Dominican International School
台北市私立道明外僑學校
No. 76, Dazhi Street, Taipei (104042), Taiwan, R.O.C.
10464 臺北市中山區大直街 76 號

COURSE SYLLABUS

School Year	2025-2026
Subject	CHEMISTRY
Grade Level	10
Teacher	Michael Hoffmann
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COURSE DESCRIPTION:

This course provides a comprehensive introduction to the fundamental principles of chemistry, emphasizing both conceptual understanding and practical application. Students explore the structure and properties of matter, chemical bonding, reactions, stoichiometry, states of matter, thermochemistry, atomic theory, periodic trends, and solutions. Laboratory investigations reinforce theoretical concepts, develop essential scientific skills, and promote safe and accurate experimental techniques. Through problem-solving, data analysis, and real-world applications, students build a strong foundation for advanced studies in chemistry and related sciences.

LABORATORY REQUIREMENT The laboratory component is an essential part of this course, providing hands-on experience with the concepts discussed in class. Students will develop skills in proper laboratory techniques, accurate measurement, data recording, and scientific analysis. Emphasis is placed on safety, teamwork, and the application of theoretical knowledge to experimental work. Laboratory activities are designed to foster curiosity, enhance problem-solving abilities, and demonstrate the practical relevance of chemistry.

COURSE OBJECTIVES: By the end of this course, students will be able to:

Demonstrate a foundational understanding of the structure and behavior of matter, chemical bonding, and the periodic table. **Apply** principles of chemical reactions, stoichiometry, and thermochemistry to solve quantitative and qualitative problems. **Interpret** and analyze data from experiments, identifying sources of error and making evidence-based conclusions. **Use** correct chemical terminology, symbols, and units when communicating ideas in oral and written form. **Perform** laboratory procedures safely and effectively, following proper chemical handling and disposal guidelines. **Connect** chemistry concepts to real-world applications in environmental science, technology, and everyday life.

PRIMARY TEXTBOOKS AND OTHER RESOURCES:
Inspire Chemistry - McGraw Hill Student Edition **ISBN-10 :** 0021381151

GRADING SYSTEM/ASSESSMENT:

Homework and assignments are designed to reinforce classroom learning, provide practice in applying concepts, and prepare students for upcoming topics. They may include problem sets, readings, research tasks, and laboratory reports. Timely submission is expected, and late work may result in reduced credit unless prior arrangements are made. Quizzes are given periodically

to assess understanding of recent material and to provide feedback on student progress. Students are encouraged to review notes regularly, seek clarification when needed, and approach all work with academic integrity.

ACADEMIC DISHONESTY:
Academic Dishonesty means employing a method or technique or engaging in conduct in an academic endeavor that contravenes the standards of ethical integrity expected at DIS. Academic dishonesty includes but is not limited to the following:

- Purposely incorporating the ideas, words of sentences, paragraphs, or parts thereof without appropriate acknowledgment and representing the product as one's work;

- Representing another's intellectual work, such as photographs, paintings, drawings, sculpture, research, or the like, as one's own, including failure to attribute content to an AI.

- Employing a tutor, using Artificial Intelligence without acknowledgment, getting a parent to write a paper or do an assignment, and paying for an essay to be written by someone else and presented as the student's work.

- Committing any act that a reasonable person would conclude, when informed of the evidence, to be a dishonest means of obtaining or attempting to obtain credit for academic work.

Any act of academic dishonesty will result in an automatic zero on the entire assignment/learning task.

