



**INTERNATIONAL
CHRISTIAN
SCHOOL**

Science Department Handbook

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1. Introduction

Welcome to the Science Department at ICS. This handbook is designed to provide an overview of our department's policies, procedures, and curriculum. It serves as a guide for teachers, students, and parents to ensure a cohesive and effective learning environment.

2. Department Vision and Mission

Vision:

Guided by our faith in Christ and a commitment to a biblical foundation, the ICS Science Department aims to inspire students to explore the wonders of the natural world and to foster a deep understanding of creation and its Creator.

Mission:

To provide high-quality science education within a biblical worldview that equips students with the knowledge, skills, and understanding necessary to glorify God and serve Him in their academic and personal lives.

Biblical Integration:

The Science Department integrates biblical principles across various courses—including Physics, Chemistry, Biology, Integrated Science, Foundations Of Science, Environmental Science and STEM—by fostering an environment where students can explore the relationship between their faith and scientific inquiry. This integration is achieved through thematic discussions and ethical considerations tailored to each subject.

In Physics, the integration focuses on the laws of motion, energy, and the order evident in creation. Lessons emphasize how these laws reflect God's design, referencing scriptures such as Genesis 1:1 and Psalm 104:5. Students explore concepts like gravity and inertia, connecting them to God's unchanging nature (Hebrews 13:8). Additionally, ethical implications of technological advancements are discussed, encouraging students to view themselves as stewards of creation, as outlined in Genesis 2:15.

In Chemistry, the curriculum highlights the creation of matter and the intricate processes governing chemical reactions. Discussions include how these processes illustrate God's design, referencing Genesis 1:1. Students learn about the role of chemistry in health and medicine, linking it to biblical views on wellness (1 Corinthians 6:19-20). Environmental stewardship is another key theme, emphasizing the importance of caring for creation (Genesis 1:28) in the context of chemical use and its impact on ecosystems.

The Biology curriculum underscores the significance of life and the natural world. Students are taught about being made in God's image (Genesis 1:26-27), reinforcing the inherent value of all living beings. Lessons on biodiversity and ecosystems incorporate biblical references to God's handiwork (Psalm 104:24-25). Ethical discussions around genetics and biotechnology are framed within biblical teachings on human dignity and the sanctity of life (Psalm 139:13-16), fostering a sense of moral responsibility.

In Integrated Science, the department combines concepts from physics, chemistry, and biology, allowing students to see the interconnectedness of scientific disciplines. This holistic approach encourages discussions on how God's creation is complex and interrelated. Students are invited to explore the implications of scientific discoveries on faith and ethics, emphasizing the importance of viewing science through a biblical lens.

The Foundations of Science course provides a basis for understanding the scientific method and the philosophy behind scientific inquiry. Here, the curriculum includes discussions on the origins of scientific thought, acknowledging the contributions of Christian scholars throughout history. Students learn about the compatibility of science and faith, engaging with biblical principles that encourage curiosity and the pursuit of knowledge (Proverbs 18:15).

In Environmental Science, the course emphasizes the biblical mandate for stewardship of the earth. Students study ecosystems, biodiversity, and the impact of human activity on the environment, linking these topics to scriptures that highlight the importance of caring for creation (Genesis 2:15). Discussions about sustainability and conservation are grounded in a biblical worldview, encouraging students to consider their responsibility to protect the environment as a reflection of their faith.

In STEM, biblical integration encourages creativity and problem-solving as reflections of God's nature as the Creator (Isaiah 40:26). Students are motivated to view their work as service to others, aligning with Jesus' teachings on servitude (Mark 10:45). Discussions on sustainability in engineering and technology emphasize the biblical mandate for stewardship and responsible use of resources (Leviticus 25:23).

To implement this integration effectively, the Science Department facilitates class discussions that prompt students to reflect on how scientific principles align with their faith. Project-based learning allows students to explore these intersections hands-on, while guest speakers from various fields provide real-world examples of faith and science in harmony.

Through this comprehensive approach, the Science Department fosters a holistic understanding of how faith and science coexist, encouraging students to think critically and ethically about their studies and their roles as stewards of creation. This integrated curriculum not only enhances students' scientific knowledge but also deepens their spiritual growth and sense of responsibility towards the world around them.

