MT. DIABLO UNIFIED SCHOOL DISTRICT

COURSE OF STUDY

COURSE TITLE:	**IB Chemistry Standard Level (SL)**
COURSE NUMBER:	**(Aeries)**
CBEDS NUMBER:	**(Aeries)**
DEPARTMENT:	**Physical Science**
LENGTH OF COURSE:	**1 year (with a 1 year prerequisite)**
CREDITS PER SEMESTER:	**5**
GRADE LEVEL(S):	**12th grade**
REQUIRED OR ELECTIVE:	**Fulfills required a-g "d" and elective "g"**
PREREQUISITES:	**AP Chemistry or Chemistry Honors**

BOARD OF EDUCATION ADOPTION:

NOTE: This course is previously approved by the UC/CSU, under the International Baccalaureate Organization (IBO). Ygnacio Valley High School is an authorized IB World School and are therefore approved to offer IB classes with the IB curriculum. **Please see the attached Chemistry guide published by the IBO, February 2014, updated 2018**

COURSE DESCRIPTION:

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. Chemical principles underpin both the physical environment in which we live and all biological systems. Chemistry is often a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science.

Both theory and practical work should be undertaken by all students as they complement one another naturally, both in school and in the wider scientific community. The DP chemistry course allows students to develop a wide range of practical skills and to increase facility in the use of mathematics. It also allows students to develop interpersonal and information technology skills, which are essential to life in the 21st century.

By studying chemistry students should become aware of how scientists work and communicate with each other. While the scientific method may take on a wide variety of forms, it is the emphasis on a practical approach through

experimental work that characterizes the subject. Teachers provide students with opportunities to develop manipulative skills, design investigations, collect data, analyse results and evaluate and communicate their findings.

COURSE PURPOSE:

Through the overarching theme of the nature of science, the aims of the DP chemistry course are to enable students to:

1. appreciate scientific study and creativity within a global context through stimulating and challenging opportunities
2. acquire a body of knowledge, methods and techniques that characterize science and technology
3. apply and use a body of knowledge, methods and techniques that characterize science and technology
4. develop an ability to analyse, evaluate and synthesize scientific information
5. develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities
6. develop experimental and investigative scientific skills including the use of current technologies
7. develop and apply 21st century communication skills in the study of science
8. become critically aware, as global citizens, of the ethical implications of using science and technology
9. develop an appreciation of the possibilities and limitations of science and technology
10. develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.

COURSE OUTLINE:

(Please see Chemistry guide, pages 20 to 27 for more details.

IB Chemistry SL is a course consisting of eleven core components that all students learn, as well as an option that instructors can choose from. Students must complete prescribed practical activities, an individual investigation and a group 4 project. Also, students finish the year with external exams, similar to AP exams.

1. **Core**

    - Stoichiometric relationships
    - Atomic structure
    - Periodicity
    - Chemical bonding and structure
    - Energetics/thermochemistry
    - Chemical kinetics
    - Equilibrium
    - Acids and bases
    - Redox processes
    - Organic chemistry
    - Measurement and data processing

2. **Options (choice of one out of four)**

    - Materials
    - Biochemistry
    - Energy
    - Medicinal chemistry

KEY ASSIGNMENTS:

- Experiments and written reports for each topic
- Individual investigation/experiment
- Group 4 project – an interdisciplinary project

INSTRUCTIONS METHODS and/or STRATEGIES:

(Please see Chemistry guide, pages 6 to 20 for more details.)

General IB approaches to teaching are

- Based on inquiry
- Focused on conceptual understanding
- Developed in local and global contexts
- Focused on effective teamwork and collaboration
- Differentiated to meet the needs of all learners
- Informed by formative and summative assessment

Strategies to meet these approaches with students include deliberate lesson planning that encourages students to develop these approaches to learning skills:

- Thinking
- Communication
- Social
- Self-management
- Research

ASSESSMENTS INCLUDING METHODS and/or TOOLS

(Please see Chemistry guide, pages 167 to 190 for more details.)

There are ongoing formative and summative assessments throughout the course as prepared by the instructor. In addition, there are specific IB assessments called Internal Assessment (IA) and External Assessment (EA). Preparation for both the IAs and EAs are ongoing throughout the course.

IA: Individual investigation and write-up of 6 to 12 pages

EA: Paper 1: 30 multiple-choice questions on the core

Paper 2: Short answer and extended response questions on the core

Paper 3: Data- and practical-based questions, plus short answer and extended response questions on the option

INSTRUCTIONAL MATERIALS:

Board approved IB textbook.

Lab equipment and chemicals. Chemicals must be approved for use for the chemistry classroom per district and California Safety Guidelines. Please see IB Chemistry guide for more details.

For Honors Distinction:

CORRESPONDING NON-HONORS COURSE:

Chemistry

DIFFERENCES in HONORS/NON-HONORS COURSES:

Individual investigation (minimum of 10 in-class hours), the Group 4 project (minimum of 10 in-class hours), preparation for the final assessments, similar to AP exams.

Committee Members:

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3. Carissa Weintraub

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