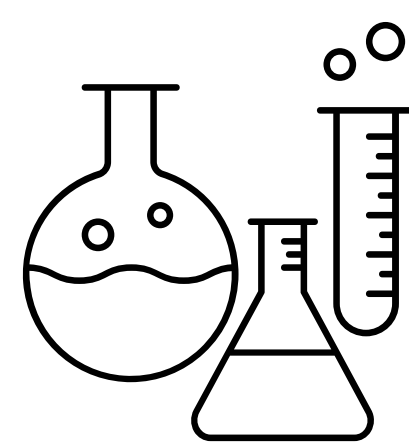


Scotch College

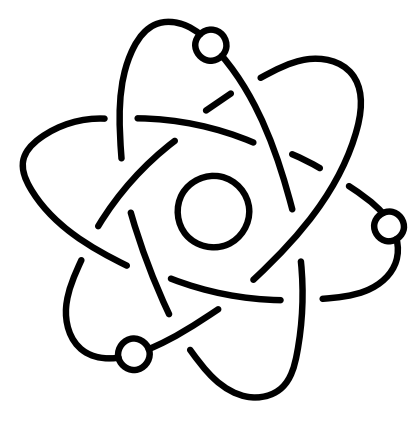
SCIENCE



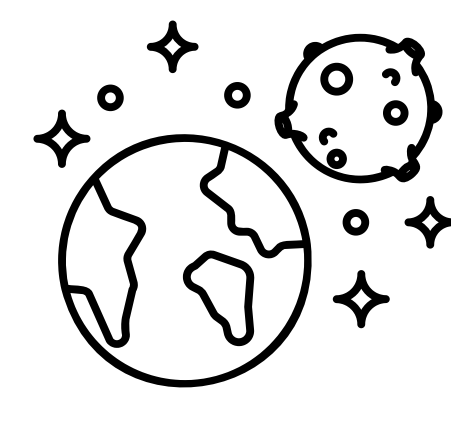
CHEMICAL SCIENCES



BIOLOGICAL SCIENCES



PHYSICS



EARTH & SPACE

- Solids, liquids & gases
- Non-Newtonian fluids
- Changes in state

- Adaptations
- Biomes
- Invasive Species
- Climate Change

- Electrical circuits
- Conductors & insulators
- Sources of electrical energy
- Renewable vs non-renewable energy

- Natural disasters
- Continental drift

- States of matter
- Solutions
- Suspensions & colloids
- Mixtures
- Concentrations
- Pollutants

- Classification
- Biodiversity
- Ecosystems

- Forces
- Gravity
- Inclined planes

- The water cycle
- El Niño & La Niña
- Renewability & sustainability
- Solar system
- Seasons
- Phases of the moon
- Eclipses
- Tides
- Gravity

- States of matter
- Atoms
- Elements
- The Periodic Table
- Physical and chemical change
- Word and chemical equations
- Types of chemical reactions

- Cells
- Circulatory System
- Respiratory System
- Digestive System

- Energy and its forms
- Conservation of energy
- Heat
- Conduction, convection & radiation
- Energy transfer and transportation
- Potential & kinetic energy

- Rocks & minerals

- Conservation of mass
- Acids and bases
- Reactions and word equations
- Combustion and corrosion
- Exothermic & endothermic reactions

- Cellular Respiration
- Ecology
- Enzymes
- Nervous & Endocrine Systems
- Metabolism
- Homeostasis

- Sound waves
- The ear
- Light
- Reflection & refraction
- The eye
- Electrical energy transfer
- Currents
- Circuits

- Structure of the Earth
- Plate tectonics
- Continental drift
- Earthquakes & volcanoes [mechanisms]—extension

- Atomic structure & properties of elements
- Types and rates of chemical reactions

- Genetics
- DNA
- Cell Division
- Biotechnology
- Evolution

- SI units & measurement
- Scalars & vectors
- Distance & displacement
- Velocity & speed
- Acceleration
- Sketching & analysing motion graphs
- Newton's Laws of Motion & Forces
- Car safety designs
- Newton's Laws of Motion & Collisions
- Energy transfers, transformation & conservation
- Cosmology: origin & evolution of the Universe

- Earth's spheres
- The Nitrogen Cycle
- The Water Cycle
- The Carbon Cycle
- Greenhouse Effect
- Climate Change
- Human Impacts on the Environment
- The Solar System
- Galaxies and the life cycle of stars
- Big Bang Theory, Cosmology & Indigenous Astronomy

YEAR 11 & 12

ATAR

GENERAL

IB DIPLOMA [2 Year]

MARINE & MARITIME

SCIENCE UNDERSTANDING

MARINE

- Oceanography
- Properties of seawater
- WA marine ecosystems and species classifications
- Nitrogen, carbon and water cycles
- Ocean currents and global atmospheric circulation systems
- Environmental and resource management
- The use of the WA marine environment to obtain salt, seawater, petroleum and gas
- Australia Exclusive Economic Zone (AEEZ)
- WA Fisheries and aquaculture

MARITIME

- Design
- Craft and hull design
- History and archaeology
- Trade routes
- Coastal exploration
- WA shipwrecks

NAUTICAL CONCEPTS AND SKILLS

POWER BOATING

- Trip Planning
- Rules and regulations
- Safety & equipment
- Emergency Situations
- Collision avoidance
- Maintenance

