

GOVT. HOLKAR (MODEL AUTONOMOUS) SCIENCE COLLEGE, INDORE



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A Detailed Overview of Integrating value framework enshrined in National Education Policy – 2020 into the Curriculum as Reflected in its POs.

A Detailed Overview of Integrating value framework enshrined in National Education Policy – 2020 into the Curriculum as Reflected in its POs.

Values enshrined in NEP-2020

The **National Education Policy (NEP) - 2020** of India emphasizes several core values that are intended to guide the educational system toward holistic development and a more inclusive society. Some of the key values enshrined in the NEP-2020 include:

- 1. Inclusivity and Equity:** The NEP-2020 promotes equal access to quality education for all, regardless of gender, socio-economic background, caste, religion, or physical abilities. It aims to eliminate disparities in education and ensure equitable opportunities for learning and development.
- 2. Quality and Excellence:** The policy emphasizes the importance of providing high-quality education at all levels. It seeks to enhance the learning outcomes, improve the competency of teachers, and promote excellence in educational institutions through robust academic standards and effective evaluation mechanisms.
- 3. Holistic Development:** The NEP-2020 recognizes the need to nurture the overall development of students, including their cognitive, social, emotional, and physical well-being. It encourages a holistic approach that focuses on knowledge, skills, values, ethics, and character building.
- 4. Multilingualism and Cultural Diversity:** The policy recognizes the rich linguistic and cultural diversity of India and encourages the preservation and promotion of different languages and cultures. It promotes multilingual education and the integration of local knowledge and traditions into the curriculum.
- 5. Ethical and Moral Values:** The NEP-2020 places a strong emphasis on fostering ethical values, moral character, and social responsibility among students. It seeks to

inculcate values such as honesty, compassion, integrity, respect for others, and a sense of social justice.

- 6. Environmental Consciousness:** The policy recognizes the urgent need to address environmental challenges and instills environmental consciousness and sustainability values in education. It promotes environmental education, conservation practices, and the integration of environmental issues into the curriculum.
- 7. Digital Literacy and Technology Integration:** The NEP-2020 acknowledges the significance of digital literacy and technology in the modern world. It encourages the integration of technology in teaching and learning processes to enhance access, engagement, and innovation in education.
- 8. Critical Thinking and Creativity:** The policy emphasizes the development of critical thinking, problem-solving, and creativity among students. It aims to nurture a spirit of inquiry, analytical skills, and the ability to think independently and creatively.
- 9. Lifelong Learning:** The NEP-2020 recognizes the importance of lifelong learning and the need for continuous skill development throughout an individual's life. It promotes a flexible and multidisciplinary approach to education that prepares students for future challenges and adaptability.
- 10. Global Citizenship:** The policy encourages students to develop a global outlook, cross-cultural understanding, and a sense of global citizenship. It promotes the internationalization of education, global collaborations, and exposure to diverse perspectives and experiences.

These values serve as guiding principles to shape the education system and promote holistic development, inclusivity, and societal progress as envisioned by the National Education Policy - 2020.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Biochemistry Major)

The individual Program Outcomes (POs) in Biochemistry can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Demonstrating knowledge and understanding of fundamental concepts and principles of Biochemistry aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including the natural sciences.

P02: Applying laboratory techniques and experimental methods to purify, analyze, and manipulate biological molecules aligns with the **value of practical skills and hands-on learning**. NEP-2020 emphasizes the integration of theoretical knowledge with practical application and promotes experiential learning.

P03: Analyzing and interpreting experimental data using quantitative and statistical methods, as well as using Bioinformatics tools, aligns with the **value of critical thinking and research**. NEP-2020 emphasizes the development of higher-order thinking skills and encourages students to engage in research and data analysis.

P04: Evaluating and critically assessing the impact of biochemical processes on human health and disease, and proposing solutions to diagnose and treat biochemical disorders aligns with the **value of societal impact and problem-solving**. NEP-2020 emphasizes the application of knowledge and skills to address real-world challenges and contribute to the well-being of society.

P05: Synthesizing and communicating complex ideas and concepts related to Biochemistry, using effective written and oral communication skills aligns with the **value of communication and expression**. NEP-2020 emphasizes the development of communication skills to effectively convey scientific information to diverse audiences.

The Program Outcomes in Biochemistry align with the values of comprehensive education, practical skills, critical thinking and research, societal impact, and effective communication advocated by NEP-2020. They reflect the objectives of providing students with a strong foundation in Biochemistry, promoting practical and analytical skills, fostering critical thinking and research abilities, addressing societal challenges related to health and disease, and developing effective communication skills for scientific dissemination.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Botany Major)

The individual Program Outcomes (POs) in Botany can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Demonstrating knowledge and understanding of the principles of Botany aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including the natural sciences.

P02: Analyzing and interpreting complex data and scientific literature, developing hypotheses, designing experiments, and drawing conclusions aligns with the **value of critical thinking and research**. NEP-2020 emphasizes the development of higher-order thinking skills and encourages students to engage in research and scientific inquiry.

P03: Evaluating and critically assessing the impacts of human activities on plant communities, ecosystems, and global environmental systems aligns with the **value of environmental sustainability**. NEP-2020 emphasizes the need for environmental awareness and promoting sustainable practices.

P04: Applying laboratory and field techniques to collect and analyze plant data, and using quantitative methods to interpret and communicate findings aligns with the **value of practical skills and hands-on learning**. NEP-2020 emphasizes the integration of theoretical knowledge with practical application and promotes experiential learning.

P05: Synthesizing and communicating complex concepts and ideas related to plant biology, using effective written and oral communication skills aligns with the **value of communication and expression**. NEP-2020 emphasizes the development of communication skills to effectively convey scientific information to diverse audiences.

The Program Outcomes in Botany align with the values of comprehensive education, critical thinking and research, environmental sustainability, practical skills, and effective communication advocated by NEP-2020. They reflect the objectives of providing students with a strong foundation in Botany, promoting critical thinking and research abilities, addressing environmental issues, fostering practical skills, and developing effective communication skills for scientific dissemination.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Biotechnology Major)

The individual Program Outcomes (POs) in Biotechnology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Demonstrating knowledge and understanding of the principles of Biotechnology aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including emerging technologies like Biotechnology.

P02: Applying laboratory techniques and experimental methods to design and conduct experiments in Biotechnology aligns with the **value of practical skills and hands-on learning**. NEP-2020 emphasizes the integration of theoretical knowledge with practical application and promotes experiential learning.

P03: Analyzing and interpreting complex biological data, using statistical methods and computational tools aligns with the **value of critical thinking and research**. NEP-2020 emphasizes the development of higher-order thinking skills and encourages students to engage in research and scientific inquiry.

P04: Evaluating and critically assessing the ethical, social, and environmental impacts of Biotechnology aligns with the **value of ethical and responsible citizenship**. NEP-2020 emphasizes the need to address societal and ethical issues related to emerging technologies and encourages students to be responsible and ethical practitioners.

P05: Synthesizing and communicating complex ideas and concepts related to Biotechnology, using effective written and oral communication skills aligns with the **value of communication and expression**. NEP-2020 emphasizes the development of communication skills to effectively convey scientific information to diverse audiences.

The Program Outcomes in Biotechnology align with the values of comprehensive education, practical skills, critical thinking and research, ethical and responsible citizenship, and effective communication advocated by NEP-2020. They reflect the objectives of providing students with a strong foundation in Biotechnology, promoting practical skills and research abilities, addressing ethical and societal implications, and developing effective communication skills for scientific dissemination.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Bioinformatics Major)

The individual Program Outcomes (POs) in Bioinformatics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Demonstrating knowledge and understanding of the principles of Bioinformatics aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including interdisciplinary fields like Bioinformatics that combine molecular biology, Computer Science, and Statistics.

P02: Applying computational methods and software tools to analyze biological data aligns with the **value of practical skills and hands-on learning**. NEP-2020 emphasizes the integration of theoretical knowledge with practical application and promotes experiential learning. It also encourages the use of technology and computational tools in education.

