SELWYN
SCHOOL

# 2017 - 2018

# SELWYN CURRICULUM GUIDE

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# Table of Contents

# Introduction to the Selwyn School Curriculum Guide

Selwyn is an independent, non-sectarian, college-preparatory day school serving kindergarten through grade 12 students. A member of the National Association of Independent Schools, Selwyn provides the most thoroughly individualized, comprehensive and developmentally appropriate array of student-focused experiences in Denton County. Our students grow into independent thinkers and creative problem solvers who are highly resilient and emotionally intelligent leaders prepared for effective citizenship in a global society.

At Selwyn School, our mission is to cultivate global citizens who embrace complex challenges with empathic and innovative thinking that advances the human condition. Selwyn prepares students for success at the collegiate level as well as to be contributors on a global stage.

## Non-Discriminatory Clause

Selwyn School admits students of any race, color, national or ethnic origin to all the rights, privileges, programs and activities generally accorded or made available to students at the school. It does not discriminate on the basis of race, color, national or ethnic origin in administration of its educational policies, admissions policies, scholarship and loan programs, athletic or other school-administered programs.

## Divisions

### *Lower and Upper Elementary Education: The Elementary Division (K-6)*

Our kindergarten and elementary education is designed to cultivate emotional intelligence, so students can develop the personal and social competency necessary to face successes, challenges and disappointments with courage and resiliency.

### *Kindergarten - Grade 2*

Kindergarten through second grade students learn in a multiage environment in which the youngest students are grouped into “learning pods.” This approach provides children with the opportunity to lead as well as follow. The learning pod approach allows for cognitive, social, and emotional learning. The student’s natural curiosity is nurtured and their passion to know “why” encouraged.

K-2 students begin the day with individualized morning work activities. The students then move into a morning meeting followed by a shared reading lesson addressing a specific skill, topic, or theme. Then, they break into learning stations for guided reading; including technology, vocabulary, spelling, sequencing, grammar, listening, reading strategies, etc. This time is followed by a math lesson, using a combination of the math program, hands-on learning stations, and technology. In the afternoons, students participate in writing workshops including handwriting, journal writing, research, story writing, narrative, and non- fiction. Science and social studies will follow, with a cross-curricular approach comprised of

reading, math, and writing. Their last activity for the day is the learning lab where students can work with blocks, puzzles, building, and games.

### *Grade 3*

Students in the third grade are given the opportunity to assume more individual responsibility for their learning while remaining in a self-contained classroom. Third grade serves as the bridge to the departmentalized upper elementary.

### *Grades 4-6*

Upper elementary provides opportunities for students to practice the skills of self-reliance and independence in a nurturing elementary environment. The course work is divided among three core instructors teaching ELA, math, science and social studies. Students in grade six have the opportunity to join middle school for electives and extracurricular programs in order to prepare them for middle school. All elementary students participate in drama, music, art, PE, Spanish, and library time.

### *Middle School Education: The Academy (7-8)*

Our middle school education is designed to empower students to construct their own understanding and knowledge of the world through individualized learning experiences. Students are encouraged to reflect on those experiences in a deeply caring environment where they are challenged, supported, and held accountable.

During these two years, students experience an interdisciplinary, project-based learning environment. Because middle school is a time of tremendous change physically, emotionally, and academically, we focus on the process of learning as much as the content that is learned.

Middle school students experience the following:

- Outdoor education
- Environmental science
- Humanities classes that integrate history and literature
- Creative writing and publishing
- Integrated math and science courses
- Computer literacy as an introduction to technology

All middle school students will also take art, drama, music, and Spanish.
Middle School students will be:

- Active participants in their own learning
- Critical thinkers and knowledge creators
- Capable and motivated decision-makers
- Responsible leaders and mentors

• Compassionate and respectful members of the Selwyn community

### *High School Education (9-12)*

Our high school education is academically challenging and student-driven so that the unique talents and interests of the students can emerge and a path toward realizing their potential is illuminated. In these four years, students have the opportunity to expand their passions and deepen their knowledge of the subjects they have been introduced to in the earlier years. In addition to the core high school curriculum, high school students also have the opportunity to take highly challenging classes such as "The Science of Vector Born Diseases."

