

# Cambridge Preparatory Academy at Federal Way High School

**The following courses, using the curriculum and examinations offered by Cambridge University, are required of the students in the Cambridge Preparatory Academy at Federal Way High School.**

## **International General Certificate of Secondary Education (IGCSE)**

### **GRADE 9**

#### **Pre-AICE Biology 9**

Curriculum and Assessment requires students be able to demonstrate knowledge and understanding of scientific phenomena, facts, laws, definitions, concepts, theories, vocabulary, instruments and apparatus, scientific quantities and their determination. Students must handle information and solve problems in oral, written, symbolic, graphical, and numerical form. Students must locate, select, organize and present information from a variety of sources. This course requires students to translate information from one form to another, manipulate numerical and other data, to use information to identify patterns, and draw inferences. Presenting reasoned explanations of phenomena, patterns and relationships, making predictions and proposing hypothesis are also required. Additionally students must solve problems of a quantitative nature. Students must demonstrate experimental and investigation skills by their use of apparatus and materials, recording observations and measurements, interpreting and evaluating experimental observations and data, planning and carrying out investigations, and evaluating methods. Curriculum content includes the nature of science (matter, energy, and chemical life processes), cells (reproduction, biology, and communication), levels of organization (classification, and taxonomy), evolution (biological selection, adaptations, and changes through time), structure, function and reproduction (plants, animals, and microorganisms), ecology (interdependence of organisms, humans, and the environment).

#### **Pre-AICE English Language**

Curriculum and Assessment requires students in the area of reading to understand and collate explicit and implicit meanings, select, analyze and evaluate what is relevant to specific purpose, and understand how writers achieve effects. In writing students must articulate experience and express what is thought, felt and imagined, and order and present facts, ideas, and opinions. Students are assessed on their ability to understand and use a range of appropriate vocabulary, to use language and register appropriate to audience and context, and make accurate and effective use of paragraphs, grammatical structures, sentences, punctuation and spelling. In the areas of speaking and listening students must understand order and be able to present facts, ideas, and opinions. They must communicate clearly and fluently using language and register appropriate to audience and context and listen to and respond appropriately to the contributions of others.

## **Pre-AICE MATH 9**

Pre-AICE Geometry/Trigonometry is equivalent in content to a full year of geometry and advanced algebra (algebra 3-4). Students are required to organize, interpret and present information accurately in written, tabular, graphical and diagrammatic forms. They must perform calculations by suitable methods including the use of an electronic calculator and use mathematical and other instruments to measure and to draw to an acceptable degree of accuracy. Interpreting, transforming and making appropriate use of mathematical statements expressed in words or symbols are required. Students must solve problems using special relationships in two and three dimensions, solve problems by applying combinations of mathematical skills and techniques, and respond to a problem relating to a relatively unstructured situation by translating it into an appropriately structured form. In this course students analyze a problem, select a suitable strategy and apply an appropriate technique to obtain its solution.

## **Pre-AICE Thinking Skills/History 9**

The AICE Thinking Skills curriculum is designed to prepare students for higher education in a wide range of careers including law, scientific research, social sciences, journalism, medicine, business, accounting, and engineering. This course consists of problem solving and critical thinking. The problem-solving component is designed to assess a student's ability to analyze numerical and graphical information in the context of real life situations and apply appropriate numerical techniques in order to find new information or derive solutions. Students gain skills in the areas of data handling, reading, modeling, and logic and reasoning. Students must apply simple mathematics to new situations in order to demonstrate an ability to manipulate numerical and graphical data. They extract and use relevant data and find methods of using information in order to come to conclusions. Students are required to recognize how the same data may be presented in different forms. Students must be able to think critically about information, evaluate possible reasons for unexpected variations and be able to use information for informed decision making. Central to critical thinking is the notion of argument. Students learn to recognize a reasoned argument as distinct from quarreling, disputing, reporting, or explaining. Students are required to understand the common characteristics of reasoning and argument and the use of reasons to support conclusions. The main activities of this course are analysis, evaluation, and construction of argument.