P03: Evaluating and critically assessing the quality and validity of biological data and computational models aligns with the **value of critical thinking and research**. NEP-2020 emphasizes the development of higher-order thinking skills and encourages students to engage in research and scientific inquiry.

P04: Designing and implementing Bioinformatics workflows and pipelines aligns with the **value of innovation and problem-solving**. NEP-2020 encourages students to develop creativity and problem-solving abilities to address real-world challenges, and Bioinformatics workflows often involve developing novel solutions to manage and analyze large-scale biological datasets.

P05: Synthesizing and communicating complex ideas and concepts related to Bioinformatics aligns with the **value of communication and expression**. NEP-2020 emphasizes the development of communication skills to effectively convey scientific information to diverse audiences, including non-scientific audiences.

The Program Outcomes in Bioinformatics align with the values of comprehensive education, practical skills, critical thinking and research, innovation and problem-solving, and effective communication advocated by NEP-2020. They reflect the objectives of providing students with a strong foundation in Bioinformatics, promoting practical skills and research abilities, encouraging innovative approaches to data analysis, and developing effective communication skills for scientific dissemination.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Chemistry Major)

The individual Program Outcomes (POs) in Chemistry can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge and understanding of the fundamental principles and concepts of Chemistry aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including the foundational principles of Chemistry.

P02: Applying laboratory techniques and instrumentation to perform chemical experiments and analyze data aligns with the **value of practical skills and hands-on learning**. NEP-2020 emphasizes the integration of theoretical knowledge with practical application and promotes experiential learning. It encourages students to develop skills in using laboratory techniques and instruments for chemical experimentation.

P03: Analyzing and interpreting chemical data to make inferences and using quantitative and qualitative methods aligns with the **value of critical thinking and research**. NEP-2020 emphasizes the development of higher-order thinking skills and encourages students to engage in scientific inquiry. It promotes the use of data analysis and interpretation to draw conclusions about chemical phenomena.

P04: Evaluating and critically assessing the environmental, societal, and ethical implications of chemical processes aligns with the **value of sustainable development and ethical responsibility**. NEP-2020 highlights the importance of understanding the impact of scientific knowledge on society and the environment. It encourages students to evaluate the implications of chemical processes, such as pollution and sustainability, and propose solutions to address these issues.

P05: Synthesizing and communicating complex ideas and concepts related to Chemistry aligns with the value of effective communication and expression. NEP-2020 emphasizes the development of communication skills to convey scientific information to diverse audiences, including non-scientific audiences. It encourages students to effectively communicate their understanding of complex chemical concepts.

The Program Outcomes in Chemistry align with the values of comprehensive education, practical skills, critical thinking and research, sustainable development and ethical responsibility, and effective communication advocated by NEP-2020. They reflect the objectives of providing students with a strong foundation in Chemistry, promoting practical skills and research abilities, encouraging critical analysis of chemical implications, and developing effective communication skills for scientific dissemination.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Computer Science Major)

The individual Program Outcomes (POs) in Computer Science can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge and understanding of the fundamental principles and concepts of Computer Science aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including the foundational principles of Computer Science.

P02: Applying programming and software development skills to design, implement, test, and maintain computer programs and systems aligns with the **value of practical skills and hands-on learning**. NEP-2020 promotes experiential learning and emphasizes the integration of theoretical knowledge with practical application. It encourages students to develop skills in software development methodologies and tools.

P03: Analyzing and interpreting complex data and computational models and using computational methods to solve problems aligns with the **value of critical thinking and research**. NEP-2020 highlights the importance of developing higher-order thinking skills and encourages students to engage in problem-solving and computational thinking. It promotes the application of computational methods in domains such as artificial intelligence, machine learning, and data science.

P04: Evaluating and critically assessing the ethical and social implications of Computer Science aligns with the **value of ethical responsibility**. NEP-2020 emphasizes the need for students to understand the ethical and social dimensions of technology. It encourages students to evaluate the implications of Computer Science, such as privacy, security, and social responsibility, and propose solutions to address these issues.

P05: Synthesizing and communicating complex ideas and concepts related to Computer Science aligns with the **value of effective communication and expression**. NEP-2020 emphasizes the development of communication skills to convey technical information to diverse audiences, including non-technical audiences. It encourages students to effectively communicate their understanding of complex Computer Science concepts.

The Program Outcomes in Computer Science align with the values of comprehensive education, practical skills, critical thinking and research, ethical responsibility, and effective communication advocated by NEP-2020. They reflect the objectives of providing students with a strong foundation in Computer Science, promoting practical skills and research abilities, addressing ethical and social implications, and developing effective communication skills for technical information dissemination.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Electronics Major)

The individual Program Outcomes (POs) in electronic circuits can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Designing and implementing electronic circuits for real-world applications using advanced software tools and techniques aligns with the **value of creativity and innovation**. NEP-2020 emphasizes the development of creative and critical thinking skills, encouraging students to design and implement solutions to real-world problems using advanced tools and techniques.

P02: Analyzing and evaluating the performance of electronic systems through experimental and theoretical investigations aligns with the **value of critical thinking and research**. NEP-2020 promotes the development of analytical and problem-solving skills, encouraging students to investigate and evaluate the performance of electronic systems through both experimental and theoretical approaches.

P03: Communicating technical information effectively to both technical and non-technical audiences, using appropriate tools and media, aligns with the **value of effective communication and expression**. NEP-2020 emphasizes the development of communication skills to convey technical information to diverse audiences, including non-technical audiences, using appropriate tools and media.

P04: Applying knowledge of ethical and professional standards to engineering practice and appreciating the social and environmental impacts of electronic technologies aligns with the **value of ethical responsibility and social awareness**. NEP-2020 highlights the importance of ethical conduct and social responsibility in engineering practice, as well as the need to consider the environmental impacts of technology.

P05: Developing a lifelong learning attitude and engaging in professional development activities to keep pace with emerging technology aligns with the **value of continuous learning and professional development**. NEP-2020 emphasizes the importance of lifelong learning and encourages students to stay updated with emerging technologies through professional development activities.

The Program Outcomes in Electronics align with the values of creativity and innovation, critical thinking and research, effective communication and expression, ethical responsibility and social awareness, and continuous learning and professional development advocated by NEP-2020. They reflect the objectives of providing students with the necessary skills and knowledge in electronic circuits, promoting critical thinking and research abilities, developing effective communication skills, fostering ethical responsibility, and encouraging lifelong learning and professional growth.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Biochemistry

The provided Program Outcomes (POs) can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Reframing the conceptual understanding of molecules essential for life and their integrated system in maintaining cellular homeostasis aligns with the NEP-2020's emphasis on **promoting holistic and multidisciplinary education**. It encourages students to develop a deep understanding of foundational concepts in Biochemistry and their relevance to maintaining overall health and well-being.

P02: Planning scientific research using various biochemical techniques and representing data using efficient bio statistical tools reflects the NEP-2020's focus on **promoting research and innovation**. It encourages students to apply their knowledge of biochemical techniques to design and conduct scientific studies, analyze data, and contribute to advancements in the field of Biochemistry.

P03: Appraising the role of essential nutrients required for the body system and acquiring clinical skills relating to diet plans aligns with the NEP-2020's emphasis on **promoting health and wellness**. It equips students with the knowledge and skills to assess the nutritional needs of individuals and develop appropriate diet plans for maintaining good health.

P04: Acquiring in-depth theoretical and practical knowledge of Biochemistry and translating that knowledge for higher contributions in the field aligns with the NEP-2020's objective of **promoting expertise and specialization**. It encourages students to delve deeply into the field of Biochemistry and develop advanced skills that enable them to make significant contributions to research, innovation, and academic pursuits.

