**Area B Proposal: Area Learning Criteria & Outcomes (ALOs)—Proposed Policy on right**

**Area B –1 Physical Science**

1. Is an introductory or survey course with no college level prerequisites.
2. Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.
3. Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living and/or non-living systems.
4. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.
5. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will (Current Outcomes):**

1. Demonstrate a knowledge and understanding of natural phenomena.
2. Apply the methodologies of science when approaching a scientific problem.
3. Explain the limitations of scientific inquiry.

**Area B-2 Life Forms**

1. Is an introductory or survey course with no college level prerequisites.
2. Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.
3. Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems.
4. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of living systems rather than merely to apply existing knowledge.
5. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will (Current Outcomes):**

1. Demonstrate a knowledge and understanding of natural phenomena.
2. Apply the methodologies of science when approaching a scientific problem.
3. Explain the limitations of scientific inquiry.

**Area B –1 Physical Science**

1. Is an introductory or survey course with no college level prerequisites.
2. Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.
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4. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.
5. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will be able to (Proposed Outcomes):**

* 1. Explain and apply core ideas and models in a physical science, citing critical observations, underlying assumptions and limitations.
	2. Describe how scientists create explanations of natural phenomena based on the systematic collection of empirical evidence subjected to rigorous testing and/or experimentation.
	3. Access and evaluate scientific information, including interpreting tables, graphs and equations.
	4. Recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public and ethical concern.

**Area B-2 Life Forms**

1. Is an introductory or survey course with no college level prerequisites.
2. Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.
3. Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems.
4. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of living systems rather than merely to apply existing knowledge.
5. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will be able to (Proposed Outcomes):**

* 1. Explain and apply core ideas and models in a life science, citing critical observations, underlying assumptions and limitations.
	2. Describe how scientists create explanations of natural phenomena based on the systematic collection of empirical evidence subjected to rigorous testing and/or experimentation.

**Area B - 3 Lab Component**

1. Emphasizes the learning of laboratory techniques and verification of facts and principles in the relevant discipline.
2. Involves at least two hours per week in the lab.
3. Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.
4. Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems and/or non-living systems. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.
5. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will (Current Outcomes):**

1. Demonstrate a knowledge and understanding of natural phenomena.
2. Apply the methodologies of science when approaching a scientific problem.
3. Explain the limitations of scientific inquiry.

**Area B – 4 Mathematical concepts and quantitative reasoning**

1. Is an introductory or survey course with no college level prerequisites.
2. Has an intermediate algebra prerequisite.
3. Develops basic mathematical or logical concepts, quantitative reasoning skills, and has general applicability in solving problems.
4. Develops computational skills or competence in the analysis of arguments.

**Students will (Current Outcomes):**

1. Solve basic mathematical problems
2. Apply quantitative reasoning and logical concepts in solving problems or analyzing arguments.

**Area B 2 (Continued)**

1. Access and evaluate scientific information, including interpreting tables, graphs and equations
2. Recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public and ethical concern.

**Area B - 3 Lab Component**

1. Emphasizes the learning of laboratory techniques and verification of facts and principles in the relevant discipline.
2. Involves at least two hours per week in the lab.
3. Emphasizes general principles and concepts having a broad range of application and is not restricted to specialized topics.
4. Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems and/or non-living systems. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.
5. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will be able to (Proposed Outcomes):**

* 1. Use their senses and scientific instruments to gather, organize and display empirical data.
	2. Identify patterns in data and use these to hypothesize underlying relationships.
	3. Explain and apply scientific technique for coping with complexity and variability in the natural world.

**Area B – 4 Mathematical concepts and quantitative reasoning**

1. Is an introductory or survey course with no college level prerequisites.
2. Has an intermediate algebra prerequisite.
3. Develops basic mathematical or logical concepts, quantitative reasoning skills, and has general applicability in solving problems.
4. Develops computational skills or competence in the analysis of arguments.

**Students will be able to (Proposed Outcomes):**

1. Solve problems by thinking logically, making conjectures, and constructing valid mathematical arguments.
2. Make valid inferences from numerical, graphical and symbolic information.
3. Apply mathematical reasoning to both abstract and applied problems, and to both scientific and non-scientific problems.

**Area B – 5 Further Studies**

**For courses in physical science or life form:**

1.Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems.

2. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.

3. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**Students will (Current Outcomes):**

1. Demonstrate a knowledge and understanding of natural phenomena.

2. Apply the methodologies of science when approaching a scientific problem.

3. Explain the limitations of scientific inquiry.

**For courses in quantitative reasoning:**

1. Develops basic mathematical or logical concepts, quantitative reasoning skills, and has general applicability in solving problems.

2. Develops computational skills or competence in the analysis of arguments.

**Students will (Current Outcomes):**

1. Demonstrate the ability to apply quantitative reasoning and logical concepts in solving problems.

2. Possess computational skills or be able to properly analyze arguments

**Area B – 5 Further Studies**

**For courses in physical science or life form:**

1.Develops an understanding of the principles underlying and interrelating natural phenomena including the foundations of our knowledge of living systems.

2. Introduces students to one or more of the disciplines whose primary purpose is to acquire knowledge of the physical universe and/or its life forms rather than merely to apply existing knowledge.

3. Develops an appreciation of the methodologies of science, the requisite features of scientific endeavors, and the limitations of scientific inquiry.

**For courses in quantitative reasoning:**

1. Develops basic mathematical or logical concepts, quantitative reasoning skills, and has general applicability in solving problems.

2. Develops computational skills or competence in the analysis of arguments.

**Students will be able to do one or more of the following (Proposed Outcomes)**:

 1. Cite critical observations, underlying assumptions and limitations to explain and apply important ideas and models in one or more of the following: physical science, life science, mathematics or computer science.

2. Recognize evidence-based conclusions and form reasoned opinions about science-related matters of personal, public and ethical concern.

3. Discuss historical or philosophical perspectives pertaining to the practice of science or mathematics.