All high school students will also take art, drama, music, and Spanish.

A Selwyn graduate is proficient in the following skills critical to being a successful contributor in the 21st century:

- Collaboration
- Communication across disciplines and cultures
- Critical thinking
- Global citizenship
- Technological literacy
- Public speaking
- Curiosity and initiative
- Resilient and emotionally intelligent leadership

## College Admissions Requirements

Selwyn ensures that our graduation requirements satisfy those of the universities and colleges to which our students apply. Faculty advisors guide the students through the college admissions process and ensure that all requirements are met and that students are able to apply to their institution of choice.

## Selwyn Graduation Requirements

Students must complete a minimum of 26 credits during grades 9-12 in order to meet the graduation requirements. A course taken for one semester is 0.5 credit. A course taken for one year is 1.0 credit. All students must enroll in a minimum of five courses each semester; however, most students take seven courses per semester. All students are encouraged to participate in clubs and other extracurricular activities to develop as well-rounded individuals and to strengthen college applications.

Below is a description of the credits required in each discipline, including the core courses required for college admissions, and detailed course descriptions.

| | |
|---|---|
| Social Studies | 4 credits |
| Science | 4.5 credits (0.5 is Health taken in 9th grade) |

| | |
|---|---|
| Mathematics | 4.5 credits (0.5 is Technology taken in 9 grade) |
| World Language | 3 credits |
| English | 4 credits |
| Fine Arts | 2 credits |
| Electives | 2 credits (0.5 is Speech) |
| Physical Education | 2 credits |

## Typical Freshman Year

Human Geography
Biology
Health (Semester)/Technology (Semester)
Geometry
Spanish 1
English 1
PE or Fine Arts

## Typical Sophomore Year

World History
Chemistry
Algebra II
Spanish II
English II
PE
Fine Arts

## Typical Junior Year

US History
Physics
Pre-Calculus
Spanish III
English III
Electives 2-4 (Dependent on whether the elective is a 0.5 or 1 credit class)

## Typical Senior Year

Government (Semester)/Economics (Semester)
Science Elective

Mathematics Elective
English IV
Electives 3-6 (Dependent on whether the elective is a 0.5 or 1 credit class)

## Course Catalog

### Social Studies

At the Upper School level, Selwyn's Social Studies courses will prepare students to become active citizens of their community by equipping them with the skills and tools necessary to understand the world in which they live. Special focus is placed on providing historical and geographical context to current issues. Students will master expressing their thoughts through written forms and learn how to conduct effective, independent research necessary at the college level.

### *Social Studies Graduation Requirements: 4 credits*

Required Classes: Geography (9th), World History (10th), US History (11th), Government (12th), and Economics (12th)

### *Human Geography (9th grade)*

This course introduces students to the systematic study of patterns and processes that have shaped human understanding, use, and alteration of Earth's surface. Students employ spatial concepts and landscape analysis to examine human social organization and its environmental consequences. They also learn about the methods and tools geographers use in their science and practice.

### *World History (10th grade)*

This course highlights the nature of changes in global frameworks and their causes and consequences as well as comparisons among major societies. It focuses on the understanding of world history from approximately 8000 BCE to the present. It emphasizes relevant factual knowledge, leading interpretive issues, and skills in analyzing types of historical evidence. Students are taught historical thinking skills such as contextualization, synthesis, and analysis. Students explore throughout the course making connections among historical developments in different times and places encompassing the five major geographical regions of the globe: Africa, the Americas, Asia, Europe, and Oceania.

### *U.S. History/AP U.S History (11th grade)*

The U.S. History course focuses on the development of historical thinking skills (chronological reasoning, comparing and contextualizing, crafting historical arguments using historical evidence, and interpreting and synthesizing historical narrative) and the development of students' abilities to think conceptually about U.S. history from approximately 1491 to the present. Seven themes of equal importance – American and National Identity; Migration and Settlement; Politics and Power; Work, Exchange, and Technology; America in the World; Geography and the Environment; and Culture and

Society – provide areas of historical inquiry for investigation throughout the course. These require students to reason historically about continuity and change over time and make comparisons among various historical developments in different times and places.