P05: Developing skills that help in acquiring scientific, academic, and industrial positions is in line with the NEP-2020's focus on **promoting employability and entrepreneurship**. It aims to equip students with the necessary skills and knowledge to pursue careers in scientific research, academia, and industry, thereby contributing to the growth and development of the nation's Biochemistry sector.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Economics Major)

The individual Program Outcomes (POs) in Economics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating understanding of economic theories, concepts, and models aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the importance of acquiring knowledge and understanding of different subjects, including Economics, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Analyzing economic issues using quantitative and qualitative research methods aligns with the **value of critical thinking and research**. NEP-2020 promotes the development of analytical skills and research abilities, encouraging students to apply research methods to analyze economic issues and phenomena.

P03: Evaluating economic policies and their impact on individuals, businesses, and society aligns with the **value of evaluation and problem-solving**. NEP-2020 emphasizes the development of evaluative skills, enabling students to assess the effectiveness and consequences of economic policies on various stakeholders.

P04: Communicating economic ideas and analysis effectively to diverse audiences, both orally and in writing, aligns with the value of **effective communication and expression**. NEP-2020 emphasizes the development of communication skills to convey economic ideas and analysis to diverse audiences in a clear and concise manner.

P05: Applying ethical principles and professional standards to guide decision-making in Economics and related fields aligns with the **value of ethics and professionalism**. NEP-2020 highlights the importance of ethical conduct and adherence to professional standards in all fields, including Economics.

The Program Outcomes in Economics align with the values of knowledge and intellectual development, critical thinking and research, evaluation and problem-solving, effective communication and expression, and ethics and professionalism advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of economic theories and concepts, promoting critical analysis and evaluation of economic issues, developing effective communication skills, and fostering ethical decision-making in the field of Economics.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Forensic Science Major)

The individual Program Outcomes (POs) in Forensic Science can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

PO1: Demonstrating knowledge and understanding of the fundamental principles and concepts of Forensic Science aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the importance of acquiring knowledge and understanding of different subjects, including Forensic Science, to develop a strong foundation of knowledge and intellectual capabilities.

PO2: Applying laboratory techniques and experimental methods to analyze and identify physical and biological evidence aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through laboratory work and hands-on experience, allowing students to apply their knowledge in real-world forensic investigations.

PO3: Analyzing and interpreting complex data and scientific literature to develop hypotheses, design experiments, and draw conclusions related to Forensic Science aligns with the **value of critical thinking and research**. NEP-2020 encourages students to develop analytical skills and research abilities, enabling them to analyze and interpret data in the context of forensic investigations.

PO4: Evaluating and critically assessing the validity and reliability of forensic evidence aligns with the **value of evaluation and problem-solving**. NEP-2020 emphasizes the development of evaluative skills, enabling students to assess the accuracy and reliability of forensic evidence and propose strategies to improve forensic analysis.

PO5: Synthesizing and communicating complex ideas and concepts related to Forensic Science, using effective written and oral communication skills to convey scientific information to a variety of audiences, aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to convey scientific information to different audiences, including non-scientific audiences.

The Program Outcomes in Forensic Science align with the values of knowledge and intellectual development, experiential learning and skill development, critical thinking and research, evaluation and problem-solving, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of Forensic Science principles, promoting practical skills in laboratory techniques, fostering critical analysis of forensic evidence, and developing effective communication skills in the field of Forensic Science.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Geology Major)

The individual Program Outcomes (POs) in Geology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

PO1: Demonstrating knowledge and understanding of the fundamental principles and concepts of Geology aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the importance of acquiring knowledge and understanding of different subjects, including Geology, to develop a strong foundation of knowledge and intellectual capabilities.

PO2: Applying field and laboratory methods to study geological phenomena aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through fieldwork, laboratory work, and the use of technology and software, allowing students to apply their knowledge in real-world geological investigations.

PO3: Analyzing and interpreting geological data to make inferences about geological processes and History aligns with the **value of critical thinking and research**. NEP-2020 encourages students to develop analytical skills and research abilities, enabling them to analyze and interpret data in the context of geological phenomena.

PO4: Evaluating and critically assessing the environmental and societal impacts of geological processes aligns with the **value of evaluation and problem-solving**. NEP-2020 emphasizes the development of evaluative skills, enabling students to assess the environmental and societal implications of geological processes and propose strategies to mitigate or adapt to these impacts.

PO5: Synthesizing and communicating complex ideas and concepts related to Geology, using effective written and oral communication skills to convey scientific information to a variety of audiences, aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to convey scientific information to different audiences, including non-scientific audiences.

The Program Outcomes in Geology align with the values of knowledge and intellectual development, experiential learning and skill development, critical thinking and research, evaluation and problem-solving, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of Geology principles, promoting practical skills in fieldwork and laboratory techniques, fostering critical analysis of geological data, evaluating environmental and societal impacts, and developing effective communication skills in the field of Geology.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Geography Major)

The individual Program Outcomes (POs) in Geography can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge and understanding of the fundamental principles and concepts of Geography aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the importance of acquiring knowledge and understanding of different subjects, including Geography, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying field and laboratory methods to study geographical phenomena aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through fieldwork, laboratory work, and the use of technology and software, allowing students to apply their knowledge in real-world geographical investigations.

P03: Analyzing and interpreting geographical data to make inferences about spatial patterns and relationships aligns with the **value of critical thinking and research**. NEP-2020 encourages students to develop analytical skills and research abilities, enabling them to analyze and interpret data in the context of geographical phenomena.

P04: Evaluating and critically assessing the environmental and societal impacts of geographical processes aligns with the **value of evaluation and problem-solving**. NEP-2020 emphasizes the development of evaluative skills, enabling students to assess the environmental and societal implications of geographical processes and propose strategies to mitigate or adapt to these impacts.

P05: Synthesizing and communicating complex ideas and concepts related to Geography, using effective written and oral communication skills to convey geographical information to a variety of audiences, aligns with the value of **effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to convey geographical information to different audiences, including non-geographical audiences.

The Program Outcomes in Geography align with the values of knowledge and intellectual development, experiential learning and skill development, critical thinking and research, evaluation and problem-solving, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of Geography principles, promoting practical skills in fieldwork and laboratory techniques, fostering critical analysis of geographical data, evaluating environmental and societal impacts, and developing effective communication skills in the field of Geography.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Horticulture Major)

The individual Program Outcomes (POs) in Horticulture can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge of plant biology, horticultural crops, and their management practices aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the importance of acquiring knowledge and understanding in different subjects, including Horticulture, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying practical techniques for propagating, growing, and maintaining horticultural crops aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through hands-on experiences, allowing students to apply their knowledge in real-world horticultural practices.

P03: Evaluating the economic and environmental sustainability of horticultural production systems aligns with the **value of evaluation and problem-solving**. NEP-2020 encourages students to develop evaluative skills, enabling them to assess the economic and environmental implications of horticultural practices and propose strategies for sustainable production systems.

P04: Communicating effectively with stakeholders in the horticultural industry, including growers, marketers, and consumers aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to engage with stakeholders and convey information effectively in the horticultural industry.

P05: Applying ethical principles and professional standards to guide decision-making in Horticulture and related fields aligns with the **value of ethics and professionalism**. NEP-2020 emphasizes the cultivation of ethical and professional values, encouraging students to make informed decisions based on ethical considerations in the field of Horticulture.

The Program Outcomes in Horticulture align with the values of knowledge and intellectual development, experiential learning and skill development, evaluation and problem-solving, effective communication and expression, and ethics and professionalism advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of horticultural principles, promoting practical skills in horticultural practices, evaluating the sustainability of production systems, fostering effective communication with industry stakeholders, and applying ethical standards in decision-making in Horticulture and related fields.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Industrial Fish and Fisheries Major)

The individual Program Outcomes (POs) in Fisheries Science can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge of the biological and ecological principles underlying Fisheries Science aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge and understanding in various subjects, including Fisheries science, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying quantitative and qualitative research methods to address problems in Fisheries management and conservation aligns with **the value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through hands-on experiences, allowing students to apply their knowledge and research methods to address real-world challenges in Fisheries management and conservation.