## **Pre-AICE World Language (Spanish or French) 9**

The Pre-AICE world language curriculum at grade 9 is equivalent in content to a year and a half of a standard language class. Students are required to demonstrate proficiency in their world language through a linguistic, communicative and cultural approach to language learning. Students must understand and respond to both spoken and written language. In their speech and writing students must show knowledge of a range and variety of vocabulary and apply the grammar and structures of the world language accurately.

## **Pre-AICE Food and Nutrition**

The Pre-AICE Food and Nutrition curriculum introduces both the theoretical and practical aspects of buying and preparing food. Dealing with diet and health in everyday life, students study the nutritional value of basic foods and develop the skills required to produce a balanced family meal. Consumer awareness is encouraged, as are high standards of personal and kitchen hygiene, especially when students put their knowledge into practice in order to produce creative and enjoyable dishes.

## **GRADE 10**

### **Pre-AICE Chemistry 10**

Curriculum and Assessment requires students be able to demonstrate knowledge and understanding of scientific phenomena, facts, laws, definitions, concepts, theories, vocabulary, instruments and apparatus, scientific quantities and their determination. Students must handle information and solve problems in oral, written, symbolic, graphical, and numerical form. Students must locate, select, organize and present information from a variety of sources. This course requires students to translate information from one form to another, manipulate numerical and other data, to use information to identify patterns, and draw inferences. Presenting reasoned explanations of phenomena, patterns and relationships, making predictions and proposing hypothesis are also required. Additionally students must solve problems of a quantitative nature. Students must demonstrate experimental and investigation skills by their use of apparatus and materials, recording observations and measurements, interpreting and evaluating experimental observations and data, planning and carrying out investigations, and evaluating methods. Curriculum content includes the particulate nature of matter, experimental techniques, atoms, elements and compounds, electricity and chemistry, chemical changes, chemical reactions acids, bases and salts, the periodic table, metals, air and water, sulfur, carbonates and organic chemistry.

### **Pre-AICE English Literature 10**

Curriculum and Assessment require students show detailed knowledge of the content of literary texts in the form of drama, poetry, and prose. They must understand the meanings of literary texts and their contexts, and show deeper awareness of ideas and attitudes. The course requires students to recognize the ways in which writers use language, structure, and form to create and shape meanings and effects. Specific skills students must demonstrate in drama, prose, and poetry for the class and exams include recall, summarization, paraphrasing, distinguishing viewpoint, exploring theme and motivation, analyzing plot and characterization, evaluation and interpretation, and integrating apposite quotation and comment.

### **Pre-AICE World History 10**

The history syllabus looks at some of the major international issues of the twentieth century, as well as covering the history of the United States in more depth. The emphasis is on both historical knowledge and on the skills required for historical research. Students learn about the nature of cause and effect, continuity and change, similarity and difference and find out how to use and understand historical evidence as part of their studies. Specific skills students must demonstrate include recall, and selecting, organizing, and deploying knowledge of the syllabus content. Students must comprehend, interpret, evaluate and use a range of sources as evidence in their historical context.

### **Pre-AICE MATH 10**

Pre-AICE Algebra 2 / Pre-calculus1 consists of trigonometry, statistics and Pre-calculus. Students are required to organize, interpret and present information accurately in written, tabular, graphical and diagrammatic forms. They must perform calculations by suitable methods including the use of an electronic calculator and use mathematical and other instruments to measure and to draw to an acceptable degree of accuracy. Interpreting, transforming and making appropriate use of mathematical statements expressed in words or symbols are required. Students must solve problems using special relationships in two and three dimensions, solve problems by applying combinations of mathematical skills and techniques, and respond to a problem relating to a relatively unstructured situation by translating it into an appropriately structured form. In this course students analyze a problem, select a suitable strategy and apply an appropriate technique to obtain its solution.

## **Pre-AICE World Language (Spanish or French) 10**

Completion of the Pre-AICE world language curriculum at grade 10 is equivalent in content to three years of a standard language class. Students are required to demonstrate proficiency in their world language through a linguistic, communicative and cultural approach to language learning. Students must understand and respond to both spoken and written language. In their speech and writing students must show knowledge of a range and variety of vocabulary and apply the grammar and structures of the world language accurately.

