

Local Relevance:

Understanding the basic and advanced concepts in Microbiology locally is relevant for educational institutions, research laboratories, and healthcare facilities. It equips individuals with the knowledge and skills necessary to analyze and interpret microbial data, conduct basic laboratory tests, and contribute to local research efforts. This understanding supports local healthcare systems, environmental monitoring, and the study of locally prevalent microbial diseases.

National Relevance:

Understanding the basic and advanced concepts in Microbiology is nationally relevant for public health agencies, biomedical research institutions, and pharmaceutical companies. It enables professionals to address national health challenges, such as infectious diseases, antimicrobial resistance, and vaccine development. This knowledge contributes to the development of national policies, guidelines, and interventions to protect public health and advance medical research.

Global Relevance:

Understanding the basic and advanced concepts in Microbiology has global significance. Microorganisms have no geographical boundaries, and their impact on human health, agriculture, and the environment extends worldwide. By comprehending these concepts, researchers and healthcare professionals can collaborate internationally, share knowledge and resources, and work towards global solutions for infectious diseases, food safety, and environmental sustainability.

PO2: Demonstrate and solve major concepts in all disciplines of Microbiology.

Local Relevance: Demonstrating and solving major concepts in all disciplines of Microbiology locally is relevant for academic institutions, diagnostic laboratories, and agricultural facilities. It enables individuals to identify and characterize microorganisms, perform laboratory techniques, and interpret experimental results. This knowledge supports local research projects, clinical diagnostics, and agricultural practices, contributing to the advancement of various sectors in the community.

National Relevance: Demonstrating and solving major concepts in all disciplines of Microbiology is nationally relevant for research institutes, public health laboratories, and agricultural organizations. It strengthens the capacity to investigate emerging infectious diseases, monitor microbial contamination, and enhance food safety practices. This knowledge is crucial for maintaining national health security, improving disease surveillance systems, and ensuring the quality of agricultural products.

Global Relevance: Demonstrating and solving major concepts in all disciplines of Microbiology has global relevance in addressing global health challenges, emerging infectious diseases, and food security. By collaborating with researchers and experts from different countries, professionals can share best practices, develop standardized protocols, and contribute to global initiatives aimed at preventing and controlling microbial threats. This knowledge supports global health networks, research collaborations, and the exchange of scientific information.

PO3: Solve problems and think methodically, independently, and draw logical conclusions about environmental Microbiological problems.

Local Relevance:

Solving problems and thinking methodically, independently, and drawing logical conclusions about environmental Microbiological problems locally is relevant for environmental agencies, water treatment plants, and waste management facilities. It enables individuals to assess and address microbial contamination in local ecosystems, develop strategies for environmental remediation, and implement sustainable practices. This knowledge supports local efforts to maintain environmental health and protect the community from potential microbial hazards.

National Relevance:

Solving problems and thinking methodically, independently, and drawing logical conclusions about environmental Microbiological problems is nationally relevant for environmental protection agencies, research institutes, and industries with potential environmental impact. It facilitates the identification and mitigation of environmental microbiological risks, such as

pollution, contamination, or outbreaks related to natural disasters. This knowledge contributes to national environmental policies, conservation efforts, and disaster response planning.

Global Relevance:

Solving problems and thinking methodically, independently, and drawing logical conclusions about environmental Microbiological problems has global significance. Microorganisms play a crucial role in global ecosystems, and their impacts on the environment transcend borders. By understanding and addressing environmental microbiological problems, professionals can contribute to global sustainability goals, biodiversity conservation, and the prevention of environmental disasters. This knowledge supports international collaborations, knowledge sharing, and the development of effective strategies for global environmental management.

PO4: Apply skills and knowledge in designing and developing new techniques and experiments for dealing with future medical microbiology problems.

Local Relevance:

Applying skills and knowledge in designing and developing new techniques and experiments for dealing with future medical microbiology problems locally is relevant for medical research institutions, hospitals, and healthcare clinics. It enables researchers and clinicians to stay at the forefront of medical microbiology by developing innovative diagnostic tools, treatment strategies, and preventive measures. This knowledge contributes to local advancements in medical care, disease management, and public health interventions.

National Relevance:

Applying skills and knowledge in designing and developing new techniques and experiments for dealing with future medical microbiology problems is nationally relevant for healthcare systems, pharmaceutical companies, and research organizations. It supports the development of novel therapies, vaccines, and diagnostic methods to address national health priorities and emerging infectious diseases. This knowledge contributes to national healthcare strategies, technological innovation, and the improvement of patient outcomes.