P03: Evaluating the impacts of human activities on fish populations and ecosystems and proposing strategies for sustainable resource use aligns with the **value of evaluation and problem-solving**. NEP-2020 encourages students to develop evaluative skills, enabling them to assess the impacts of human activities on Fisheries and ecosystems and propose strategies for sustainable resource management.

P04: Communicating scientific findings and policy recommendations effectively to diverse audiences, including policymakers, industry stakeholders, and the general public aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively convey scientific information and policy recommendations to different audiences in the field of Fisheries science.

P05: Applying ethical principles and professional standards to guide decision-making in Fisheries science and management aligns with the **value of ethics and professionalism**. NEP-2020 emphasizes the cultivation of ethical and professional values, encouraging students to make informed decisions based on ethical considerations in the field of Fisheries science and management.

The Program Outcomes in Fisheries science align with the values of knowledge and intellectual development, experiential learning and skill development, evaluation and problem-solving, effective communication and expression, and ethics and professionalism advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of Fisheries science principles, promoting practical skills in Fisheries management and conservation, evaluating the impacts of human activities on fish populations and ecosystems, fostering effective communication with diverse stakeholders, and applying ethical principles in decision-making in Fisheries science and management.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Microbiology Major)

The individual Program Outcomes (POs) in Microbiology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating understanding of the principles of Microbiology, including microbial diversity, physiology, and genetics aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge and understanding in various subjects, including Microbiology, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying laboratory techniques to culture, identify, and study microorganisms aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through hands-on experiences, allowing students to apply their knowledge and laboratory techniques to study and analyze microorganisms.

P03: Evaluating the impact of microorganisms on human health, the environment, and industry aligns with the **value of evaluation and problem-solving**. NEP-2020 encourages students to develop evaluative skills, enabling them to assess the role of microorganisms in various contexts and their impacts on human health, the environment, and industry.

P04: Communicating scientific findings and recommendations effectively to diverse audiences aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively convey scientific information and recommendations to different audiences in the field of Microbiology.

P05: Applying ethical principles and professional standards to guide decision-making in Microbiology research and practice aligns with the **value of ethics and professionalism**. NEP-2020 emphasizes the cultivation of ethical and professional values, encouraging students to make informed decisions based on ethical considerations in Microbiology research and practice.

The Program Outcomes in Microbiology align with the values of knowledge and intellectual development, experiential learning and skill development, evaluation and problem-solving, effective communication and expression, and ethics and professionalism advocated by NEP-2020. They reflect the objectives of providing students with a deep understanding of Microbiology principles, promoting practical skills in microbiological techniques, evaluating the impacts of microorganisms, fostering effective communication with diverse audiences, and applying ethical principles in Microbiology research and practice.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Mathematics Major)

The individual Program Outcomes (POs) in Mathematics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge and understanding of the fundamental principles and concepts of Mathematics aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge in various subjects, including Mathematics, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying mathematical reasoning and problem-solving skills to analyze and solve mathematical problems aligns with **the value of experiential learning and skill development**. NEP-2020 promotes the development of problem-solving skills through hands-on experiences, allowing students to apply mathematical reasoning to solve theoretical and applied problems.

P03: Analyzing and interpreting mathematical data and models to draw conclusions and make predictions about real-world phenomena aligns with the **value of evaluation and problem-solving**. NEP-2020 encourages students to develop evaluative skills, enabling them to analyze mathematical data and models to draw meaningful conclusions and make predictions in various real-world contexts.

P04: Evaluating and critically assessing mathematical arguments and proofs aligns with the **value of critical thinking and reasoning**. NEP-2020 emphasizes the cultivation of critical thinking skills, enabling students to evaluate mathematical arguments, proofs, and solutions critically.

P05: Synthesizing and communicating complex ideas and concepts related to Mathematics aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively convey mathematical information to diverse audiences, including non-mathematical audiences.

The Program Outcomes in Mathematics align with the values of knowledge and intellectual development, experiential learning and skill development, evaluation and problem-solving, critical thinking and reasoning, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of mathematical principles, promoting problem-solving skills, analyzing mathematical data and models, evaluating mathematical arguments, and effectively communicating mathematical ideas to a variety of audiences.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Pharmaceutical Chemistry Major)

The individual Program Outcomes (POs) in Pharmaceutical Chemistry can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

PO1: Demonstrating knowledge and understanding of the fundamental principles and concepts of Pharmaceutical Chemistry aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge in various subjects, including Pharmaceutical Chemistry, to develop a strong foundation of knowledge and intellectual capabilities.

PO2: Applying laboratory techniques and experimental methods to synthesize, purify, and characterize novel drug compounds aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through hands-on experiences, allowing students to apply laboratory techniques and methods in the synthesis and characterization of drug compounds.

PO3: Analyzing and interpreting data from in vitro and in vivo studies to evaluate the safety and efficacy of drug compounds aligns with the **value of evaluation and problem-solving**. NEP-2020 encourages students to develop evaluative skills, enabling them to analyze and interpret scientific data to make informed decisions about the safety and efficacy of drug compounds.

PO4: Evaluating and critically assessing the ethical and regulatory issues related to drug development and use aligns with the **value of ethical and responsible behavior**. NEP-2020 emphasizes the cultivation of ethical principles, prompting students to critically evaluate the ethical and regulatory implications of drug development and propose strategies to ensure responsible and ethical use of pharmaceuticals.

PO5: Synthesizing and communicating complex ideas and concepts related to Pharmaceutical Chemistry aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively convey scientific information to diverse audiences, including non-scientific audiences.

The Program Outcomes in Pharmaceutical Chemistry align with the values of knowledge and intellectual development, experiential learning and skill development, evaluation and problem-solving, ethical and responsible behavior, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of Pharmaceutical Chemistry principles, promoting practical skills in drug synthesis and evaluation, analyzing scientific data, evaluating ethical and regulatory issues, and effectively communicating scientific information to a variety of audiences.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Physics Major)

The individual Program Outcomes (POs) in Physics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge and understanding of the fundamental concepts, principles, and laws of Physics aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge in various subjects, including Physics, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying mathematical and computational techniques to analyze and solve problems in Physics aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through the application of mathematical and computational methods to solve problems in Physics.

P03: Evaluating and critically assessing the validity and limitations of scientific models and theories aligns with the **value of critical thinking and reasoning**. NEP-2020 encourages students to develop evaluative skills, enabling them to critically assess scientific models and theories and draw evidence-based conclusions about physical phenomena.

P04: Designing and conducting experiments and investigations to test hypotheses aligns with the **value of experimental and empirical learning**. NEP-2020 emphasizes the importance of hands-on experiences and conducting experiments to collect and analyze data, supporting the development of scientific inquiry skills in Physics.

P05: Synthesizing and communicating complex ideas and concepts related to Physics aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively convey scientific information to diverse audiences, including both written and oral forms of communication.

The Program Outcomes in Physics align with the values of knowledge and intellectual development, experiential learning and skill development, critical thinking and reasoning, experimental and empirical learning, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of Physics principles, promoting practical skills in mathematical and computational problem-solving, evaluating scientific models and theories, conducting experiments, and effectively communicating scientific information to a variety of audiences.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Seed Technology Major)

The individual Program Outcomes (POs) in Seed Technology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge of seed biology, genetics, and breeding techniques aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge in various subjects, including seed biology and genetics, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying seed production and processing technologies to produce high-quality seeds aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through the application of seed production and processing techniques, enabling students to produce high-quality seeds.

P03: Evaluating seed quality using appropriate laboratory and field techniques aligns with the **value of critical thinking and reasoning**. NEP-2020 encourages students to develop evaluative skills, enabling them to assess seed quality using scientific techniques and make informed decisions.

P04: Communicating effectively with stakeholders in the seed industry aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively engage with stakeholders in the seed industry, including growers, researchers, and policymakers.