## **Pre-AICE Food and Nutrition**

The Pre-AICE Food and Nutrition curriculum introduces both the theoretical and practical aspects of buying and preparing food. Dealing with diet and health in everyday life, students study the nutritional value of basic foods and develop the skills required to produce a balanced family meal. Consumer awareness is encouraged, as are high standards of personal and kitchen hygiene, especially when students put their knowledge into practice in order to produce creative and enjoyable dishes.

# **Advanced International Certificate of Education (AICE)**

## **GRADE 11**

### **Pre-AICE Physics**

Pre-AICE Physics enables students to better understand the technological world in which they live, and take an informed interest in science and scientific developments. Students learn about the basic principles of Physics through a mix of theoretical and practical studies. Students also develop an understanding of the scientific skills essential for further study at A Level, skills which are useful in everyday life. As they progress, students learn how science is studied and practiced, and become aware that the results of scientific research can have both good and bad effects on individuals, communities and the environment.

### **AICE Biology (AS Level)**

Curriculum and Assessment requires students be able to demonstrate knowledge and understanding of scientific phenomena, facts, laws, definitions, concepts, theories, vocabulary, instruments and apparatus, scientific quantities and their determination. Students must handle information and solve problems in oral, written, symbolic, graphical, and numerical form. Students must locate, select, organize and present information from a variety of sources. This course requires students to translate information from one form to another, manipulate numerical and other data, to use information to identify patterns, and draw inferences. Presenting reasoned explanations of phenomena, patterns and relationships, making predictions and proposing hypothesis are also required. Students must solve problems of a quantitative nature and apply knowledge and principles to novel situations. They must demonstrate an awareness of the limitations of biological theories and models. Students must demonstrate experimental and investigation skills by their use of apparatus and materials, recording observations and measurements, interpreting and evaluating experimental observations and data, planning and carrying out investigations, and evaluating methods.

The Advanced Subsidiary Biology curriculum consists of cell structure, biological molecules, enzymes, cell membranes and transport, cell and nuclear division, genetic control, transport, gas exchange, infectious disease, immunity, and ecology.

### **AICE Chemistry**

A and AS Level Chemistry builds on the skills acquired at Pre-AICE (or equivalent) level. The syllabus includes the main theoretical concepts which are fundamental to the subject, a section on some current applications of chemistry, and a strong emphasis on advanced practical skills. Practical skills are assessed in a timetabled practical examination. The emphasis throughout is on the understanding of concepts and the application of chemistry ideas in novel contexts as well as on the acquisition of knowledge. The course will foster creative thinking and problem-solving skills which are transferable to any future career path, and A and AS Level Chemistry is ideal for students who want to study chemistry or a wide variety of related subjects at university or to follow a career in science.

## **AICE English Language**

In the area of language curriculum and assessment require students to read with understanding written material in a variety of forms, and to comment on its effectiveness. Students must demonstrate knowledge and understanding of features of English language. They are required to write clearly, accurately and effectively for a particular purpose or audience. In the area of literature, students respond to prose, poetry and drama from different cultures. They must understand the way in which writer's choices of form, structure and language shape meanings. A demonstration of the ability to produce informed, independent opinions and judgments on literary texts is required. Students must communicate the knowledge, understanding and insight appropriate to literary study.

## **AICE Calculus/Mechanics1**

This Advanced Subsidiary (AS) Mathematics course, consisting of pure mathematics and mechanics, is equivalent to first year college calculus. In the area of pure mathematics the curriculum consists of quadratics, functions, coordinate geometry, circular measure, trigonometry, vectors, series, differentiation, and integration. In the area of mechanics the curriculum consists of forces and equilibrium, kinematics of motion in a straight line, Newton's laws of motion, energy, work and power. Students must demonstrate understanding of relevant mathematical concepts, terminology and notation. The course requires accurate recall and successful use of appropriate manipulative techniques. Students are required to recognize appropriate mathematical procedures for a given situation. They must apply combinations of mathematical skills and techniques in solving problems. The presentation of mathematical work and the ability to communicate conclusions in a clear and logical way is required. This class is a prerequisite for students taking AS physics in their senior year.