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First Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
Week 1 (4 days) (August 12 to 15) **4 days of class** 12-General Assembly at the Gymnasium 15-Opening Mass & Assumption of Our Lady	**Intro to Chemistry & Measurement** • Course expectations, lab safety training • Scientific method • Lab equipment & basic techniques • Units, SI prefixes, significant figures • Intro to density **Lab: Lab Safety & Equipment Practice OR Density of Solids and Liquids**
Week 2 (5 days) (August 18 to 22) 18-St. Dominic de Guzman Feast Day Celebration) Integrated during the Monday Assembly 20- House Shirt & Blue Jeans Day Starts 22- Club Orientation and Club Sign-up	**Measurement & Math in Chemistry** • Dimensional analysis (unit conversions) • Accuracy vs. precision • Percent error • Practice with density, volume, mass
Week 3 (5 days) (August 25 to 29) 27- High School Talk - "Kickstart Your Success: Winning Mindsets for a Great School Year" 29- First Club Meeting	**Matter and Its Properties** • Classification of matter: elements, compounds, mixtures • States of matter and particle diagrams • Physical vs. chemical properties • Physical vs. chemical changes **Lab: Physical and Chemical Changes Lab**
Week 4 (5 days) (September 1 to 5) 1- Launching of the World Day of Prayer for the Care of Creation (During the Monday Assembly) 1-AP Registration 3- AEO Fall University Fair 5- House Ceremony	**Atomic Theory & Structure** • History: Democritus → Dalton → Thomson → Rutherford → Bohr • Modern atomic theory intro • Subatomic particles (protons, neutrons, electrons) • Atomic number, mass number, isotopes • Average atomic mass calculations
Week 5 (5 days) (September 8 to 12) 8- Holy Mass: Nativity of the Blessed Virgin Mary & VIP Induction 10- House Mini Games Start	**Isotopes & Atomic Models** • Isotope practice • Review: atomic theory, structure, isotopes • Electron arrangement basics (shell model intro) • Quantum model (brief overview) **Lab/Activity: Isotope Simulation with Beans or Dice**
Week 6 (5 days) (September 15 to 19) 15- Catholic Bridge	**Electron Configuration & Orbitals** • Aufbau principle, Pauli exclusion, Hund's rule • Orbital diagrams and electron configuration (up to atomic #20)

Program for all New Students (After the Monday Assembly at the Gymnasium) 19- Athletics / Sports Orientation 19- PSAT/NMSQT Registration deadline	• Valence electrons and stability • Ions: cations and anions (concept only)
Week 7 (5 days) (September 22 to 26) 22- Celebration of the International Day of Peace-Peace Pole Ceremony (During the Monday Assembly) Teacher's Day Celebration & 26-Teachers' Appreciation 26- Grade 12 Career Educational Trip 24 to 26-Pre-Exam Days	**The Periodic Table** • Organization of periodic table (groups, periods) • Metals, nonmetals, metalloids • Families of elements: alkali, alkaline earth, halogens, noble gases • Periodic trends: atomic radius, ionization energy (qualitative)
Week 8 (1 day) (September 29 to October 3) 29- Launching of the Month of the Holy Rosary (During the Monday Assembly) Oct. 1-2- First Quarter Exam (half day)	**Periodic Trends & Light Emission** • Electronegativity and reactivity trends • Review: atomic structure → periodic trends • How light is produced: connection to electron energy levels • Use periodic table to predict element behavior **Lab: Flame Test Lab (linking periodicity and electron transitions)**
Oct. 3-DIS Teachers and Staff Recognition Day/ Record Day *Recollection for Aunties and Uncles (no classes for students)*	

Second Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
6-Moon Festival (no classes)	
7-9 Teacher's Conference (no classes)	
Week 1 (5 days) (October 13 to 17) 13- Second Quarter Begins 13- Start of New Applicant Enrollment for 2nd Semester	**Introduction to Chemical Bonding** • Why atoms bond: stability and octets • Ionic vs. covalent bonding (focus on electron transfer/sharing) • Properties of ionic and covalent substances • Use periodic table to predict bond type