P05: Applying ethical principles and professional standards to guide decision-making in Seed Technology aligns with the **value of ethical and professional conduct**. NEP-2020 emphasizes the importance of ethical decision-making and adherence to professional standards in Seed Technology and related fields.

The Program Outcomes in Seed Technology align with the values of knowledge and intellectual development, experiential learning and skill development, critical thinking and reasoning, effective communication and expression, and ethical and professional conduct advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of seed biology and genetics, practical skills in seed production and quality evaluation, effective communication with stakeholders, and ethical decision-making in Seed Technology and related fields.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Statistics Major)

The individual Program Outcomes (POs) in Statistics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge of statistical theories, methods, and techniques aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge in various subjects, including statistical theories and methods, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Applying statistical software and programming languages to analyze data aligns with the **value of experiential learning and skill development**. NEP-2020 promotes the development of practical skills through the application of statistical software and programming languages, enabling students to analyze data effectively.

P03: Evaluating the reliability and validity of statistical models and analyses aligns with the **value of critical thinking and reasoning**. NEP-2020 encourages students to develop evaluative skills, enabling them to assess the reliability and validity of statistical models and analyses and make informed decisions.

P04: Communicating statistical findings and recommendations effectively to diverse audiences aligns with the **value of effective communication and expression**. NEP-2020 highlights the importance of developing communication skills to effectively convey statistical findings and recommendations to diverse audiences.

P05: Applying ethical principles and professional standards to guide decision-making in statistical practice and research aligns with the **value of ethical and professional conduct**. NEP-2020 emphasizes the importance of ethical decision-making and adherence to professional standards in statistical practice and research.

These Program Outcomes in Statistics align with the values of knowledge and intellectual development, experiential learning and skill development, critical thinking and reasoning, effective communication and expression, and ethical and professional conduct advocated by NEP-2020. They reflect the objectives of providing students with a solid understanding of statistical theories and methods, practical skills in data analysis, critical evaluation of statistical models and analyses, effective communication of statistical findings, and ethical decision-making in statistical practice and research.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.Sc. (Zoology Major)

The individual Program Outcomes (POs) in Zoology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Demonstrating knowledge and understanding of the principles of Zoology aligns with the **value of knowledge and intellectual development**. NEP-2020 emphasizes the acquisition of knowledge in various subjects, including Zoology, to develop a strong foundation of knowledge and intellectual capabilities.

P02: Analyzing and interpreting complex data and scientific literature to develop hypotheses, design experiments, and draw conclusions aligns with the **value of critical thinking and reasoning**. NEP-2020 promotes the development of analytical and problem-solving skills, enabling students to analyze scientific data and literature in the field of Zoology.

P03: Evaluating and critically assessing the impacts of human activities on animal populations, ecosystems, and global environmental systems aligns with the **value of environmental consciousness and sustainability**. NEP-2020 emphasizes the need for students to understand the impacts of human activities on the environment and propose solutions to mitigate or prevent negative effects.

P04: Applying laboratory and field techniques to collect and analyze animal data, and using quantitative methods to interpret and communicate findings aligns with the **value of experiential learning and skill development**. NEP-2020 highlights the importance of practical skills development through laboratory and fieldwork, enabling students to collect and analyze data related to animal biology.

P05: Synthesizing and communicating complex ideas and concepts related to Zoology, using effective written and oral communication skills aligns with the **value of effective communication and expression**. NEP-2020 emphasizes the development of communication skills to effectively convey scientific information to a variety of audiences, including non-scientific audiences.

The Program Outcomes in Zoology align with the values of knowledge and intellectual development, critical thinking and reasoning, environmental consciousness and sustainability, experiential learning and skill development, and effective communication and expression advocated by NEP-2020. They reflect the objectives of providing students with a comprehensive understanding of Zoology principles, analytical skills to interpret scientific data, awareness of environmental impacts, practical skills in data collection and analysis, and effective communication of zoological concepts to diverse audiences.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: B.C.A.

The individual Program Outcomes (POs) in the field of Mathematics, Computer Science, and management can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: An ability to apply knowledge of Mathematics, Computer Science, and management in practice aligns with the **value of practical skills and employability**. NEP-2020 emphasizes the development of skills that are applicable and relevant in real-world scenarios, enabling students to apply their knowledge effectively in practical settings.

P02: An ability to enhance a comprehensive understanding of the theory and its application aligns with the **value of holistic development**. NEP-2020 emphasizes the need for a comprehensive understanding of theoretical concepts coupled with their practical application, promoting a well-rounded and holistic approach to education.

P03: The program prepares the young professional for a range of computer applications, computer organization, techniques of computer networking, software engineering, web development, database management, and advanced Java aligns with the **value of multidisciplinary learning and specialization**. NEP-2020 encourages students to explore diverse fields and acquire knowledge in multiple domains, fostering multidisciplinary learning and specialization in specific areas.

P04: An ability to design a computing system to meet desired needs within realistic constraints aligns with the **value of problem-solving and innovation**. NEP-2020 promotes problem-solving skills and encourages students to design solutions that address real-world needs while considering constraints such as safety, security, and applicability.

P05: An ability to communicate effectively aligns with the **value of effective communication and expression**. NEP-2020 emphasizes the development of communication skills to convey ideas, concepts, and solutions effectively to different audiences.

The Program Outcomes in Mathematics, Computer Science, and management align with the values of practical skills and employability, holistic development, multidisciplinary learning and specialization, problem-solving and innovation, and effective communication and expression advocated by NEP-2020. They reflect the objectives of preparing students for practical applications, promoting a comprehensive understanding of theory and its application, equipping students with specialized knowledge in specific areas, fostering problem-solving abilities, and developing effective communication skills.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. - Biochemistry

The individual Program Outcomes (POs) related to Biochemistry can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

PO1: Reframe the conceptual understanding of molecules essential for life and their integrated system in maintaining cellular homeostasis aligns with the **value of holistic development and understanding**. NEP-2020 emphasizes the importance of a comprehensive understanding of concepts and their integration in various domains, fostering a holistic approach to education.

PO2: Plan scientific research using the understanding of various biochemical techniques and represent the data by applying efficient biostatistical tools aligns with the **value of research and innovation**. NEP-2020 encourages students to engage in research and innovation, promoting the use of advanced techniques and statistical tools to plan and conduct scientific research.

PO3: Appraise the role of essential nutrients required for the body system and acquire clinical skills relating to diet plans aligns with the **value of health and well-being**. NEP-2020 recognizes the significance of health and well-being and emphasizes the understanding of essential nutrients and their impact on the body system, enabling students to acquire clinical skills related to diet plans.

PO4: Acquire in-depth theoretical and practical knowledge of Biochemistry and translate knowledge for higher contribution in the field of Biochemistry aligns with the **value of specialization and expertise**. NEP-2020 promotes specialization and expertise in specific fields, encouraging students to acquire in-depth knowledge of Biochemistry and apply it for higher contributions in the field.

PO5: Develop skills that will help in acquiring scientific, academic, and industrial positions aligns with the **value of employability and career readiness**. NEP-2020 emphasizes the development of skills that enhance employability and prepare students for diverse career opportunities in scientific, academic, and industrial sectors.

The Program Outcomes in Biochemistry align with the values of holistic development, research and innovation, health and well-being, specialization and expertise, and employability and career readiness advocated by NEP-2020. They reflect the objectives of promoting a comprehensive understanding of Biochemistry, fostering research skills and statistical analysis, recognizing the importance of essential nutrients and clinical skills, acquiring in-depth knowledge for higher contributions, and developing skills for scientific, academic, and industrial positions.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Biotechnology

The provided Program Outcomes (POs) can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Understanding the various biomolecules, their structure, properties, and their role and applications in Biotechnology aligns with NEP-2020's emphasis on **promoting interdisciplinary education**. It encourages students to develop a comprehensive understanding of biomolecules and their applications in the field of Biotechnology, which integrates concepts from biology and technology.