### *U.S. Government/AP US Government and Politics (12th grade, 0.5 credit)*

This course is a one-semester course that introduces students to key political ideas, institutions, policies, interactions, roles, and behaviors that characterize the political culture of the United States. The course examines politically significant concepts and themes, through which students learn to apply disciplinary reasoning, assess causes and consequences of political events, and interpret data to develop evidence-based arguments.

### *U.S. Economics (12th grade, 0.5 credit)*

This is a one-semester course that helps students understand events and conditions in the economy in an attempt to make the student a better decision maker. Students will take eld trips to area businesses to learn the complexities of operating a business and be able to compare different business types. Students will be offered the opportunity to create a business plan for their own company and have it evaluated.

## Social Studies Electives

The following is a list of Social Studies electives that students may take during their 4 years at Selwyn Upper School.

### *World Religions (0.5 credits)*

This course is an introduction to the world's major religious traditions and the ways in which religions have developed. The class draws on diverse materials from the world's religious traditions and multiple disciplinary approaches.

### *Introduction to Philosophy (0.5 credits)*

This class provides an introduction to philosophical reflection and an examination of some central questions to human existence as discussed in Western philosophy. Topics include metaphysics, ethics, epistemology, and a just society.

### *United States Election Process (0.5 credits)*

This class provides students with an in-depth, multi-disciplinary examination of the election process found within the United States. Special focus is placed on providing students with opportunities to get involved in the election process in the classroom.

### *Comparative Government and Politics (0.5 credits)*

This course introduces students to a diversity of political life outside the United States. Students examine how different governments solve similar problems by comparing the effectiveness of approaches to global issues.

### *Psychology (0.5 credits)*

This course introduces students to the scientific study of the human mind and its functions especially those affecting behavior in a given situations. Psychology will focus on the development of the brain through various stages of development. Psychological research will be explored and how the results can be interpreted to affect reactions within society.

### *Sociology (0.5 credits)*

This course focusing on group organization. Sociology is intended to aid the student in developing a better understanding of family relationships, society, and social problems.

### *Social Studies Research Project (0.5 credits)*

This course is designed to provide individual students with the opportunity to develop their research skills. Significant responsibility lies with the student to work independently and to develop a proposal study that must be approved by a faculty mentor. The faculty mentor will provide counsel throughout the study and evaluate the student's incremental progress. A committee of faculty advisors will be formed to evaluate the student's final project.

## Upper School Science

At the Upper School level, Selwyn's Science courses will offer the students a more in-depth knowledge of Biology, Physics and Chemistry. Students will also discover the interconnection of the basic 3 courses with not only each other but also within all science courses.
Students will have developed problem solving skills through designing and conducting experiments. They will integrate math and language skills into each class while applying scientific thinking to real world scenarios.

### *Science Graduation Requirements: 4.5 credits*

Required classes: Biology (9th), Health (9th grade, 0.5 credit) Chemistry (10th), Physics (11th or 12th)

### *Biology/Honors Biology (9th grade, 1 credit)*

### *Biology ($9^{th}$ Grade, 1 credit)*

This course is designed as an introductory level course focusing on the major concepts in biology and their application in our society. The content emphasized to illustrate the major concepts and skills of this course will be related to the study of life and human experiences. This course is designed to provide students with a strong foundation and conceptual understanding of biology, which will prepare students to take a variety of other science courses. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Honors Biology (9th Grade, 1 credit)*

This course is for the academically gifted or college-bound student. This advanced course takes the concepts of Biology and expands them to include an in-depth study of cellular biology, taxonomy, microbiology, and genetics in order to prepare students for future. Honors studies, as well as, prepare students to take a full range of other biology courses. A must for those who aspire to work in the medical profession. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *General Chemistry/Honors Chemistry (10th grade, 1 credit, Prerequisite(s): Algebra 1)*

## *Chemistry*

This course is designed to introduce students to chemistry concepts and investigations. The scientific inquiry method, measurement and data gathering techniques, the atom, naming and using commonly-known chemicals, identifying chemicals, balancing equations, and laboratory explorations of new products will be investigated. This course is designed to provide students with a strong foundation and conceptual understanding of chemistry, which will prepare students to take a variety of other Chemistry and Biology courses. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Honors Chemistry*