14- Visit of Mother Mary to Classrooms (During the morning prayer) 15- AP Exam Only Registration Deadline 15- Monthly Career Talk - College Prep 17- PSAT/NMSQT Digital Exam	
Week 2 (4 days) (October 20 to 24) 20- Jubilee: Marian Exhibit Opening (After the Monday Assembly) 20- Campus Safety Talk for Students 24- Book Fair (Senior Escape Room)	**Bond Polarity & Lewis Structures** • Electronegativity & polarity (nonpolar, polar, ionic) • Drawing Lewis dot structures for simple compounds • Lewis structures with single, double, triple bonds • Polyatomic ions in Lewis structures (basic intro) **Lab: Bonding Properties Lab – Solubility, conductivity, melting point comparisons for salt, sugar, plastic, etc.**
Week 3 (5 days) (October 27 to 31) 29- Grade 11 Career Educational Trip Oct. 31 to Nov. 1- Gr.6 SEL Camp	**Ionic & Covalent Naming** • Naming and writing formulas for binary ionic compounds • Multivalent ions and Roman numerals • Naming binary covalent compounds (prefix system)
Week 4 (5 days) (November 3 to 7) 3- Feast of St. Martin de Porres Mass (integrated during the Monday Assembly) 5- Monthly Career Talk - College Prep	**Polyatomic Ions & Acids** • Recognizing and using common polyatomic ions (e.g., nitrate, sulfate, carbonate) • Naming ternary ionic compounds • Naming and writing formulas for acids (binary and oxyacids)
Week 5 (5 days) (November 10 to 14) 14- Health Week 14- VIP-Parent Learning Community	**Intro to Chemical Reactions** • Signs of chemical change • Types of reactions: synthesis, decomposition • Writing and balancing chemical equations (intro) • Use of physical states in equations (s, l, g, aq)
Week 6 (5 days) (November 17 to 21) 17- Launching of Mental Health and Anti-Bullying Month 21- Young Shakespeare Play Writing and Performing Contest	**Reaction Types Continued** • Single replacement, double replacement, combustion • Predicting products (guided and scaffolded) • Practice balancing increasingly complex reactions **Lab: Types of Chemical Reactions Lab – Students observe and classify 4–5 reactions (e.g., baking soda + vinegar, magnesium + HCl, copper sulfate + iron, etc.)**
Week 7 (5 days) (November 24 to 28) 24- Peace Pole Day (Monday Assembly)	**Net Ionic Equations (Introductory)** • Definition of spectator ions • Writing complete vs. total ionic vs. net ionic equations • Focus on precipitate and neutralization reactions

24- Lighting of the Christmas Tree after school (Campus Min/ ECA/ D' Torch Orchestra/ Religious Studies) (Afternoon) 25-27- Pre-Exam Days 27- Thanksgiving Potluck after school for teachers and staff 27- Thanksgiving Family Day 28- Gr. 12 Second Quarter Exam	• Use of solubility rules (with provided chart)
Nov. 29 Invitation for All: The Jubilee Pilgrimage to Taipei (Saturday)	
Week 8 (4 days) (December 1 to 5) 1- First Week of Advent: Lighting of First Advent Candle (During the Monday Assembly) 3- Monthly Career Talk - College Prep 5- Nativity Play (Collaboration with Campus Ministry) 5- Christmas Fair Whole Day	**Law of Conservation of Mass** • Demonstration or lab measuring mass before and after reaction • Practice stoichiometry-lite problems (conceptual only) • Review of all types of equations **Lab: Conservation of Mass – Precipitation reaction in sealed container or mass before/after solid-gas reaction**
Week 9 (3 days) (December 8 to 12) 8- Foundation Day Mass, cake ceremony, and Class Party (half day) 8- Solemnity of the Immaculate Conception 8- Second Week of Advent 10- Gr. 12 Advent Immersion 11 and 12- Second Quarter Exam (half day)	**Review & Quarter Assessment** • Cumulative review of bonding, naming, reactions, and balancing • Naming/formula matching games, equation balancing races • Review key vocabulary and problem-solving strategies • Quarter 2 exam (or project-style alternative)
December 13 Invitation for All: Advent Recollection @DIS (Saturday)	
December 15 to January 2 Christmas Break	

