NOTRE DAME

Integrated Science MYP Level I Grade 6

Ms. Thomas
kthomas@ndpma.org

I. Course Description:
Integrated Science Level 1 will provide the foundation necessary for studying science and engaging in scientific inquiry. Students will be introduced to the nature of science, the scientific method, and laboratory equipment, methods, and safety practices. The three central themes that encompass all levels of science study are life, earth, and physical sciences. Through these broad topics students will examine scientific issues both in their local environment and globally, gaining context and relevance through discussion and experimentation. Learning resources incorporated in the course include: textbooks, computer technology, online video resources, field trips, and science lab materials.

Units of Study
Unit 1: The Nature of Science and Technology
Unit 2: Astronomy
Unit 3: Chemical Building Blocks
Unit 4: Environmental Science

II. Aims and Objectives:

AIMS – To encourage and enable students to develop:

- acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts.
- develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions.
- communicate scientific ideas, arguments and practical experiences accurately in a variety of ways.

OBJECTIVES – At the end of the course, students should be able to:

- communicate scientific information using a range of scientific language.
- analyze scientific information by identifying components, relationships and patterns, both in experimental data and ideas.
- design scientific investigations that include variables and controls, material/equipment needed, a method to be followed, data to be collected, and suggestions for its analysis.

III. Areas of Interaction:
Approaches to Learning. Through the Nature of Science and Technology unit, students will learn to approach science by adopting the attitudes and habits of scientists, and exploring the way scientists seek "to know."

Human Ingenuity. Students gain experience in both the structured part of the scientific method, such as defining and controlling variables, and the creative, fluid aspect of scientific endeavor, such as thoughtful tinkering and revising an investigation based on an unexpected discovery.

Health and Social Education. Students will be able to research their environment and look for ways to create a stronger and healthier community.

Environments. Throughout each unit, students will explore how their actions contribute to the environments around them. They also will learn about the various environments that they create and that surround them.

IV. Texts and Resources:
Prentice Hall Science Explorer Series, 2009
Nature of Science and Technology
Astronomy
Environmental Science

V. Methodology:
In addition to exploring topics of study through their own experimental design, students perform laboratory activities; work individually and in groups; read textbooks, articles, and websites; view videos and web-based animations; participate in class discussion; engage in exploratory investigations; and take lecture notes. Students keep a binder/portfolio of all written work and handouts as an organizational and study tool.

VI. Methods of Assessment:
Student learning will be assessed through formal and informal assessments. Examples of informal assessments are: small group activities including lab participation, class discussion, and daily class work. Formal assessments include quizzes, tests, oral presentations, projects, and creative, factually based reports.

Students will demonstrate their understanding through two types of assessment: formative and summative. Formative assessments will include written classwork, homework, and responses in class discussions. Summative assessment will include projects, lab reports, tests, and quizzes. In addition, Level II science students will take a written, cumulative final exam that will count toward 25% of their final grade. Rubrics are used where appropriate to determine student achievement level. The following MYP science criteria will be used when assessing student achievement levels:

Criterion A: One World
Criterion B: Communication in Science
Criterion C: Knowledge and Understanding of Science
Criterion D: Scientific Inquiry
Criterion E: Processing Data
Criterion F: Attitudes in Science

VII. Grading Policy, including the use of MYP criteria:
The grade for each marking phase will be calculated by percentage of points earned. Letter grades then will be assigned as follows:
100 – 90 = A
80 – 89 = B
70 – 79 = C
60 – 69 = D
Below 60 = F

NOTRE DAME

Integrated Science MYP Level II Grade 7

Ms. Thomas
kthomas@ndpma.org

I. Course Description:
Students in this course continue their study of the nature of science by actively *being* scientists. Building on the knowledge of the scientific method gained in *Integrated Science Level I*, students are prompted to "learn deeper" by applying that knowledge in the designing and conducting of their own experiments. Students ask and act on their questions: *How can I find this out? Will my experimental design actually test what I want to know? How do I interpret my results? How do I communicate my results? How is my work relevant in my own life and in the world?*

Units of Study
Unit 1: Cells
Unit 2: Heredity & Genetics
Unit 3: Human Body
Unit 4: Weather & Atmosphere
Unit 5: Plants

II. Aims and Objectives:

AIMS – To encourage and enable students to develop:
- acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts.
- develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions.
- communicate scientific ideas, arguments and practical experiences accurately in a variety of ways.

OBJECTIVES – At the end of the course, students should be able to:
- communicate scientific information using a range of scientific language.
- analyze scientific information by identifying components, relationships and patterns, both in experimental data and ideas.
- design scientific investigations that include variables and controls, material/equipment needed, a method to be followed, data to be collected, and suggestions for its analysis.

III. Areas of Interaction:
Approaches to Learning. Through the use of the scientific method, students will approach science with an essential Approach to Learning: adopting the attitudes and habits of scientists, and exploring the way scientists seek "to know."

Human Ingenuity. A key question pertaining to this Area of Interaction is *How do we create?* In their study of experimental design, students explore the question *How do we create scientific knowledge?* Students experience both the structured part of the scientific method, such as defining and controlling variables, and the creative,

fluid aspect of scientific endeavor, such as thoughtful tinkering and revising an investigation based on an unexpected discovery.

Health and Social Education. In their study of human biology, students examine and explore what keeps our bodies moving, and how we can keep them healthy.

Environments. Throughout each unit, students will explore how their actions contribute to the environments around them. They will also learn about the various environments that they create and that surround them.