Global Relevance:

Applying skills and knowledge in designing and developing new techniques and experiments for dealing with future medical microbiology problems has global significance. Infectious diseases are a global concern, and new challenges continue to arise. By developing innovative

techniques and experiments, professionals can contribute to global efforts in disease prevention, treatment, and control. This knowledge facilitates international collaborations, scientific advancements, and the development of strategies to combat global health threats.

PO5: Employ critical thinking and scientific knowledge to design, carry out, record, and analyze the results of microbial experiments.

Local Relevance:

Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of microbial experiments locally is relevant for research laboratories, academic institutions, and healthcare facilities. It enables researchers and students to conduct experiments, gather data, and analyze results to generate new scientific knowledge and contribute to local research endeavors. This knowledge supports local research projects, scientific publications, and the development of evidence-based practices.

National Relevance:

Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of microbial experiments is nationally relevant for research institutes, government agencies, and industries involved in healthcare or biotechnology. It supports the generation of new scientific knowledge, the development of innovative technologies, and the improvement of national healthcare practices. This knowledge contributes to national research and development initiatives, technological advancements, and the competitiveness of the country's scientific community.

Global Relevance:

Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of microbial experiments has global relevance. Scientific research transcends borders, and advancements in microbiology contribute to global knowledge and understanding. By conducting rigorous experiments and analyzing results, professionals can contribute to global scientific breakthroughs, the development of new therapies and technologies, and the advancement of microbiological knowledge. This knowledge supports international collaborations, scientific exchanges, and the collective efforts to address global health challenges.

PHARMA

PO1: Understand the basic and advanced concepts in pharmaceutical chemistry.

Local Relevance:

Understanding the basic and advanced concepts in pharmaceutical chemistry locally is relevant for pharmaceutical companies, research institutions, and academic institutions offering pharmaceutical chemistry programs. It enables professionals to contribute to local drug development, quality control, and research projects. This knowledge supports the local pharmaceutical industry and advances healthcare by ensuring the production of safe and effective medications.

National Relevance:

Understanding the basic and advanced concepts in pharmaceutical chemistry is nationally relevant for the pharmaceutical sector, regulatory bodies, and academic institutions offering pharmaceutical programs. It contributes to national drug research and development efforts, ensuring the availability of high-quality medications for the population. This knowledge supports the advancement of healthcare, pharmaceutical innovation, and the country's economic growth.

Global Relevance:

Understanding the basic and advanced concepts in pharmaceutical chemistry has global significance. The pharmaceutical industry operates on a global scale, and advancements in drug development impact healthcare worldwide. By understanding pharmaceutical chemistry principles, professionals can contribute to global drug discovery, drug safety, and efficacy. This knowledge fosters international collaborations, scientific exchanges, and the improvement of global healthcare outcomes.

PO2: Categorize drugs based on chemical structure, therapeutic action, and natural sources.

Local Relevance:

Categorizing drugs based on chemical structure, therapeutic action, and natural sources locally is relevant for healthcare professionals, pharmacists, and pharmaceutical researchers. It enhances local drug prescribing practices, allows for the identification of alternative therapies, and promotes the use of natural products in healthcare. This knowledge contributes to improved patient care and supports local efforts in personalized medicine.

National Relevance:

Categorizing drugs based on chemical structure, therapeutic action, and natural sources is nationally relevant for healthcare authorities, drug regulatory agencies, and pharmaceutical manufacturers. It helps in drug classification, formulation development, and pharmacovigilance. This knowledge supports national drug regulations, ensures the safety and efficacy of medications, and facilitates the rational use of drugs within the country's healthcare system.

Global Relevance:

Categorizing drugs based on chemical structure, therapeutic action, and natural sources has global relevance. Standardized drug classification systems enable international collaboration, harmonization of drug regulations, and the sharing of drug information across borders. This knowledge facilitates global drug safety monitoring, promotes the discovery of new drug candidates, and contributes to the understanding of traditional medicine practices worldwide.

PO3: Demonstrate synthesis, mode of action, and SAR (Structure-Activity Relationship) of drugs and prepare dosage forms.