P02: Learning genetics, genetic engineering, and their techniques and tools, and understanding their uses in Biotechnology, reflects NEP-2020's focus on **promoting research and innovation**. It equips students with the knowledge and skills to apply genetic engineering techniques in Biotechnology to develop new applications and advancements.

P03: Knowing instruments like chromatography, electrophoresis, and centrifugation, and understanding their principles, utility, and applications aligns with NEP-2020's objective of **promoting skill development and practical knowledge**. It helps students acquire proficiency in using laboratory instruments commonly employed in Biotechnology research and analysis.

P04: Creating knowledge of plant tissue culture, media, and sterilization techniques, and understanding how to maintain various cultures in vitro, aligns with NEP-2020's emphasis on **promoting hands-on and experiential learning**. It equips students with the skills to work with plant tissue culture and conduct experiments in controlled laboratory environments, fostering the practical application of theoretical knowledge.

P05: Understanding the concept of the environment, environmental issues, pollution, its types, and methods for measurement and treatment to protect the environment reflects NEP-2020's focus on **promoting environmental sustainability and awareness**. It helps students develop an understanding of environmental issues and equips them with knowledge and skills to address and mitigate pollution through appropriate methods and treatments.

The Program Outcomes in Biotechnology align with NEP-2020's vision of promoting interdisciplinary education, research and innovation, practical skill development, and environmental sustainability.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Botany

The provided Program Outcomes (POs) in the field of Botany can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

PO1: Understanding the principles and importance of Botany, including plant taxonomy, plant diversity, plant physiology, Biochemistry, molecular cytogenetics, and Statistics aligns with NEP-2020's **emphasis on holistic and comprehensive education**. It promotes a deep understanding of core subjects in Botany, providing a strong foundation for further studies and research.

PO2: Gaining skills in plant tissue culture, molecular biology, and plant identification aligns with NEP-2020's objective of **promoting skill development and practical knowledge**. It enables students to conduct research and acquire hands-on experience in laboratory techniques, fostering their scientific inquiry and analytical abilities.

PO3: Exploring the application of Botany in agriculture, such as plant pathology, and studying Palaeobotany to trace the evolution of plants aligns with NEP-2020's **focus on interdisciplinary learning**. It allows students to understand the practical applications of Botany in the field of agriculture and the historical context of plant evolution.

PO4: Understanding the relationship between plants and society and discussing logical, scientific, and ethical issues in Botany reflects NEP-2020's vision of **promoting critical thinking and ethical reasoning**. It encourages students to recognize and address societal and ethical implications related to plants, fostering their ability to engage in informed discussions and decision-making.

PO5: Understanding environmental issues and sustainable development in relation to the assessment, conservation, and utilization of floral diversity aligns with NEP-2020's **emphasis on environmental sustainability and awareness**. It equips students with knowledge and skills to contribute to sustainable development through the conservation and responsible use of plant resources.

PO6: Gaining knowledge about various plants and plant products and developing entrepreneurship skills using plant resources, such as medicinal plants, mushroom cultivation, nursery management, vermicomposting, and organic farming, aligns with NEP-2020's objective of **promoting entrepreneurship and vocational education**. It encourages students to explore innovative and sustainable business opportunities in the field of Botany and plant-based industries.

The Program Outcomes in Botany align with NEP-2020's vision of promoting holistic education, skill development, interdisciplinary learning, critical thinking, environmental sustainability, and entrepreneurship.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.

Programme Name: M.Sc. – Chemistry:

The provided Program Outcomes (POs) in the field of Chemistry can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: The ability to think creatively, propose novel ideas, and develop skills of observation and logical inferences aligns with NEP-2020's emphasis on **promoting critical thinking and creativity**. It encourages students to explore innovative solutions and develop a scientific mindset.

P02: Recognizing the importance of an interdisciplinary approach for sustainable development aligns with NEP-2020's objective of **promoting interdisciplinary learning**. It encourages students to integrate knowledge from different fields to address complex challenges and contribute to sustainable development.

P03: Building skills in research and the industrial field, including handling scientific instruments, planning and performing laboratory experiments, and developing a scientific temperament, aligns with NEP-2020's vision of **promoting skill development and research-oriented education**. It equips students with the necessary skills to succeed in research or industrial careers.

P04: Understanding environmental issues such as global warming, climate change, acid rain, and ozone depletion, and creating awareness in society aligns with NEP-2020's focus on **environmental sustainability and awareness**. It promotes the development of environmentally responsible citizens who can contribute to addressing and mitigating environmental challenges.

P05: Developing skills in reading, listening, speaking, and effectively expressing ideas through seminars aligns with NEP-2020's objective of **promoting language proficiency and effective communication skills**. It enables students to communicate their thoughts and ideas clearly and effectively in various activities, fostering their overall communication and presentation skills.

The Program Outcomes in Chemistry align with NEP-2020's vision of promoting critical thinking, interdisciplinary learning, skill development, environmental sustainability, and effective communication.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Computer Science

The provided Program Outcomes (POs) in the field of Computer Science can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: The ability to adapt skills and implement effective solutions for need-based problems aligns with NEP-2020's focus on **promoting practical and application-oriented learning**. It encourages students to apply their knowledge gained through different programming languages, tools, and software to solve real-world problems and meet societal needs.

P02: Learning about operating systems, memory management, and file management aligns with NEP-2020's emphasis on **developing a deep understanding** of computer systems. It enables students to make optimized decisions and apply appropriate algorithms in the context of operating systems, contributing to a stronger foundation in Computer Science.

P03: Handling network-related problems, studying data communication networks, and network security aligns with NEP-2020's objective of **promoting digital literacy and cybersecurity**. It equips students with the knowledge and skills to troubleshoot network issues, ensure secure communication, and understand mobile communications, aligning with the growing importance of digital technologies.

P04: Learning and applying the concepts of software engineering aligns with NEP-2020's focus on **promoting a holistic approach to software development**. It emphasizes the importance of structured and systematic software development, which is essential for working on big modules and projects, enhancing the quality and efficiency of software solutions.

P05: Applying and implementing the working of compilers and developing efficient, scalable software solutions aligns with NEP-2020's **emphasis on technology-driven education**. It enables students to develop web or windows applications and contribute to the digital ecosystem. This aligns with NEP-2020's vision of promoting digital learning, technological proficiency, and innovation.

The Program Outcomes in Computer Science align with NEP-2020's objectives of promoting practical learning, digital literacy, cybersecurity, structured software development, and technology-driven education. They equip students with the necessary skills to contribute to the digital transformation and technological advancements.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Fisheries

The provided Program Outcomes (POs) in the field of Fisheries can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Referencing the conceptual understanding of fish diversity, fish breeding, and various culture technologies aligns with NEP-2020's focus on **promoting a multidisciplinary approach**. It enables students to develop a comprehensive understanding of Fisheries, encompassing biological, ecological, and technological aspects.

P02: Planning scientific research using different Fisheries resources, with a special reference to India, aligns with NEP-2020's emphasis on **promoting research and innovation**. It encourages students to explore the rich Fisheries resources of India and contribute to the scientific knowledge and sustainable management of Fisheries.

P03: Gaining knowledge about fish feed nutrition technology and different integrated farming systems with fish farming aligns with NEP-2020's emphasis on **promoting sustainable agricultural practices**. It enables students to understand the importance of nutrition in fish farming and explore integrated farming systems that combine fish farming with other agricultural practices for enhanced productivity and resource efficiency.

P04: Acquiring knowledge about fish marketing, Fisheries Economics, and extension methodology in the Fisheries sector aligns with NEP-2020's focus on **promoting entrepreneurship and skill development**. It equips students with the understanding of marketing principles, economic aspects of Fisheries, and extension methodologies to effectively communicate and disseminate knowledge in the Fisheries sector.

P05: Improving skills to acquire academic, scientific, and industrial positions aligns with NEP-2020's objective of **promoting employability and career readiness**. It empowers students with the necessary skills and knowledge to pursue academic research, scientific positions, and industrial roles in the Fisheries sector, contributing to their personal and professional growth.