This is an advanced level course, taking the concepts of Chemistry and expanding them to include dimensional analysis and a greater emphasis on data collection and laboratory investigations. A more in-depth look at chemical concepts will prepare students to take future Honors studies in chemistry, as well as, a full range of other chemistry and Biology courses. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Physics/Honors Physics (11th or 12th grade, 1 credit, Prerequisite(s): Algebra 1 and Geometry (concurrent is acceptable for regular Physics))*

### *Physics*

This is an introductory course that looks at the principles of motion from a Newtonian perspective, along with optics and electricity. Physics will provide students with a better understanding of the way our world works. This course is designed to provide students with a strong foundation and conceptual understanding of physics, which will prepare students to lake a variety of other physics courses. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

### *Honors Physics*

This is an advanced level course taking the concepts of Physics and expanding them to include dimensional analysis and a greater emphasis on data collection and laboratory investigations. A more in-depth look at physics concepts will prepare students to take future Honors studies in Physics. This class requires a stronger level of math skills. Algebra 1 and some geometry concepts are a prerequisite. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated hands-on labs, essays, workplace documents, and science projects using the scientific method.

## Science Electives

The following is a list of Science electives that students may take during their 4 years at Selwyn Upper School.

### *Earth Science (9th-12th grade, Credits: 0.5, Prerequisite(s): none)*

This semester long course explores the foundations of Earth Science in the following related topics / fields: Earth's place in the universe, dynamic Earth processes, Energy in the Earth system, bio-chemical cycles, structure and composition of the atmosphere, and geology. Students will have the opportunity for self-assessment as well as for teacher guidance and assessment throughout the course. Coursework includes the preparation and finalization of semester Problem Solving Projects, which focus on research, organization, and drafting strategies. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

### *Space Science (9th-12th grade, Credits:0.5, Prerequisite(s): Physical Science (Newtonian Physics), Algebra 1)*

This semester long course introduces students to the wonders of the universe. Students begin an introduction to modern astronomy with insight into history and astrophysics. Star types, planets, comets, meteors, and black holes are among the topics investigated in this course. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies,

several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Environmental Studies (10th-12th grade, Credits: 1, Prerequisite(s): Biology 1, Algebra 1)*

### *Environmental*

This is a field-oriented interdisciplinary science course which emphasizes data collecting techniques in outdoor lab settings. In addition to the field based and laboratory activities, this course will involve numerous group and independent ecological projects. Studies will include all types of environments, their inhabitants, and the processes that allow them to function. The causes and the possible solutions to the earth's pollution and resource problems will also be investigated. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

### *Honors Environmental*

This is an advanced level course, building on the concepts of Environmental science, which covers types of environments, their inhabitants, and the processes that allow them to function. The causes and the possible solutions to the earth's pollution and resource problems. Students at the honors level will be expected to complete independent research projects.

## *Comparative Anatomy (10th-12th grade, Credits: 0.5, Prerequisite(s): Biology 1)*

Comparative Anatomy and Physiology of Vertebrates is an exciting course that will greatly increase students' understanding of the structure, function, and evolution of the vertebrate body plan. We will be looking at major groups of vertebrates – fish, reptiles, birds, and tetrapods – and investigating their functional morphologies. This will be a challenging course, as a majority of the material presented will be new to the majority of students. It is ideal preparation for pre-veterinary, biology, and even pre-med majors, but has also been enjoyed by persons who were simply interested in the topic.

The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Human Anatomy and Physiology I & II (11th-12th grade, Credits: 1, Prerequisite(s): Honors Biology 1 and Honors Chemistry)*

Anatomy and Physiology of Human (A&P) Systems focuses on the study of the structure of function of the human body, its individual systems, and the integration of the body systems into an efficiently functioning organism. It is taught with the rigor of a college level A&P class with the exception that instead of each section being a semester long, it is extended to a year-long course. This will allow students who plan to major in pre-med (dental, veterinary, nursing etc.) the opportunity to learn the material at a more relaxed pace than they will experience in college. This is a great way to have a foundation in a class that carries the most weight in the determination of applicants to nursing, medical, veterinary programs at the college level.