Local Relevance:

Demonstrating synthesis, mode of action, and SAR of drugs and preparing dosage forms locally is relevant for pharmaceutical manufacturers, research laboratories, and compounding pharmacies. It enables the development of locally produced medications, quality control of drug formulations, and the optimization of drug therapies for specific patient populations. This knowledge supports local pharmaceutical industries, healthcare providers, and patient outcomes.

National Relevance:

Demonstrating synthesis, mode of action, and SAR of drugs and preparing dosage forms is nationally relevant for the pharmaceutical sector, drug regulatory authorities, and academic institutions offering pharmaceutical programs. It contributes to national drug research and development efforts, ensuring the availability of safe and effective medications tailored to the country's healthcare needs. This knowledge supports national healthcare strategies, drug affordability, and patient access to quality medications.

Global Relevance:

Demonstrating synthesis, mode of action, and SAR of drugs and preparing dosage forms has global significance. It contributes to global drug development, formulation optimization, and drug safety evaluation. By understanding drug synthesis and SAR, professionals can contribute to the discovery of new therapeutics and the improvement of existing drugs. This knowledge fosters international collaborations, advances pharmaceutical science, and benefits patients worldwide.

PO4: Analyze drugs qualitatively and quantitatively using advanced analytical techniques like HPLC, FTIR, UV spectroscopy in various drug formulations and as raw materials

Local Relevance:

Analyzing drugs qualitatively and quantitatively using advanced analytical techniques locally is relevant for pharmaceutical quality control laboratories, contract research organizations, and regulatory bodies. It ensures the accuracy and consistency of drug formulations, verifies the identity and purity of raw materials, and monitors drug stability. This knowledge supports the production of high-quality medications and compliance with local regulatory standards.

National Relevance:

Analyzing drugs qualitatively and quantitatively using advanced analytical techniques is nationally relevant for pharmaceutical manufacturers, regulatory agencies, and drug testing laboratories. It contributes to national drug quality control efforts, promotes the detection of substandard or counterfeit medications, and ensures the safety and efficacy of drugs on the market. This knowledge supports public health initiatives, strengthens the pharmaceutical sector's reputation, and protects patient well-being.

Global Relevance:

Analyzing drugs qualitatively and quantitatively using advanced analytical techniques has global significance. It enables the harmonization of drug testing standards, facilitates international trade of pharmaceutical products, and supports global pharmacovigilance efforts. This knowledge contributes to global drug quality assurance, enhances patient safety, and promotes trust in the pharmaceutical industry worldwide.

PO5: Apply skills and knowledge in drug designing.

Local Relevance:

Applying skills and knowledge in drug designing locally is relevant for pharmaceutical research institutions, academic laboratories, and drug discovery startups. It enables the development of locally designed drug candidates tailored to specific healthcare needs or disease profiles prevalent in the local population. This knowledge supports local research and innovation in pharmaceutical sciences and may lead to the discovery of novel treatments or therapeutic approaches.

National Relevance:

Applying skills and knowledge in drug designing is nationally relevant for the pharmaceutical sector, research institutes, and academic institutions. It contributes to national drug research and development efforts, promotes the discovery of new drug candidates, and fosters innovation in healthcare. This knowledge supports national healthcare strategies, improves patient treatment options, and enhances the country's competitiveness in the global pharmaceutical market.

Global Relevance:

Applying skills and knowledge in drug designing has global significance. It contributes to global drug discovery, advances in personalized medicine, and the development of targeted therapies for various diseases. By applying drug designing skills, professionals can contribute to international collaborative research projects, multinational pharmaceutical companies, and global efforts to address unmet medical needs. This knowledge fosters innovation, improves patient outcomes, and drives advancements in global healthcare.

M.Sc. PHYSICS

PO1: Understand the basic and advanced concepts in physics.

Local Relevance:

Understanding the basic and advanced concepts in physics locally is relevant for educational institutions, research centers, and industries involved in scientific research and technology development. It supports the education and training of local students, promotes scientific literacy, and lays the foundation for further studies or careers in physics-related fields.

National Relevance:

Understanding the basic and advanced concepts in physics is nationally relevant for the development of a skilled workforce in scientific research, engineering, and technology sectors. It contributes to national innovation, drives technological advancements, and fosters scientific progress. This knowledge is crucial for the growth of industries, national defense, and the overall scientific and technological development of the country.

Global Relevance:

Understanding the basic and advanced concepts in physics has global significance. It forms the basis for international collaborations in scientific research, contributes to advancements in various fields such as energy, communications, and healthcare, and promotes the sharing of scientific knowledge and discoveries. This knowledge is essential for addressing global challenges, fostering international cooperation, and pushing the boundaries of human understanding.