3. ICS Teaching and Learning Philosophy

ICS Standards

ICS has a standards-based approach to education. This means we have clear and objective targets (standards) for learning in every subject, at every grade level. In the liberal arts (Math, Science and the Humanities) we emphasise the importance of knowledge, which is the basis for much of what we call 'skills'. In the creative arts (Music, Art and Drama) we emphasise the quality of both technique and interpretation. In Physical Education and Health we develop standards of physical capacity and skill.

Assessing learning of these standards is achieved by the use of proficiency rubrics, which clearly delineate a continuum from 'below standard' to 'approaching standard' to 'meeting standard' to 'exceeding standard'. Both formative and summative assessments are appropriate to the subject-specific standards. Theology is the 'Queen of the Sciences', and so the Bible has the pre-eminent place in our curriculum, training students in a Biblical worldview and understanding of the 'whole counsel of God'.

ICS Teaching & Learning Principles

- The Bible is our final authority in all matters of faith and conduct
- We use evidence-based practice founded on good cognitive science
- Optimal learning is knowledge-based and teacher-directed
- The teaching cycle: explicit instruction, modelling, practice, feedback
- The essence of a liberal arts education is deep reading, thinking, writing and discussion, in pursuit of goodness, truth and beauty.
- We prioritise the known benefits of physical reading and handwriting
- We prepare students to operate effectively in a dual-modal society: departmental handbooks outline where digital technology is effective in enhancing learning, and our curriculum policy details education in digital literacy
- ICS partners with parents in mitigating the harms associated with screen-based childhood and learning, including our policies on homework and device-use

Assessment

Formative assessment refers to a variety of methods teachers use to gather evidence of students' academic progress over time. Formative feedback to students aims to help students understand what to aim for and how to achieve that.

Summative assessments are high-stakes assessments that are used to evaluate students' proficiency against ICS Standards in a particular unit, semester, or course.

4. Science Department Curriculum Links

• Curriculum Introduction

The focus of the ICS Science curriculum is to build towards AP exams in the Natural Sciences of Physics, Chemistry and Biology. Our learning standards for every grade level are backward designed from the AP standards. Alongside these core disciplines, elective courses in Forensic Science and Human Anatomy are offered in High School. Our purpose is to provide a high-quality Science education, building foundations for understanding the world through Biology, Chemistry, and Physics. Students should develop a sense of wonder and curiosity about the natural phenomena of God's creation and understand how science can help them to explain occurrences, predict behaviours, and analyse causes.

• Middle School

Content:

Integrated Science 6th Grade Scope and Sequence

Integrated Science 7th Grade Scope and Sequence

Integrated Science 8th Grade Scope and Sequence

STEM Middle School Scope and Sequence

• High School

Content:

Foundation of Science Scope and Sequence

Honors Biology Scope and Sequence

Honors Chemistry Scope and Sequence

Honors Physics Scope and Sequence

Forensic Science Scope and Sequence

Human Anatomy Scope and Sequence

AP Biology Scope and Sequence

AP Chemistry Scope and Sequence

AP Physics 1 Scope and Sequence

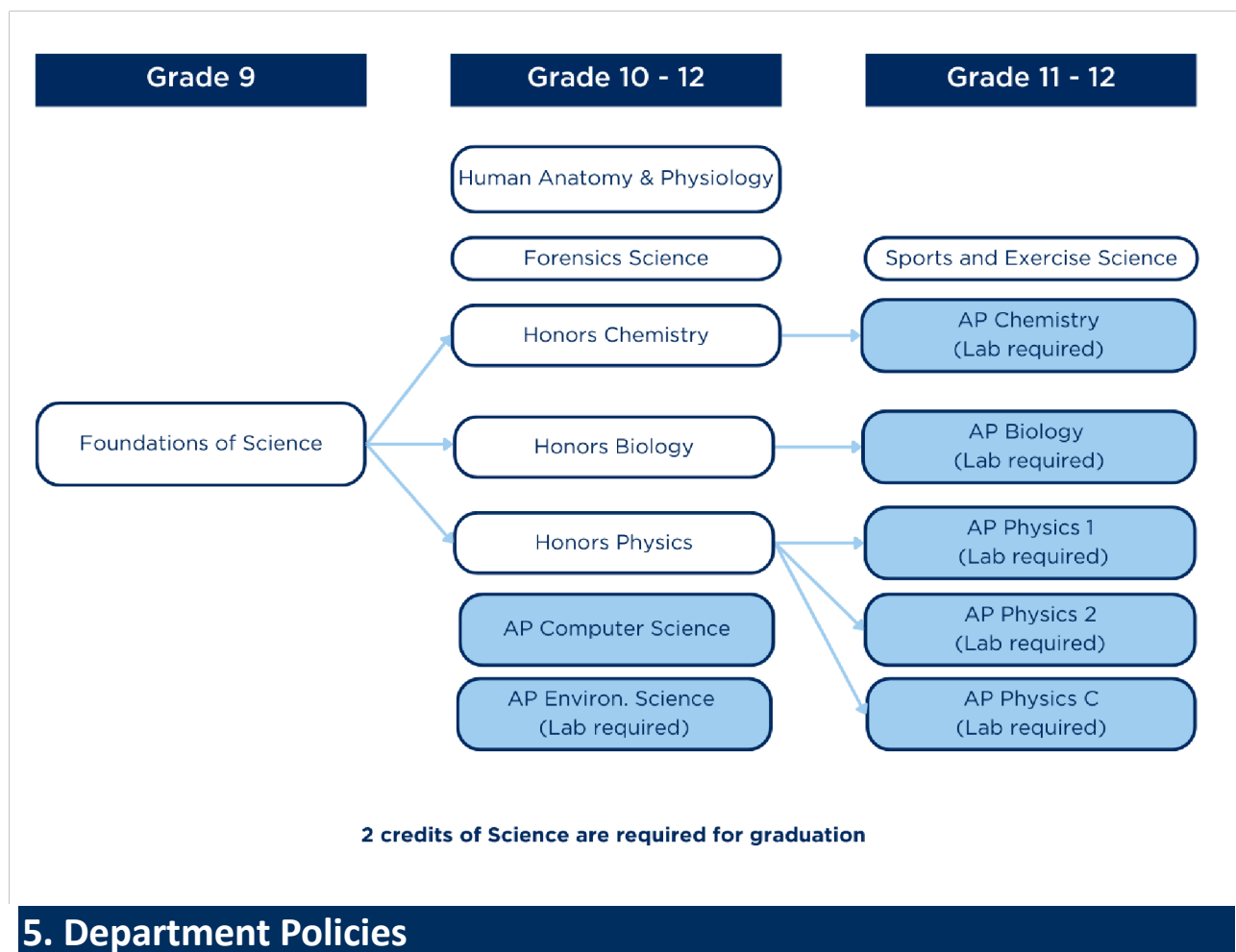
AP Physics 2 Scope and Sequence

AP Physics C (Mechanics, E&M) Scope and Sequence

AP Environmental Studies Scope and Sequence

- **Science Pathways Grade 6 - Grade 12**

Secondary Course Pathways - High School Course Guide



5. Department Policies

- **General Classroom Practice**

Hard-copy course textbooks are maintained in classrooms.

Students maintain Science notebooks which must be brought to every lesson. Teachers are responsible for communicating Unit Rubrics at the beginning of every Unit of Study to students and parents as well as feedback on every assessment against the rubric.

- **Homework Policy**

We adhere to the [ICS Homework Policy](#)

- **Technology Policy**

We adhere to the [ICS Technology Policy](#)

- **Assessment Policy**

We adhere to the [ICS Secondary Assessment Policy](#)

- **Health and Safety**

Lab Safety: Strict adherence to safety protocols during practical lessons.

Students sign a lab safety agreement in each class [MS Lab Safety agreement / HS Lab Safety agreement].

Risk Assessments: Regular assessments to ensure a safe learning environment. All such guidelines are maintained in the [ICS Safety and Security Policy](#).

7. Co-curricular Clubs, Trips and Activities

- **Clubs**

- STEM Club
- Robotics Club
- Science Club
- Roots and Shoots
- Aspiring Medics Club

- **Trips**

- Middle School field trips to Science Museum/Ocean Park/GeoPark
- AP Environmental Studies- Hong Kong Wetland Park and Study Project.

- **Activities**

The ICS Science department supports students in a number of annual competitions and outside activities, based on student interest and initiative.

- Guest speakers (for courses and clubs)
- International Biology, Chemistry and Physics Olympiads