### *A&P 1*

This course is a study of cellular functions, general biochemistry, cellular structure of bones and its formation, bone names, cellular structure of muscle and muscle movement, human muscle identification, cellular structure and function of cardiovascular system.

### *A&P II*

This course studies the cellular structure and gross anatomical function of: immune, respiratory, and digestive systems along with transportation, nutrition, excretion, and reproduction. Dissection is a major component of this course and participation in dissection labs is required.

## *Chemical Impact on History (10th-12th grade, Credits: 0.5, Prerequisite(s): General Chemistry (can be concurrent)*

This semester long course uses the book *Napoleon's Buttons* by Jay Burreson and Penny Le Couteur as a framework for exploration of the "17 molecules that greatly influenced the world." *Napoleon's Buttons* is described as *"*the fascinating account of seventeen groups of molecules that have greatly influenced the course of history. These molecules provided the impetus for early exploration, and made possible the voyages of discovery that ensued… A change as small as the position of an atom can lead to enormous alterations in the properties of a substance-which, in turn, can result in great historical shifts."

In addition to reading the book, students will learn fundamental chemistry concepts, connect historical and scientific knowledge, and examine the effect of certain chemical compounds on the body. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Environmental Research (11th- 12th grade, Credits: 0.5, Prerequisite(s): Biology, General Chemistry, Environmental, & Algebra I)*

This semester long course is designed as a strong laboratory and field investigation course. The goal of the course is to allow students to learn about the environment through firsthand observation. Experiences both in the laboratory and in the field provide students with important opportunities to test concepts and principles that were introduced in previous science classes.

This course allows students to explore specific problems with a depth not easily achieved otherwise, and gain an awareness of the importance of confounding variables that exist in the "real world." In these experiences, students can employ alternative learning styles to reinforce fundamental concepts and principles. Students are expected to complete a research project for each semester in the class. Students in the year-long course will perform original research, which will be presented in a public forum at the end of the year and assessed by a faculty panel.

The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

## *Cellular Biology and Genetics (11th-12th grade, Credits: 1, Prerequisite(s): Biology and Chemistry)*

### *Semester 1 Cellular Biology*

This course delves deeper into the inner workings of a cell. Students study the organelles and their specific contributions to a living system. From replication to membrane proteins, students gain greater understanding of how the body responds to different events and medications.

### *Semester 2 Genetics*

This course covers the different way that our genes affect our lives. Students consider genetic mutations of common (and not so common) genetic disorders. We will discover how stressful events (illness, poor nutrition, and common 'stress') affect humans on a genetic level.

The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

*These classes can be taken separately or together. Either class is useful for those interested in the topic, and those planning to pursue pre-med degrees in college.*

### *Neurology (11th-12th grade, Credits: 0.5, Prerequisite(s): Biology and Chemistry)*

This semester long course covers topics in biopsychology and cellular/molecular biology within the field of neuroscience, as it relates to normal as well as abnormal/deviant behavior. This course is designed for students who have shown interest and ability in neural sciences. This semester will focus on the following four topics:

1) Review of the nervous system (anatomy, the neuron, neural transmission, neurotransmitters and overview of tools to study neuroscience)
2) Mental illness (such as depression, anxiety, bipolar disorder and schizophrenia)
3) Neurodegenerative diseases (such as Alzheimer's disease, Parkinson's disease)
4) Disorders of development and childhood (such as autism, autistic spectrum disorders and ADHD)

### *Neuropsychopharmacology (Grade: 11-12, Credits: 0.5, Prerequisite(s): Biology and Chemistry)*

This semester long course is the trifecta of science classes, which includes the neurology, psychology, and pharmacology of common legal and illegal chemical substances. These chemicals include: caffeine, nicotine, ethyl alcohol, cocaine/crack, THC, LSD, etc.

This course is designed to educate students on the physiological effects of these drugs on the human body, along with the lasting impact on the body and mind. The intention of this course is that, in addition to increasing their store of scientific knowledge, students will be equipped to make informed decisions and understand how drugs can affect the body.