PO2: Demonstrate and solve major concepts in all disciplines of physics.

Local Relevance:

Demonstrating and solving major concepts in physics locally is relevant for educational institutions, providing hands-on learning experiences for students and reinforcing theoretical knowledge. It supports local talent development, encourages scientific inquiry, and prepares students for further studies or careers in physics-related fields.

National Relevance:

Demonstrating and solving major concepts in physics is nationally relevant for research institutions, industries, and universities. It enables the application of physics principles to real-world problems, drives technological advancements, and contributes to scientific discoveries. This knowledge is essential for the development of innovative solutions, improving national competitiveness, and addressing societal challenges.

Global Relevance:

Demonstrating and solving major concepts in physics has global significance. It facilitates international collaborations in scientific research, enables the exchange of ideas and methodologies, and contributes to global scientific advancements. This knowledge helps address global challenges, promotes scientific breakthroughs, and pushes the boundaries of human knowledge on a global scale.

PO3: Solve problems and think methodically, independently, and draw logical conclusions.

Local Relevance:

Solving problems and thinking methodically, independently, and drawing logical conclusions locally is relevant for various sectors such as engineering, technology, and research. It enhances problem-solving skills, fosters critical thinking, and encourages analytical reasoning. These skills are valuable for local industries, research institutions, and academia.

National Relevance:

Solving problems and thinking methodically, independently, and drawing logical conclusions are nationally relevant for driving innovation, problem-solving, and decision-making processes in different sectors. It equips individuals with the ability to tackle complex challenges, contribute to technological advancements, and make informed decisions. These skills support national development and competitiveness.

Global Relevance:

Solving problems and thinking methodically, independently, and drawing logical conclusions have global significance. They are fundamental skills required in various fields, including science, engineering, and technology, to address global challenges and make advancements. These skills contribute to global scientific collaborations, foster innovation, and facilitate the development of solutions to global issues.

PO4: Apply skills and knowledge in the design and development of electronic circuits.

Local Relevance:

Applying skills and knowledge in the design and development of electronic circuits locally is relevant for the electronics industry, research institutions, and engineering firms. It supports the development of local expertise in circuit design, manufacturing, and troubleshooting, contributing to the growth of the local electronics sector.

National Relevance:

Applying skills and knowledge in the design and development of electronic circuits is nationally relevant for the electronics industry, defense sector, and research institutions. It promotes the development of indigenous electronic systems, drives technological advancements, and supports national security and defense capabilities. This knowledge contributes to the growth of the national electronics sector and enhances national competitiveness.

Global Relevance:

Applying skills and knowledge in the design and development of electronic circuits has global significance. It contributes to the development of advanced electronic devices, communication systems, and technology. This knowledge fosters global innovation, supports technological advancements, and facilitates the exchange of electronic technologies worldwide.

PO5: Employ critical thinking and scientific knowledge to design, carry out, record, and analyze the results of physics experiments.

Local Relevance:

Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of physics experiments locally is relevant for educational institutions, research centers, and scientific laboratories. It enhances the practical understanding of physics concepts, promotes scientific inquiry, and supports local research and educational initiatives.

National Relevance:

Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of physics experiments is nationally relevant for research institutions, industries,

and educational institutions. It contributes to the development of scientific research capabilities, drives technological advancements, and fosters a culture of innovation. This knowledge supports national scientific progress and contributes to various sectors, including engineering, healthcare, and energy.

Global Relevance:

Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of physics experiments has global significance. It contributes to the global scientific community by expanding knowledge, validating theories, and pushing the boundaries of scientific understanding. This knowledge facilitates international collaborations, promotes scientific discoveries, and addresses global challenges through evidence-based research.

M.Sc. Statistics

Local Relevance:

1. The Master of Science in Statistics program provides Local Relevance by training students to apply statistical techniques to analyze data in various disciplines within the local context. This is important for addressing local problems, conducting research, and making data-driven decisions in fields such as healthcare, economics, social sciences, and environmental studies.
2. Providing practical experience in handling modern statistical software enables students to acquire skills that are applicable to local industries, research institutions, and organizations requiring data analysis and interpretation.
3. Equipping students with the knowledge and expertise in statistics prepares them to contribute to the local workforce, supporting data-driven decision-making and problem-solving in businesses, government agencies, and non-profit organizations.