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Third Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
January 5- Record Day (No Classes for students)	
Week 1 (4 days) (January 5 to 9) 5- PSAT 8/9 Registration Starts 6- Third Quarter Begins 7- Monthly Career Talk- College Prep 9- New Year Mass at 8:00	**Introduction to the Mole** ● Define the mole as a counting unit ● Molar mass and formula mass ● Mole ↔ mass conversions ● Introduction to Avogadro's number
Week 2 (5 days) (January 12 to 16) 16- Club Orientation & Sign Up	**Particles, Percent Composition & Empirical Formulas** ● Mole ↔ particles ↔ volume (for gases at STP) ● Percent composition from formulas ● Empirical vs. molecular formulas **Lab: Percent Composition of Magnesium Oxide – Empirical formula determination from heating magnesium in air**
Week 3 (5 days) (January 19 to 23) 19-23- Individual Yearbook Photoshoot for Students 19-23- Career Awareness Week 22- Grade 9 Career Educational trip 23- First Club Meeting for 2nd Semester	**Basic Stoichiometry** ● Mole-to-mole relationships in balanced equations ● Mole ↔ mass conversions in chemical reactions ● Mole maps and dimensional analysis practice
Week 4 (5 days) (January 26 to 30) 26- Feast Day of St. Thomas Aquinas/Launching of the Catholic Week 26-28- Aquinas Conference: Science and Faith 26-30- Catholic Week Activities 30- DYM Charity Concert	**Applied Stoichiometry** ● Mass-to-mass stoichiometry ● Mass ↔ volume (gases at STP) ● Reaction yield concepts introduced
Week 5 (5 days) (February 2 to 6) 1-4- WASC Mid-Cycle Visit 4- Monthy Career Talk - College Prep 6-7- SUAO Recollection for MS	**Limiting Reactants and Percent Yield** ● Identify limiting and excess reactants ● Calculate theoretical and actual yield ● Calculate percent yield **Lab: Gas Collection Lab – React baking soda and vinegar to collect CO_2 and compare actual vs. theoretical volume**

Week 6 (5 days) (February 9 to 13) 9- Start of New Applicant Enrollment for 1st Semester for SY2025-26 13- PSAT 8/9 Registration Deadline 13- House Valentine's Mini Fair 13- Chinese New Year Celebration	**States of Matter & Kinetic Molecular Theory** ● Particle behavior in solids, liquids, gases ● Kinetic molecular theory of gases ● Pressure, temperature, volume, particle motion ● Gas laws intro with real-life applications
February 16-20 Chinese New Year Holiday	
Week 7 (3 days) (February 23 to 26) 23-26- IOWA Assessments 23- Student Council Application 24-26- Pre-Exam Days	**Boyle's and Charles's Laws** ● Boyle's Law: pressure and volume ● Charles's Law: temperature and volume ● Graphical interpretation of both laws **Lab: Boyle's Law Lab – Pressure-volume relationship using syringes or pressure sensors**
February 27 Memorial Day Holiday (no classes)	
Week 8 (5 days) (March 2 to 6) 3- Monthly Career Talk - College Prep 6- PSAT 8/9 System Installation and Practice Test	**Ideal Gas Law & Mixed Problems** ● Ideal Gas Law (PV = nRT) — introduced with plug-and-chug examples ● Practice with rearranging and solving ● Mixed gas law problems using combined gas law ● Discuss deviations from ideal behavior (briefly, concept only)
Week 9 (4 days) (March 9 to 13) 13 and 16- Third Quarter Exam (half day)	**Review & Quarter Assessment** ● Cumulative review: mole, stoichiometry, gas laws ● Real-world gas law scenarios (hot air balloons, scuba diving, airbags) ● Final assessment or performance task (can include lab data analysis) ● Optional enrichment: gas law calculations with limiting reactants

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Fourth Quarter Tentative Course Content