SEAMANSHIP SKILLS

CHARTING SKILLS

EXAMINATION:

School Based Exam

HUMAN BIOLOGY

THE FUNCTIONING HUMAN BODY

- Cells and Tissues
- Metabolism
- Respiratory system
- Circulatory system
- Digestive system
- Musculoskeletal system
- Excretory system

REPRODUCTION & INHERITANCE

- DNA
- Cell Production
- Human Reproduction
- Types of inheritance

EXAMINATION:

School Based Exam

BIOLOGY

ECOSYSTEMS & BIODIVERSITY

- Describing biodiversity
- Classification systems
- Habitats
- Species interactions
- Abiotic and biotic factors
- Ecosystem dynamics
- Energy transfer
- Population dynamics
- Fire
- Human impact
- Conservation strategies
- Models of ecosystem interactions

SINGLE CELL TO MULTICELLULAR ORGANISMS

- Cells as the basis of life
- Eukaryotic and Prokaryotic cells
- Metabolism
- Movement across a membrane
- Enzymes
- Photosynthesis
- Cellular respiration
- Multicellular organisms
- Plant and animal gas exchange
- Animal digestion
- Animal excretion
- Water and mineral transport in plants

EXAMINATION:

School Based Exam

CHEMISTRY

CHEMICAL FUNDAMENTALS

- Properties and structure of atoms and materials
- Chemical reactions: reactants, products and energy change

MOLECULAR INTERACTIONS & REACTIONS

- Intermolecular forces and gases
- Aqueous solutions and acidity
- Rates of chemical reactions

EXAMINATION:

School Based Exam

PHYSICS

MOTION FORCES & ENERGY

- Motion and forces
- Thermal energy
- Mechanical energy

WAVES, NUCLEAR & ELECTRICAL PHYSICS

- Waves
- Ionising radiation
- Nuclear reactions
- Electrical forces and energy

EXAMINATION:

School Based Exam

MARINE & MARITIME

SCIENCE UNDERSTANDING

MARINE

- Oceanography
- Properties of seawater
- Wind formation
- Tides, waves and ocean currents
- Ocean zones and food webs
- Marine organism adaptations and classification
- Environmental and resource management
- WA fisheries: rules, regulations and issues
- Protection of marine environments
- WA resource management

MARITIME

- Design
- Membranes and membrane transport
- Cell specialisation
- Gas exchange
- Transport
- Muscle and motility
- Adaptation to environment
- Ecological niches

NAUTICAL CONCEPTS AND SKILLS

SNORKELLING AND DIVING QB SAILING

BIOLOGY

UNITY & DIVERSITY

- Water
- Nucleic acids
- Origins of cells
- Cell structure
- Viruses
- Diversity of organisms
- Classification and cladistics
- Evolution and speciation
- Conservation of biodiversity

FORM & FUNCTION

- Carbohydrates and lipids
- Proteins
- Membranes and membrane transport
- Organelles and compartmentalization
- Cell specialisation
- Gas exchange
- Transport
- Muscle and motility
- Adaptation to environment
- Ecological niches

INTERACTION & INTERDEPENDANT

- Enzymes and metabolism
- Cell respiration
- Photosynthesis
- Chemical signalling
- Neural signalling
- Integration of body systems
- Defence against disease
- Population and communities
- Transfer of energy and matter

CONTINUITY & CHANGE

- DNA replication
- Protein synthesis
- Mutations and gene editing
- Cell and nuclear division
- Gene expression
- Water potential
- Reproduction
- Inheritance
- Homeostasis
- Natural selection
- Sustainability and change
- Climate change

CHEMISTRY

MODELS OF THE PARTICULATE NATURE OF MATTER

- Introduction to the particulate nature of matter
- The nuclear atom
- Electron configurations
- Counting particles by mass: The mole
- Ideal gases

MODELS OF BONDING & STRUCTURE

- The ionic model
- The covalent model
- The metallic model
- From models to materials

CLASSIFICATION OF MATTER

- The periodic table: Classification of elements
- Functional groups: Classification of organic compounds

WHAT DRIVES CHEMICAL REACTIONS?

- Measuring enthalpy change
- Energy cycles in reactions
- Energy from fuels
- Entropy and spontaneity

HOW MUCH, HOW FAST & HOW FAR?

- How much? The amount of chemical change
- How fast? The rate of chemical change
- How far? The extent of chemical change

WHAT ARE THE MECHANISMS OF CHEMICAL CHANGE?

- Proton transfer reactions
- Electron transfer reactions
- Electron sharing reactions
- Electron-pair sharing reactions

PHYSICS

SPACE, TIME AND MOTION

- Kinematics
- Forces and momentum
- Work, energy and power
- Rigid body mechanics
- Galileo and special relativity

THE PARTICULATE NATURE OF MATTER

- Thermal energy transfers
- Greenhouse effect
- Gas laws
- Thermodynamics
- Current and circuits

WAVE BEHAVIOUR

- Simple harmonic motion
- Wave phenomena
- Standing waves and resonance
- Doppler effect

FIELDS

- Gravitational fields
- Electric and magnetic fields
- Motion in electromagnetic fields
- Induction

NUCLEAR AND QUANTUM PHYSICS

- Structure of the atom
- Quantum physics
- Radioactive decay
- Fusion
- Fission and stars