National Relevance:

1. The Master of Science in Statistics program has national relevance as it contributes to the development of a skilled workforce in statistical analysis and data science. This is essential for national-level research, policy-making, and planning across various sectors, including government, finance, healthcare, and education.
2. By training students to handle real-life problems through practical classes and teaching programming languages and statistical software, the program equips graduates with skills that are in high demand in the national job market, fostering innovation and enhancing the nation's statistical capabilities.
3. The program's focus on statistical theory and multiple programming languages aligns with national efforts to promote data-driven decision-making, evidence-based policymaking, and the use of advanced analytics in diverse sectors.

Global Relevance:

1. The Master of Science in Statistics program holds global relevance as statistical analysis and data interpretation are vital in addressing global challenges, such as climate change, epidemiology, market research, and social sciences research.

2. Providing training in modern statistical techniques and software equips graduates to contribute to international research collaborations and data-driven projects, facilitating global knowledge sharing and advancements in various disciplines.
3. The program's emphasis on modeling real-life data using statistical theory and multiple programming languages enables graduates to apply their skills to global issues and contribute to international efforts in fields such as data science, research, and academia.

M.Sc. ZOOLOGY

PO1: Understanding the basic and advanced concepts of Zoology.

Local Relevance:

Understanding the basic and advanced concepts of Zoology is relevant for local students studying Zoology or pursuing careers related to animal biology. It can contribute to the understanding and conservation of local animal species, their behavior, and their ecological roles in the local ecosystem.

National Relevance:

Knowledge of basic and advanced concepts of Zoology is important for the scientific study and conservation of animal diversity in the country. It can contribute to the understanding of indigenous animal species, their habitats, and their conservation needs at the national level.

Global Relevance:

Understanding Zoology has global relevance as it contributes to the global understanding of animal diversity, behavior, and ecological interactions. It can support global conservation efforts, biodiversity research, and the development of sustainable practices for wildlife management.

PO2: Learning the biological diversity and grades of complexity of various animal forms through their systematic classification and comparative studies.

Local Relevance:

Learning about the biological diversity and grades of complexity of local animal forms is relevant for understanding the local fauna and their evolutionary relationships. It can contribute to the identification and classification of local animal species, as well as the understanding of their ecological roles in the local ecosystem.

National Relevance:

Knowledge of the biological diversity and grades of complexity of animal forms is important for the study and conservation of India's rich animal diversity. It can inform conservation strategies, habitat management, and the protection of endangered species at the national level.

Global Relevance:

Studying the biological diversity and grades of complexity of animal forms has global relevance as it contributes to the understanding of animal evolution, phylogenetics, and the global patterns of biodiversity. Sharing knowledge and collaborating internationally can enhance global efforts in conservation, taxonomy, and evolutionary biology.

PO3: Developing skills in analytical and critical thinking through the concept of biostatistics.

Local Relevance:

Developing skills in analytical and critical thinking through biostatistics is relevant for local researchers, scientists, and students in the field of Zoology. It can enhance their ability to analyze and interpret data, design experiments, and draw meaningful conclusions for local research projects and conservation efforts.

National Relevance:

Skills in analytical and critical thinking through biostatistics are important for scientific research and decision-making in the field of Zoology at the national level. It can contribute to evidence-based policymaking, data-driven conservation strategies, and the advancement of scientific knowledge in the country.

Global Relevance:

Developing skills in analytical and critical thinking through biostatistics has global relevance as it contributes to the global scientific community's ability to analyze and interpret biological data, conduct robust experiments, and make informed decisions. Collaboration and sharing of statistical methodologies and findings can enhance global research outcomes and improve data-driven approaches to conservation and wildlife management.

PO4: Motivating learners about new developments in cell and molecular biology and their implications in human welfare.

Local Relevance:

Motivating learners about new developments in cell and molecular biology and their implications in human welfare is relevant for local students and researchers in the field of Zoology. It can inspire them to explore and contribute to advancements in biomedical research, healthcare, and understanding local health issues.

National Relevance:

Motivating learners about new developments in cell and molecular biology and their implications in human welfare is important for India's healthcare and biomedical research sectors. It can foster innovation, scientific advancements, and the development of new therapies and treatments at the national level.

Global Relevance:

Keeping learners updated about new developments in cell and molecular biology and their implications in human welfare has global relevance as it contributes to the global advancement of medical science, biotechnology, and healthcare. Sharing knowledge, collaborating internationally, and disseminating research findings can contribute to global improvements in human health and well-being.