IV. Texts and Resources:
Prentice Hall Science Explorer Series, 2009:
Cells and Heredity
Human Biology
Health, Weather and Climate
From Bacteria to Plants

V. Methodology:
In addition to exploring topics of study through their own experimental design, students perform laboratory activities; work individually and in groups; read textbooks, articles, and websites; view videos and web-based animations; participate in class discussion; engage in exploratory investigations; and take lecture notes. Students keep a journal of all lab work and a binder to keep all handouts, study guides, and homework to use as an organizational and study tool.

VI. Methods of Assessment:
Students will demonstrate their understanding through two types of assessment: formative and summative. Formative assessments will include written classwork, homework, and responses in class discussions. Summative assessment will include projects, lab reports, tests, and quizzes. In addition, Level II science students will take a written, cumulative final exam that will count toward 25% of their final grade. Rubrics are used where appropriate to determine student achievement level. The following MYP science criteria will be used when assessing student achievement levels:

Criterion A: One World
Criterion B: Communication in Science
Criterion C: Knowledge and Understanding of Science
Criterion D: Scientific Inquiry
Criterion E: Processing Data
Criterion F: Attitudes in Science

VII. Grading Policy, including the use of MYP criteria:
The grade for each marking phase will be calculated by percentage of points earned. Letter grades then will be assigned as follows:
100 – 90 = A
80 – 89 = B
70 – 79 = C
60 – 69 = D
Below 60 = F

NOTRE DAME

Integrated Science MYP Level III Grade 8

Mr. Forrester
jforrester@ndpma.org

I. Course Description:
The Level III Science curriculum is intended to strengthen the students' analytical science skills. Using information gained during Levels I and II, students will design and critique their own experiments. The course covers chemistry, physics, and geology. During the year students will be presented with current information and studies in these three topic areas. Students will relate what they have learned to current world events and issues. They will also critique the validity of scientific studies.

The purpose of this course is to provide the students with the critical thinking skills needed as they continue their education as well as to see how science relates to their lives and to the larger global community. Students will continue to improve their scientific communication skills by writing laboratory reports and working on group activities. During the group activities they will make inferences based on what they have learned.

Units of Study
Unit 1: Chemistry
Unit 2: Energy
Unit 3: Motion and Forces
Unit 4: Geology

II. Aims and Objectives:

AIMS – To encourage and enable students to:

- develop inquiring minds and curiosity about science and the natural world.
- acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts.
- develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions.
- communicate scientific ideas, arguments and practical experiences accurately in a variety of ways.
- think analytically, critically and creatively to solve problems, judge arguments and make decisions in scientific and other contexts.
- demonstrate attitudes and develop values of honesty and respect for themselves, others, and heir shared environment.

OBJECTIVES – At the end of the course, students should be able to:

- describe and discuss ways in which science is applied and used to solve local and global problems.
- discuss how science and its applications interact with social, economic, political, environmental, cultural and ethical factors.

- communicate scientific information using a range of scientific language.
- communicate scientific information using appropriate modes of communication.
- present scientific information in a variety of formats.
- recognize and recall scientific information.
- explain and apply scientific information to solve problems in familiar and unfamiliar situations.
- discuss and evaluate scientific information from different sources and assess its credibility.
- design scientific investigations that include variables and controls, material/equipment needed, a method to be followed, data to be collected and suggestions for its analysis.
- suggest improvements to the method.
- collect and record data using appropriate units of measurement.
- organize and transform data into numerical and diagrammatic forms, including mathematical calculations and visual representation.
- present data in a variety of ways using appropriate communications modes and conventions.
- analyze and interpret data by identifying trends, patterns and relationships.
- draw conclusions supported by scientific explanations and a reasoned interpretation of the analysis of the data.
- carry out scientific investigations using materials and techniques safely and skillfully.
- work effectively as members of a team, collaborating, acknowledging and supporting others as well as ensuring a safe working environment.
- show respect for themselves and others, and deal responsibly with the living and non-living environment

III. Areas of Interaction:
During the year, approaches to learning will be incorporated into each unit. In addition, the following describe how the other areas of interaction will be addressed in the Level 3 Integrated Science curriculum.

Health and Social Education. In the Earth Science unit we will look at how natural disasters affect the local population and economy. During the chemistry unit, students will research how their chosen element impacts their health and the well-being of society.

Human Ingenuity. As students learn about earthquakes and volcanoes, they will see how scientists are trying to predict the occurrence of these natural disasters. Also, how do humans try to protect themselves from the harmful effects of natural disasters? During the chemistry unit students will discuss whether some chemicals should be used to make products humans surround themselves with everyday.

Environment. Students will read literature that discusses the impact, both harmful and helpful, that earthquakes and volcanoes have on the environment. They will look at this issue both from a local perspective and a global one. Students will also look into the harmful effects of pollution due to manufacturing in both the physics and chemistry units.

Community and Service. Students will explore ways to aid victims of natural disasters. We will discuss which products will be most useful and why.

IV. Text and Resources:
Prentice Hall, *Science Explorer: Chemical Building Blocks, Chemical Interactions, Motion Forces & Energy, Inside Earth,* 2009

V. **Methodology**:
During the course of the year we will use class discussions to introduce topics. From there we will focus on investigations and activities to expand upon the original topic. Some of the investigations will be from the textbook and others will be designed by the students.

VI. Methods of Assessment:
Students will be using their textbooks, online resources, current periodicals, and laboratory research during the year. Assessment will be based on their knowledge of the material presented, oral presentations, art projects, posters, laboratory reports, and other forms of assessment. Students will be assessed using the following MYP criteria:

Criterion A: One World
Criterion B: Communication in Science
Criterion C: Knowledge and Understanding of Science
Criterion D: Scientific Inquiry
Criterion E: Processing Data
Criterion F: Attitudes in Science

VII. Grading Policy, including the use of MYP criteria:
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