## **AICE History 11**

The history of the United States, c. 1840-1968 is the content for this course. This is a source-based study through which students develop interpretation skills and evaluate evidence. Students must demonstrate an understanding of the complexity of issues and themes within a historical period. They must distinguish and assess different approaches, interpretations, and opinions about the past. Expressing awareness of historical concepts such as change and continuity and cause and effect is required. On required essays students must present a clear, concise, logical, and relevant argument.

## **Advanced Subsidiary (AS) World Language (Spanish or French)**

Both Advanced Subsidiary languages require students to develop the ability to communicate confidently and clearly in speech and written language. Students must exhibit linguistic competence and knowledge of contemporary society. This is demonstrated through understanding and responding to texts written in the target language. Written material is taken from magazines, newspapers, reports, books, or other forms of extended writing. Students must manipulate the target language accurately in spoken and written form in order to demonstrate the capacity to choose appropriate examples of lexis and structure.

## **GRADE 12**

### **AICE Biology (A level)**

The Advanced (A-level) Biology class is a continuation of curriculum begun at the AS level. Curriculum and assessment requires students be able to demonstrate knowledge and understanding of scientific phenomena, facts, laws, definitions, concepts, theories, vocabulary, instruments and apparatus, scientific quantities and their determination. Students must handle information and solve problems in oral, written, symbolic, graphical, and numerical form. Students must locate, select, organize and present information from a variety of sources. This course requires students to translate information from one form to another, manipulate numerical and other data, to use information to identify patterns, and draw inferences. Presenting reasoned explanations of phenomena, patterns and relationships, making predictions and proposing hypothesis are also required. Students must solve problems of a quantitative nature and apply knowledge and principles to novel situations. They must demonstrate an awareness of the limitations of biological theories and models. Students must demonstrate experimental and investigation skills by their use of apparatus and materials, recording observations and measurements, interpreting and evaluating experimental observations and data, planning and carrying out investigations, and evaluating methods.

The curriculum consists of energy and respiration, photosynthesis, regulation and control, inherited change, and selection and evolution. Biology application curriculum consists of biodiversity and conservation, gene technology, biotechnology, crop plants and aspects of human reproduction.

### **AICE Physics (AS-level)**

The syllabus includes the main theoretical concepts which are fundamental to the subject, a section on some current applications of physics, and a strong emphasis on advanced practical skills. Practical skills are assessed in a timetabled practical examination. The emphasis throughout is on the understanding of concepts and the application of physics ideas in novel contexts as well as on the acquisition of knowledge. The course will foster creative thinking and problem-solving skills which are transferable to any future career path, and AS Level Physics is ideal for students who want to study physics or a wide variety of related subjects at university or to follow a career in science.

### **Advance (A-level) World Language (Spanish or French)**

Both Advanced languages require students to develop the ability to communicate confidently and clearly in speech and written language. Students must exhibit linguistic competence and knowledge of contemporary society. This is demonstrated through understanding and responding to texts written in the target language. Written material is taken from magazines, newspapers, reports, books, or other forms of extended writing. Students must manipulate the target language accurately in spoken and written form in order to demonstrate the capacity to choose appropriate examples of lexis and structure. The A-level exam requires a presentation, topic conversation, general conversation, reading two passages in the world language from classic works of literature, comprehension questions, and an extended essay on a designated topic.

## **AICE English Literature**

The English Advanced (A-level) course is a continuation of both language and literature study begun at the AS level. In the area of language curriculum and assessment require students to read with understanding written material in a variety of forms, and to comment on its effectiveness. Students must demonstrate knowledge and understanding of features of English language. They are required to write clearly, accurately and effectively for a particular purpose or audience. In the area of literature, students respond to prose, poetry and drama from different cultures. They must understand the way in which writer's choices of form, structure and language shape meanings. A demonstration of the ability to produce informed, independent opinions and judgments on literary texts is required. Students must communicate the knowledge, understanding and insight appropriate to literary study.