PO5: Employing critical thinking and scientific knowledge to understand Aquaculture Limnology, and immunology in various fields.

Local Relevance:

Employing critical thinking and scientific knowledge to understand Aquaculture, Limnology, and immunology is relevant for local students and professionals involved in fisheries, aquatic ecology, and public health sectors. It can contribute to sustainable aquaculture practices, the conservation of local freshwater ecosystems, and the understanding and prevention of local infectious diseases.

National Relevance:

Employing critical thinking and scientific knowledge to understand Aquaculture, Limnology, and immunology is important for India's fisheries industry, freshwater resource management, and public health sector. It can inform policy decisions, resource allocation, and disease control strategies at the national level.

Global Relevance:

Understanding Aquaculture, Limnology, and immunology using critical thinking and scientific knowledge has global relevance as it contributes to global food security, freshwater conservation, and disease prevention. Sharing best practices, research findings, and collaborating internationally can enhance global efforts in sustainable aquaculture, freshwater management, and public health.

PGDCA

PO1: Understanding the fundamental concepts of computer systems, programming languages, operating systems, and networking.

- **Local Relevance:** Understanding the fundamental concepts of computer systems, programming languages, operating systems, and networking is relevant for local students studying computer science or pursuing careers in the IT industry. It can contribute to the development of local technological infrastructure, support local businesses, and drive digital innovation in the community.

- **National Relevance:** Knowledge of fundamental concepts in computer systems, programming languages, operating systems, and networking is important for the development of the national IT sector and digital economy. It can contribute to the growth of the IT industry, improve digital literacy among the population, and drive technological advancements in the country.

- **Global Relevance:** Understanding the fundamental concepts of computer systems, programming languages, operating systems, and networking has global relevance as it forms the foundation of modern computing and communication technologies. It enables global connectivity, collaboration, and the development of innovative solutions to global challenges.

PO2: Analyzing and solving computational problems using algorithmic thinking and logical reasoning.

- **Local Relevance:** Analyzing and solving computational problems using algorithmic thinking and logical reasoning is relevant for local students and professionals in the field of computer science and software development. It can enhance their problem-solving skills, contribute to local software development projects, and support the growth of the local IT industry.

- **National Relevance:** The ability to analyze and solve computational problems using algorithmic thinking and logical reasoning is important for the national IT sector. It can contribute to the development of innovative software solutions, improve efficiency in various industries, and drive digital transformation at the national level.

- **Global Relevance:** Analyzing and solving computational problems using algorithmic thinking and logical reasoning has global relevance as it is essential for the development of new algorithms, software applications, and technologies. It enables advancements in various fields such as artificial intelligence, data analysis, and cybersecurity on a global scale.

PO3: Acquiring knowledge and practical skills in web designing using HTML, XML, and DHTML.

- **Local Relevance:** Acquiring knowledge and practical skills in web designing using HTML, XML, and DHTML is relevant for local students and professionals in the field of web development and digital marketing. It can contribute to the creation of local websites, online platforms, and digital marketing campaigns that cater to the needs of the local community.

- **National Relevance:** The knowledge and practical skills in web designing using HTML, XML, and DHTML are important for the growth of the national digital economy. It can support the development of local e-commerce platforms, online services, and digital content creation, driving economic growth and technological innovation.

- **Global Relevance:** Acquiring knowledge and practical skills in web designing using HTML, XML, and DHTML has global relevance as the internet and web technologies are essential components of the global digital infrastructure. The skills can contribute to the development of user-friendly websites, online applications, and digital experiences that have a global impact.

PO4: Applying database design and SQL skills to design, create, and manage databases using Oracle.

- **Local Relevance:** Applying database design and SQL skills to design, create, and manage databases using Oracle is relevant for local students and professionals in the field of database management and software development. It can support the creation and maintenance of local databases for businesses, organizations, and government agencies, improving data management and decision-making processes.

- **National Relevance:** The application of database design and SQL skills using Oracle is important for the national IT infrastructure and data-driven decision-making. It can contribute

to the development of robust database systems, data integration, and analytics capabilities at the national level, enhancing efficiency and effectiveness in various sectors.

- **Global Relevance:** Applying database design and SQL skills to design, create, and manage databases using Oracle has global relevance as databases are integral to modern organizations and industries worldwide. Sharing best practices, collaborating on database design