Week/Date	Topic/Projects/Assessments
Week 1 (3 days) (March 16 to 20) 16- Third Quarter Exam (half day) 16-20- Faculty & Staff Yearbook Photo 17- Fourth Quarter Begins 18-21- EARCOS Teachers' Conference 19- Lectio Divina and Feast of St. Joseph 20- Parents Learning Community Meeting 20- Kindilympics 20-House Movie Night and Club Fair	**Introduction to Solutions** ● Definitions: solute, solvent, solution ● Types of mixtures: homogeneous vs. heterogeneous ● Factors affecting solubility (temperature, agitation, particle size, polarity) ● Solubility curves (basic interpretation)
March 21 (Saturday) Spring Fair	
Week 2 (5 days) (March 23 to 27) 23-27 Student Leaders Applicant Interviews 26- Annual Visit to World Religion Museum Gr. 11 27- Lower School Readers Theatre	**Molarity & Dilution** ● Definition and calculation of molarity ● Calculating moles from molarity and volume ● Preparing solutions from solids ● Dilution calculations using $M_1V_1 = M_2V_2$ **Lab: Molarity & Dilution Lab – Students prepare a solution of a known concentration and dilute it to a target molarity**
March 30 to April 6 Easter/Spring Break	
Week 3 (3 days) (April 7 to 10) 7- Spring University Fair 9- Easter Mass 9- Easter Egg Hunt for Lower School Students	**Acid & Base Properties** ● Properties of acids and bases ● Arrhenius definition (introductory) ● Introduction to the pH scale (0–14), concentration of H^+/OH^- ● pH indicators and color ranges
Week 4 (5 days) (April 13 to 17) 13 Laudato Si Month Launching (During the Monday Assembly) 13-30 Laudato Si Month Activities 13-17- Class Photo Taking 17- AP Chinese/Japanese Practice Test	**Neutralization Reactions & pH Testing** ● Reactions of acids and bases → salt + water ● Writing neutralization equations ● Real-life applications: antacids, acid rain, digestion ● Practice with identifying conjugate acid-base pairs (optional, if time permits) **Lab: pH Testing Lab – Use indicators or pH meters to test household substances (or) Simple Titration Demo**
Week 5 (5 days) (April 20 to 24) 20-24 Cultural Awareness	**Introduction to Thermochemistry** ● Law of conservation of energy ● Exothermic vs. endothermic reactions

Week / Art Exhibit / Earth Week 24- Music Recital 20-24 Student Council Campaign 20-24 AP Mock Exams	• Interpreting energy diagrams • Identifying heat transfer in reactions
Week 6 (4 days) (April 27 to 30) 27- Student Council Elections 27-30 Senior Project Presentations 28-30 Pre-Exam Days	**Specific Heat & Calorimetry Concepts** • Heat equation: q = mcΔT • Units of heat, specific heat capacity • Sample calorimetry calculations **Lab prep for calorimetry experiment**
May 1: Labor Day Public Holiday	
Week 7 (May 4 to 8) 4- May Crowning & Mother's Day Celebration (During the Monday Assembly) 4-14 Final Exams (K, Gr. 5, 8, & 12 Only) 4-15 AP Exams	**Calorimetry Lab & Data Analysis** Lab: Calorimetry Lab – Measure temperature change in a chemical reaction to calculate heat transferred Compare results from different groups Sources of error and lab conclusion writing Enrichment: connect to food energy or combustion reactions
Week 8 (May 11 to 15) 13 and 14- Fourth Quarter Exam—Undergraduate (half day) 14-16 Student Leaders Retreat Days	**Final Project or Cumulative Exam** **Options:** Final test covering solutions, acids/bases, and thermochemistry Student-designed mini-experiments or presentations Real-world chemistry application project (e.g., "Chemistry in Cooking," "pH of Local Water Samples") Course reflection and preparation for AP Chemistry next year
May 15 Record Day (No Classes for students) *Final Deliberation for Graduating/Promoting Classes*	
Week 9 (May 18 to 22) 18- Gr. 5 Recollection & Mass 19- Gr. 8 Recollection & Mass 20- Gr. 12 Recollection 20- Baccalaureate Mass (Whole School) 18-21 WIDA Testing 19- Lower School Sports Day / Gr. 6 & 7 School Field Trip 19- Gr. 9 - 11 - "Senior	**TBA**

Success Forum: Inspiring the Next Generation" 19-22 Student Clearance Days 21- Middle & High School Sports Day 21- High School Field Trip 22- House Culminating Activity 20-22 Final Deliberation for Non-Graduating Classes 22- Student Leaders One Day Recollection / Turn Over Ceremony	
Week 10 (May 25 to 29) 25- Kindergarten Graduation/Gr. 5 Promotion 26- LS Field Trip 26- Gr. 8 Graduation and Gr. 12 Graduation 27- Pre-Kindergarten & Gr. 1 - 4, 6 & 7, 9-11 Recognition Last Day of School, Report Card 28- Distribution, & Class Party (half day) 29- Last day for Teachers/Staff Meeting	**TBA**