## **AICE Calculus/Mechanics2**

This Advanced (A-level) mathematics course, consisting of pure mathematics and mechanics, is equivalent to second year college calculus. In the area of pure mathematics the curriculum consists of algebra, logarithmic and exponential functions, trigonometry, differentiation, integration, numerical solution of equations, and complex numbers. Mechanics curriculum includes motion of a projectile, equilibrium of a rigid body, uniform motion in a circle, Hooke's law, and linear motion under a variable force.

Students must demonstrate understanding of relevant mathematical concepts, terminology and notation. The course requires accurate recall and successful use of appropriate manipulative techniques. Students are required to recognize appropriate mathematical procedures for a given situation. They must apply combinations of mathematical skills and techniques in solving problems. The presentation of mathematical work and the ability to communicate conclusions in a clear and logical way is required.

## **Advanced Subsidiary (AS-level) Thinking Skills**

The Thinking Skills syllabus has two aspects: Problem Solving and Critical Thinking. Each of these consists of a set of sub-skills.

The problem solving component is designed to assess a student's ability to analyze numerical and graphical information in the context of real life situations and apply appropriate numerical techniques in order to find new information or derive solutions.

Problem solving draws on a range of skills such as data handling, reading, modeling, logic and reasoning. The problem solving abilities of students are assessed at the level of these various sub-skills, which are the building blocks for successful application to wider and more complex problems. For the examination students need to be able to apply simple mathematics to new situations in order to demonstrate an ability to manipulate numerical and graphical data. They will need to be able to extract and use relevant data and find methods of using information in order to come to conclusions. Students are also required to recognize how the same data may be presented in different forms. They are expected to be able to think critically about information, evaluate possible reasons for unexpected variations and be able to use information for informed decision-making. Thinking Skills is not designed as a test of students' mathematical abilities. Rather, the Problem Solving element of this subject is about using logical methods of handling numerical, graphical and pictorial data. They have to understand and use numerical information, to analyze it and to draw conclusions from it.

Central to Critical Thinking is the notion of argument. Students will learn to recognize when someone is engaged in reasoned argument, as distinct from quarrelling, disputing, reporting or explaining. Different examples of reasoning and argument are explored in order to understand their common characteristics, and most importantly the use of reasons (or premises) to support conclusions. Candidates will acquire a basic language of reasoning: everyday words, which are used to talk about argument. The main activities, which comprise Critical Thinking, are analysis, evaluation and construction of argument. By analyzing arguments

students learn to identify the key elements of a reasoned case, and to understand how they function. Evaluation involves making informed judgments about the soundness, strength or weakness of a piece of reasoning. This frequently includes assessing their impact of responses to an argument: challenges, supporting evidence, counter-examples, etc. In addition candidates are required to engage in their own reasoning, based on given stimulus material.

### **AICE International History**

The History Syllabus requires students to study two different areas and periods of history. It encourages them to identify patterns in, and connections between, apparently contrasting events and developments. It includes source-based studies through which candidates develop skills of interpreting and evaluating evidence. International History will be the focus of the syllabus for grade 12.

### **AICE Economics**

The purpose of this course is to provide students with the knowledge and decision-making tools necessary for understanding how society organizes its limited resources to satisfy its wants. Students will gain understanding of choices they must make as producers, consumers, investors and taxpayers. The content shall include, but shall not be limited to, the following: economic reasoning; principles of decision-making in the marketplace; resources and the economic problem; Al locative mechanisms; economic incentives; the circular flow of national income; specialization, trade and exchange; international trade; economic development; policy objectives and instruments.

### **AICE Graphic Design**

The Art and Design syllabus considers expression and communication. Students learn about visual perception and aesthetic experience, and the ways in which art and design creates a language of its own. Most of the work for this syllabus is practical or studio based, so that students can develop their abilities of observation and analysis of the visual world, sensitivity, skill, personal expression and imagination. They also learn how to relate their skills to an enhanced knowledge of their own cultures, past and present, as well as an appreciation of practical design problems.