THE JOY OF LEARNING

Grade 11 & 12 Science

Learning Experience

EKYA SCHOOLS

We at Ekya believe in a world beyond boundaries where education should continuously evolve and adapt as the world changes.

Ekya is a community of children, educators and parents where everyone learns together. At Ekya, our students find their purpose, passion and community to make a difference in the world.

FIND
New Ways to Learn

Our innovative learning model goes beyond conventional norms. We apply interdisciplinary skills to think differently and solve real-world problems. We equip students with skills such as problem-solving, collaboration, critical thinking, reflection and global awareness.

Students engage in authentic tasks and challenges to investigate each learning area deeply and transfer their learning to new situations.

For example, in Physics students use scientific inquiry methodology to explore the concept of spring constant in everyday life. Similarly in Chemistry, students work on an engineering design challenge to prepare a galvanic cell.

English

The English Program helps students develop skills and understanding in reading, writing, speaking and Listening as well as an appreciation for literature and language.

The program covers a wide range of topics, including grammar, vocabulary, composition, and literary analysis. Students learn how to analyse and interpret literary works, and how to express their ideas and opinions in a clear and persuasive manner. They learn how to analyse complex texts and makeinformed judgments about the meaning and significance of literary works.

Core concepts and skills

• Reading resources, including a range of fiction genres • Poetry and play scripts • Non-fiction texts • Communication and presentation • Language skills for social and academic purposes • Reasoning, interpretation and inference • Writing on a variety of topics for different audiences and purposes • Translation

Physics

The Physics Program is designed to introduce the fundamental concepts of physics, including mechanics, waves, electricity, magnetism, and thermodynamics. The program promotes problem-solving abilities and the application of concepts to explore different processes in Physics.

Students identify and appreciate the interface of physics with other disciplines. They work on experiments and simulations to explore and analyse various concepts, create hypotheses, test them against observations, and draw conclusions.

Core concepts and skills

• Kinematics • Conservation principles • Waves • Thermodynamics • Electricity and magnetism • Properties of bulk matter • Kinetic theory • Waves • Optics • Asking questions and defining problems • Planning and carrying out investigations • Mathematics and computational thinking • Constructing explanations and designing solutions • Analysing and interpreting data • Obtaining, evaluating, and communicating information.

Chemistry

The Chemistry Program is designed to introduce students to the fundamental concepts of chemistry, including the properties and behaviour of matter, the periodic table, chemical reactions, and the behaviour of gases, liquids, and solids.

It inculcate a positive scientific attitude and appreciate Chemistry's contribution to improving the quality of human life.

Core concepts and skills

• Structure and properties of matter • Classification of three-dimensionalicity • Chemical bonding and molecular structure • Thermodynamics and equilibrium • Organic chemistry • Chemical reactions and interactions • Electrochemistry • Chemical kinetics • Asking questions and defining problems • Developing and using models • Planning and carrying out investigations

Biology

The Biology Program is designed to introduce students to the fundamental concepts of Biology, including cell biology, genetics, ecology, and evolution. The program emphasises the underlying principles common to animals and plants and highlights the relationship of Biology with other areas of knowledge.

Students explore the concepts with hands-on laboratory work, formulate hypotheses, test them against observations, and draw conclusions. Students analyse and evaluate scientific information, identify problems, and develop solutions based on scientific evidence.

Core concepts and skills

• Diversity in the living world • Structural organisation in plants and animals • Structure and functions • Plant and human physiology • Reproduction • Genetics and evolution • Biology in human welfare • Biotechnology • Matter and energy in organisms and ecosystems • Asking questions and defining problems • Planning and carrying out investigations • Analysing and interpreting data • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, Evaluating, and communicating information

Mathematics

The Mathematics Program is designed to introduce students to a diverse range of topics, including algebra, coordinate geometry, trigonometry, calculus, and statistics. It helps students build and develop the mathematical knowledge, skills and understanding to solve problems in real contexts and to support their progression in further education.

