Biochemistry (BSCH.BIOC)	Microbiology (BSCH.MICR)	Molecular Biology & Genetics (BSCH.MBG)
A. GENERAL SKILLS **1. Problem Solving & Critical Thinking** • Critically evaluate ideas and arguments by gathering and integrating relevant information, assessing its credibility, and synthesizing evidence to formulate a position. • Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise. • Accurately interpret and use numerical information to evaluate and formulate a position. **2. Communication** • Accurately and effectively communicate ideas, arguments and analyses, to a range of audiences, in graphic, oral and written form. **3. Professional and Ethical Behaviour** • Demonstrate personal and professional integrity by respectfully considering diverse points of view and the intellectual contribution of others, and by demonstrating a commitment to honesty and equity, and awareness of sustainability, in scientific practice and society at large. • Collaborate effectively as part of a team by demonstrating mutual respect, leadership, and an ability to set goals and manage tasks and timelines. • Plan for professional growth and personal development within and beyond the undergraduate program. • Demonstrate a good work ethic by setting goals and meeting deadlines. **B. DEGREE RELATED SKILLS & KNOWLEDGE** **1. Scientific Method** • Apply scientific methods and processes by formulating questions, designing investigations and synthesizing data to draw conclusions and make scientifically-based decisions. • Generate and interpret scientific data using quantitative, qualitative and analytical methodologies and techniques. • Evaluate the limitations of and trouble shoot experimental approaches.	**A. GENERAL SKILLS** **1. Problem Solving & Critical Thinking** • Critically evaluate ideas and arguments by gathering and integrating relevant information, assessing its credibility, and synthesizing evidence to formulate a position. • Identify problems and independently propose solutions using creative approaches, acquired through interdisciplinary experiences, and a depth and breadth of knowledge/expertise. • Accurately interpret and use numerical information to evaluate and formulate a position. **2. 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2. Breadth & Depth of Understanding in a Particular Scientific Discipline • Apply the core concepts of mathematics, physics, chemistry and biology to Biochemistry. • Demonstrate knowledge of the ethical, economic, commercial and social implications of scientific discovery and technological innovation. • Interpret current scientific concepts and gaps in knowledge (and methods) in light of the historical development of Biochemistry. • Integrate the different levels of biological organization, from molecules to cells to organisms. • Describe how cells are capable of producing almost all required metabolites and macromolecules from diverse precursors. • Apply thermodynamic principles to the molecular basis of biological energy generation, storage and usage • Understand the relationship between the structure and the functional properties of proteins, nucleic acids, lipids and carbohydrates.	**2. Breadth & Depth of Understanding in a Particular Scientific Discipline** • Apply the core concepts of mathematics, physics, chemistry and biology to Microbiology. • Demonstrate knowledge of the ethical, economic, commercial and social implications of scientific discovery and technological innovation. • Interpret current scientific concepts and gaps in knowledge (and methods) in light of the historical development of Microbiology. • Integrate the different levels of biological organization, from molecules to cells to organisms. • Describe the metabolic and cellular diversity of microbes. • Explain the critical roles of microbes in health, disease and the biosphere. • Describe the use of microorganisms in industry, biotechnology and as model organisms for scientific discovery.	**2. Breadth & Depth of Understanding in a Particular Scientific Discipline** • Apply the core concepts of mathematics, physics, chemistry and biology to Molecular Biology & Genetics. • Demonstrate knowledge of the ethical, economic, commercial and social implications of scientific discovery and technological innovation. • Interpret current scientific concepts and gaps in knowledge (and methods) in light of the historical development of Molecular Biology & Genetics. • Integrate the different levels of biological organization, from molecules to cells to organisms. • Explain the molecular mechanisms of genetic inheritance that drive the evolution of populations. • Describe the synthesis and structure of macromolecules and their roles in cellular processes. • Explain how gene regulation networks and signal transduction cascades enable development and adaptation to the environment.
3. Scientific Technology & Techniques in a Scientific Discipline • Apply contemporary research methods, skills and techniques to conduct independent inquiry in Biochemistry. • Design and implement experimental procedures using relevant techniques to purify, characterize and quantify metabolites and macromolecules. • Conduct research with relevant computational and bioinformatics tools. • Work safely, effectively and ethically in the laboratory to generate reproducible and reliable results.	**3. Scientific Technology & Techniques in a Scientific Discipline** • Apply contemporary research methods, skills and techniques to conduct independent inquiry in Microbiology. • Design and implement experimental procedures using relevant techniques to isolate, characterize and culture microbiological samples. • Conduct research with relevant computational and bioinformatics tools. • Work safely, effectively and ethically in the laboratory to generate reproducible and reliable results.	**3. Scientific Technology & Techniques in a Scientific Discipline** • Apply contemporary research methods, skills and techniques to conduct independent inquiry in Molecular Biology & Genetics. • Design and implement experimental procedures using relevant techniques in gene analysis and manipulation and genetic engineering in model systems. • Conduct research with relevant computational and bioinformatics tools. • Work safely, effectively, and ethically in the laboratory to generate reproducible and reliable results.