The Program Outcomes in Fisheries align with NEP-2020's objectives of promoting multidisciplinary approaches, research and innovation, sustainable agricultural practices, entrepreneurship, skill development, and employability. They equip students with the necessary knowledge and skills to contribute to the sustainable development and management of Fisheries in India.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.

Programme Name: M.Sc. – Forensic Science:

The provided Program Outcomes (POs) can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Identifying and recognizing scientific facts and knowledge of natural or unnatural phenomena aligns with NEP-2020's emphasis on **promoting scientific temper and curiosity**. It encourages students to develop a deep understanding of scientific concepts and engage in critical thinking to analyze and interpret various phenomena.

P02: Relating theory and practical education to solve societal problems aligns with NEP-2020's focus on **promoting experiential learning and the application of knowledge**. It empowers students to apply their theoretical knowledge to address real-world challenges and contribute to the betterment of society.

P03: Developing and training successful professionals in different areas aligns with NEP-2020's objective of **promoting multidisciplinary education and skill development**. It aims to equip students with the necessary knowledge, skills, and competencies to excel in their chosen fields and make meaningful contributions to society.

P04: Employing knowledge to create a healthy and beautiful environment aligns with NEP-2020's emphasis on **sustainability and environmental consciousness**. It encourages students to apply their knowledge to promote environmental conservation, health, and aesthetics, contributing to the overall well-being of individuals and communities.

P05: Carrying out internship programs and research projects to develop scientific skills and innovative ideas aligns with NEP-2020's focus on **promoting research and innovation**. It provides students with practical exposure and opportunities to develop critical research skills and contribute to the advancement of knowledge.

P06: Facing and succeeding in high-level competitive examinations like NET, FACT, State PSC, UPSC aligns with NEP-2020's objective of **promoting meritocracy and enabling students to pursue higher education and professional opportunities**. It prepares students to excel in competitive examinations and opens doors for further academic and career advancements.

The Program Outcomes align with NEP-2020's objectives of promoting scientific temper, experiential learning, multidisciplinary education, sustainability, research and innovation, and merit-based opportunities. They equip students with the knowledge, skills, and values necessary to contribute to their development and progress.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Geology

The provided Program Outcomes (POs) can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Providing knowledge in the field of Earth Science aligns with NEP-2020's **emphasis on holistic and multidisciplinary education**. It enables students to gain a comprehensive understanding of the Earth and its processes, fostering a scientific temper and curiosity.

P02: Developing an understanding of fundamental laws in Earth Sciences and the capability to develop ideas based on them aligns with NEP-2020's focus on **promoting critical thinking and problem-solving skills**. It empowers students to analyze complex geological phenomena and generate innovative solutions based on scientific principles.

P03: Applying theoretical, conceptual, and observational knowledge to analyze and interpret geological data aligns with NEP-2020's objective of **promoting experiential learning and application of knowledge**. It encourages students to apply their theoretical understanding to real-world geological data and make meaningful interpretations.

P04: Making use of geological data for environmental studies aligns with NEP-2020's **emphasis on environmental consciousness and sustainability**. It equips students with the skills to assess and analyze geological data for environmental impact assessments and contribute to the conservation and management of Earth's resources.

P05: Promoting interest in higher studies in the field of earth sciences aligns with NEP-2020's objective of **promoting research and innovation**. It encourages students to pursue higher education and engage in advanced research in the field of Geology, contributing to the advancement of scientific knowledge.

P06: Making students fully competent to undertake any job in the field of Geology aligns with NEP-2020's **focus on skill development and employability**. It equips students with the necessary knowledge, skills, and competencies to succeed in various Geology-related careers and contribute to the socio-economic development of the country.

The Program Outcomes align with NEP-2020's objectives of promoting holistic education, critical thinking, experiential learning, environmental consciousness, research and innovation, and skill development. They prepare students to contribute to the scientific understanding of the Earth and pursue careers in the field of Geology.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Mathematics

The provided Program Outcomes (POs) can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

PO1: Developing need-based Mathematics teaching-learning resources aligns with NEP-2020's focus on **promoting learner-centric education** and the **creation of high-quality and contextually relevant educational materials**.

PO2: Understanding Mathematics education as an academic and research field aligns with NEP-2020's objective of **promoting research and innovation in education**. It encourages students to explore the nature of Mathematics and its applications, fostering a deeper understanding of the subject.

PO3: Defining specific components of Mathematics, such as axioms, postulates, and theorems, aligns with NEP-2020's emphasis on **developing logical reasoning and analytical thinking skills**. It enables students to analyze and prove mathematical statements using rigorous methods.

PO4: Discussing and analyzing the history and development of the field of Mathematics for the betterment of mankind aligns with NEP-2020's objective of **promoting a sense of cultural and historical awareness**. It helps students appreciate the contributions of mathematicians and the relevance of Mathematics in societal progress.

PO5: Choosing and applying basic statistical techniques for various kinds of data collected under educational research aligns with NEP-2020's emphasis on **data-driven decision-making in education**. It equips students with the skills to collect, analyze, and interpret data to inform educational practices and policies.

PO6: Preparing students for pursuing research or a career in industry in mathematical sciences and allied fields aligns with NEP-2020's focus on **promoting research, innovation, and employability**. It encourages students to pursue advanced studies or enter industry sectors where mathematical expertise is valued.

The Program Outcomes align with NEP-2020's objectives of promoting learner-centric education, research and innovation, logical reasoning and analytical thinking, cultural and historical awareness, data-driven decision-making, and employability. They prepare students to contribute to the field of Mathematics education and pursue careers in mathematical sciences and related industries.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Microbiology:

The Program Outcomes (POs) in Microbiology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Understanding the basic and advanced concepts in Microbiology aligns with the **value of comprehensive and holistic education** advocated by NEP-2020. It emphasizes the importance of a strong foundation in the subject area to build higher-order skills and understanding.

P02: Demonstrating and solving major concepts in all disciplines of Microbiology aligns with the **value of multidisciplinary and interdisciplinary learning**. NEP-2020 promotes the integration of different disciplines to foster a holistic understanding and encourage students to make connections across subjects.

P03: Solving problems methodically, and independently, and drawing logical conclusions about environmental Microbiological problems aligns with the **value of critical thinking and problem-solving skills** emphasized by NEP-2020. It encourages students to analyze problems, think critically, and arrive at logical conclusions using their knowledge and skills.

P04: Applying skills and knowledge in designing and developing new techniques and experiments for future medical Microbiology problems aligns with the **value of innovation and research** promoted by NEP-2020. It encourages students to think creatively, develop novel approaches, and contribute to the advancement of the field.

P05: Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of microbe experiments aligns with the **value of experiential learning and practical application** emphasized by NEP-2020. It promotes hands-on learning experiences, allowing students to apply their scientific knowledge in real-world scenarios.

These Program Outcomes in Microbiology align with the values of comprehensive education, multidisciplinary learning, critical thinking, problem-solving, innovation, research, and experiential learning advocated by NEP-2020. They reflect the objectives of providing students with a well-rounded education, promoting higher-order thinking skills, fostering innovation and research, and preparing them for practical applications in the field of Microbiology.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. - Pharmaceutical Chemistry

The Program Outcomes (POs) in Pharmaceutical Chemistry can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Understanding the basic and advanced concepts in Pharmaceutical Chemistry aligns with the **value of comprehensive and holistic education** advocated by NEP-2020. It emphasizes the importance of a strong foundation in the subject area to build higher-order skills and understanding.

P02: Categorizing drugs based on chemical structure, therapeutic action, and natural sources aligns with the **value of multidisciplinary learning**. NEP-2020 promotes the integration of different disciplines to foster a holistic understanding and encourage students to make connections across subjects.

P03: Demonstrating synthesis, mode of action, structure-activity relationships (SAR) of drugs, and preparation of dosage forms aligns with the **value of the practical application and experiential learning**. NEP-2020 emphasizes the importance of hands-on learning experiences and practical skills development.