Students use mathematical models to make predictions and draw conclusions and communicate their findings effectively to others. The program encourages students to work collaboratively in groups and develop interpersonal skills such as communication, teamwork, and leadership.

Core concepts and skills

• Sets and Functions • Algebra • Coordinate geometry • Calculus • Vectors and three-dimensional geometry • Linear programming • Statistics and probability • Problem-Solving • Reasoning • Connecting • Communicating • Representing • Reflecting • Selecting computational tools and strategies

Computer Science

The Computer Science Program introduces students to fundamental concepts and skills in Computer Science, programming, and technology. This includes programming languages, algorithms, data structures, databases, networks, and cybersecurity.

Students are provided opportunities to develop critical thinking, problem-solving, and collaboration skills and apply these skills to solve real-world problems.

Core concepts and skills

• Computer system architecture • Computational thinking and Algorithm/Flowcharts • Cyber ethics, cyber safety and cybercrime • Value and impact of technology on society • Python programming-conditionals, iterations, collections, library, functions, file handling, basic data structures • Computer networks • Database concepts and SQL • Connectivity between Python and SQL • Problem solving • Reasoning • Critical thinking • Communicating • Computational thinking • Representing solutions • Connecting/Collaborating • Error analysis • Debugging • Investigating • Designing/Creating

Psychology

The Psychology Program equips Learners to explore the biological, cognitive and socio-cultural influences on human behaviour and mental processes and develop the ability to become self-aware and socially aware.

Students use relevant case studies and narratives, conduct experiential exercises and analyse everyday experiences. They work on projects involving different methods of enquiry like observation, surveys, interviews, and questionnaires and conduct small studies.

Core concepts and skills

• Psychological knowledge and practices • Behavioural processes • Cause-effect • Questioning • Researching • Analysing • Evaluating and interpreting • Communicating

Design and Innovation

The Design and Innovation Program is a skill-based elective. It aims to introduce ideas, methodologies, principles, and skills that comprise a knowledge base important to all design disciplines.

The program provides a pathway to design-based qualifications, including graphic design, visual merchandising, digital design, and screen and performing arts.

Core concepts and skills

• Visualisation and representation • Basic design • Design and habitat • Design methodology • Design tools and Techniques • Design concept • Product design • Digital design

Physical Education

The Physical Education Program prepares students for higher studies in fields related to movement and the body, including social and health sciences, recreation and tourism. Students learn to use tools to develop physical, emotional, and social skills for everyday life, create a feeling of personal responsibility for their long-term health.

Students engage in various aspects of fitness, overall well-being, movement competence with safety and security, and participation in outdoor activities, games, team building exercises, etc. Students are encouraged to understand the physical capabilities of their bodies and effectively find their own space(s) in the world of movement.

Core Concepts and Skills

• Physical fitness, Health and wellness • Sports and nutrition • Test and measurement in sports • Physiology and injuries in sports • Biomechanics and sports • Psychology and sports • Physical education and sports for CWSN • Training in sports • Physical, emotional and social Skills • Proficiency in games and sports • Yogic practices • Motor skills • Collaboration • Sportsmanship

Life Skills

The Life Skills Program is based on the socio-emotional and ethical learning framework. The curriculum focuses on cultivating positive emotional regulation, self-compassion, and interpersonal skills to improve academic progress and personal well-being.

Student learning is organised into three dimensions: Awareness, Compassion and Engagement.

Core Concepts and Skills

• Kindness and compassion for self and others • Building resilience • Self-regulation • Interpersonal awareness for self and others • Relationships • Understanding interdependence • Recognizing common humanity • Community engagement

Makery

The Makery Program is an innovative educational program that aims to foster creativity, innovation, and collaboration among students. The program is designed to provide students with hands-on experiences in arts, design and engineering.

The program provides students with access to tools and equipment for creative expression and more, which they can use to turn their ideas into tangible prototypes.

Core concepts and skills

• Creating • Collabaration • Curiosity • Observation • Thinking