P04: Analyzing drugs qualitatively and quantitatively using advanced analytical techniques aligns with the **value of research and innovation**. NEP-2020 encourages students to think critically, engage in research activities, and use advanced techniques to analyze and evaluate pharmaceutical formulations.

P05: Applying skills and knowledge in drug designing aligns with the **value of innovation and research** promoted by NEP-2020. It encourages students to think creatively, apply their knowledge in designing new drugs, and contribute to the advancement of the field.

These Program Outcomes in Pharmaceutical Chemistry align with the values of comprehensive education, multidisciplinary learning, practical application, experiential learning, research, and innovation advocated by NEP-2020. They reflect the objectives of providing students with a well-rounded education, promoting higher-order thinking skills, fostering innovation and research, and preparing them for practical applications in the field of Pharmaceutical Chemistry.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Physics

The Program Outcomes (POs) in Physics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Understanding the basic and advanced concepts in Physics aligns with the **value of comprehensive and holistic education** advocated by NEP-2020. It emphasizes the importance of developing a strong foundation in Physics to build higher-order thinking and problem-solving skills.

P02: Demonstrating and solving major concepts in all disciplines of Physics aligns with the **value of multidisciplinary learning**. NEP-2020 promotes the integration of different disciplines and encourages students to make connections across various branches of Physics.

P03: Solving problems methodically, and independently, and drawing logical conclusions aligns with the **value of critical thinking and problem-solving skills**. NEP-2020 emphasizes the development of higher-order thinking skills and encourages students to think analytically and critically.

P04: Applying skills and knowledge in the design and development of electronic circuits aligns with the **value of the practical application and experiential learning**. NEP-2020 promotes hands-on learning experiences and encourages students to apply their knowledge in real-world contexts.

P05: Employing critical thinking and scientific knowledge to design, carry out, record, and analyze the results of Physics experiments aligns with the **value of research and innovation**. NEP-2020 emphasizes the importance of research-based learning and encourages students to engage in scientific inquiry and experimentation.

These Program Outcomes in Physics align with the values of comprehensive education, multidisciplinary learning, critical thinking, practical application, experiential learning, and research advocated by NEP-2020. They reflect the objectives of providing students with a well-rounded education, promoting higher-order thinking skills, fostering innovation and research, and preparing them for practical applications in the field of Physics.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Statistics

The individual Program Outcomes (POs) in the Master of Science in Statistics can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Training students in the development and application of statistical techniques align with the **value of multidisciplinary learning and problem-solving skills**. NEP-2020 emphasizes the importance of developing skills in data analysis and Statistics for addressing complex problems across various disciplines.

P02: Providing a platform for higher studies in Statistics and training students to meet the needs of society aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of higher education that prepares students for academic and professional pursuits and equips them with relevant skills for societal needs.

P03: Enabling students to pursue research or a career in Statistics aligns with the **value of research and innovation**. NEP-2020 emphasizes the promotion of research culture and encourages students to engage in research activities in their respective fields.

P04: Mastery of the basics and applied aspects of Statistics and the ability to apply knowledge in various life domains align with the **value of the practical application and lifelong learning**. NEP-2020 emphasizes the development of practical skills and the integration of learning into real-life contexts.

P05: Training students to handle real-life problems, use programming languages, and analyze data aligns with the **value of experiential learning and practical application**. NEP-2020 promotes hands-on learning experiences and encourages the use of technology and software tools in education.

P06: Developing knowledge of statistical theory and multiple programming languages aligns with the **value of multidisciplinary learning and skill development**. NEP-2020 emphasizes the integration of different disciplines and the acquisition of diverse skills for holistic development.

P07: Providing expertise in statistical techniques for career opportunities as a statistician or data scientist aligns with the **value of employability and career readiness**. NEP-2020 emphasizes the importance of skill development and preparing students for employment and entrepreneurship.

P08: Understanding and critically applying statistical methods to solve problems in various sectors aligns with the **value of the practical application and societal impact**. NEP-2020 emphasizes the development of skills for problem-solving and decision-making in different domains.

These Program Outcomes in Statistics align with the values of comprehensive education, multidisciplinary learning, research and innovation, practical application, experiential learning, skill development, employability, and societal impact advocated by NEP-2020. They reflect the objectives of providing students with a well-rounded education, equipping them with relevant skills for the needs of society, fostering research and practical application, and preparing them for successful careers in Statistics and related fields.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: M.Sc. – Zoology

The individual Program Outcomes (POs) in Zoology can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) of India as follows:

P01: Understanding the basic and advanced concepts of Zoology aligns with the **value of comprehensive education**. NEP-2020 emphasizes the importance of providing students with a broad understanding of different subjects, including the natural sciences.

P02: Learning about biological diversity, animal classification, and comparative studies aligns with the **value of multidisciplinary learning and holistic development**. NEP-2020 emphasizes the integration of different disciplines and the promotion of a well-rounded education.

P03: Developing analytical and critical thinking skills through the concept of Biostatistics aligns with the **value of critical thinking and problem-solving**. NEP-2020 emphasizes the development of higher-order thinking skills to equip students for complex problem-solving.

P04: Motivating learners about new developments in cell and molecular biology and their implications for human welfare aligns with the **value of research and innovation**. NEP-2020 emphasizes the promotion of research culture and encourages students to stay updated with the latest developments in their fields.

P05: Employing critical thinking and scientific knowledge to understand Aquaculture, Limnology, and immunology in various fields aligns with the **value of the practical application and societal impact**. NEP-2020 emphasizes the integration of theoretical knowledge with real-life contexts and encourages students to apply their learning to address societal challenges.

The Program Outcomes in Zoology align with the values of comprehensive education, multidisciplinary learning, critical thinking, research and innovation, practical application, and societal impact advocated by NEP-2020. They reflect the objectives of providing students with a deep understanding of zoological concepts, fostering analytical and critical thinking skills, promoting research and practical application, and preparing them for successful careers in Zoology and related fields.

Govt. Holkar (Model, Autonomous) Science College, Indore, M.P.
Programme Name: PGDCA

The individual Program Outcomes (POs) related to computer systems and programming can be related to the value framework enshrined in the National Education Policy 2020 (NEP-2020) as follows:

P01: Understanding the fundamental concepts of computer systems, programming languages, operating systems, and networking aligns with the **value of foundational knowledge and conceptual understanding**. NEP-2020 emphasizes the importance of developing a strong foundation and understanding of core concepts in computer systems and networking.

P02: Analyze and solve computational problems using algorithmic thinking and logical reasoning aligned with the **value of critical thinking and problem-solving**. NEP-2020 promotes the development of critical thinking skills and the ability to apply logical reasoning to solve complex problems, which is essential in computational problem-solving.

P03: Acquire knowledge and practical skills in web designing using HTML, XML, and DHTML that align with the **value of skill development and creativity**. NEP-2020 encourages the acquisition of practical skills and the development of creativity, which is reflected in the acquisition of web designing skills using HTML, XML, and DHTML.

P04: Apply database design and SQL skills to design, create, and manage databases using Oracle aligns with the **value of the practical application and technological proficiency**. NEP-2020 emphasizes the application of knowledge and practical skills, and the ability to effectively use technologies such as Oracle for database design and management.

P05: Evaluate and apply e-commerce technologies, security measures, and business models that align with the **value of entrepreneurship and innovation**. NEP-2020 recognizes the importance of entrepreneurship and innovation, and the ability to evaluate and apply e-commerce technologies, security measures, and business models reflects these values.

These Program Outcomes in computer systems and programming align with the values of foundational knowledge, critical thinking and problem-solving, skill development and creativity, practical application and technological proficiency, and entrepreneurship and innovation advocated by NEP-2020. They reflect the objectives of developing a strong foundation in computer systems, fostering critical thinking and problem-solving skills, acquiring practical skills in web designing, applying database design and management skills, and evaluating and applying e-commerce technologies and business models.