### *Science of Vector Born Diseases (11th-12th grade, Credits: 0.5, Prerequisite(s): Biology and Chemistry)*

This semester long course covers entomology (the study of insects) and their role in the transfer of pathogens from animal to animal, along with the effects on communities. This includes such topics as malaria, Zika, Lyme's disease, etc. In this course, students are introduced to current research and risk analysis related to travel in today's society.

### *Biology Research (11th-12th grade, Credits: 0.5, Prerequisite(s): Biology and Chemistry)*

This semester long course allows students to explore specific problems with a depth not easily achieved otherwise and gain an awareness of the importance of confounding variables that exist in the "real world." In these experiences students can employ alternative learning styles to reinforce fundamental concepts and principles. Students are expected to complete a research project for each semester in the class. Students taking the year-long course will perform original research, which will be presented in a public

forum at the end of the year and assessed by a faculty panel. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

This course is highly recommended for students interested in pursuing a career in the medical field (Future Pre-Med and Pre-Vet majors).

## *Chemistry Research (11th-12th grade, Credits: 0.5, Prerequisite(s): General Chemistry, Geometry (concurrent)(Algebra 2 highly recommended))*

This semester long course is designed to allow students explore specific problems with a depth not easily achieved in general chemistry class, and gain an awareness of variables that exist in the "real world." In these experiences students can employ alternative learning styles to reinforce fundamental concepts and principles. Students will be expected to complete a research project for each semester in the class. Students in the year-long course will perform original research that will be presented in a public forum at the end of the year and assessed by a faculty panel. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method. This course is highly recommended for students interested in pursuing a career in the medical field. (Future Pre-Med and Pre-Vet majors)

## *Physics Research (11th-12th grade, Credits: 0.5, Prerequisite(s): Algebra II (Recommended concurrent enrollment in pre-calculus))*

This semester long course will allow students to explore specific problems with a depth not easily achieved otherwise, and gain an awareness of the importance of confounding variables that exist in the "real world." In these experiences students can employ alternative learning styles to reinforce fundamental concepts and principles. Students will be expected to complete a research project for each semester in the class. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test-taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

*Students in the year-long course will perform original research that will be presented in a public forum at the end of the year and assessed by a faculty panel.*

## *Aero-Astro (11th-12th grade, Credits: 1, Prerequisite(s): Physics, Algebra 1 (Can be concurrent))*

This is an aeronautics class based upon MIT's AeroAstro 1600 class.

This class will cover: How rockets function, orbital mechanics, life support systems, the effects of space travel on the human body, robotics and current trends, and plans for space exploration.

Students are expected to carry out orbital calculations and make predictions on flight. The course covers scientific terminology, historical and cultural advances in science, vocabulary building, test taking strategies, several simulated labs, hands-on labs, essays, workplace documents, and science projects using the scientific method.

*This is a good course for those interested in space, robotics, or the general effects of different environments on the human body.*

### *Health (0.5 credits)*

This course guides students through the many dimensions of wellness. Students will: explore concepts related to health promotion and disease prevention; be able to identify, access, and utilize valid health information; demonstrate the ability to practice health-enhancing behaviors and reduce health-related risks; and analyze the influence of culture, media, technology, and other factors on health.

## Mathematics

At the Upper School level, Selwyn's Mathematics courses will prepare students for successful advancement into college level math. The classes will engage the students in higher level thinking skills by using the basic concepts of Algebra, Calculus, and Statistics in practical applications such as data gathering and data analysis. The skills learned through the math program will prepare the students to tackle complex challenges in a real world setting.

### *Mathematics Graduation Requirements 4.5 credits*

Required classes: Algebra I (8th grade, Geometry (9th grade), Algebra II (10th grade), Pre-Calculus (11th grade), Technology (9th grade)

### *Pre-Algebra (1 credit)*

Students will study linear, quadratic, and exponential functions and their related transformations, equations, and associated solutions. Students will also study polynomials of degree one and two, radical expressions, and laws of exponents.

### *Algebra I (1 credit)*

Topics studied are same as Pre-Algebra but at a more in depth level and faster pace that promotes critical thinking and skill processing necessary to be successful in Advanced Placement classes.

### *Technology 101 (9th grade, 0.5 credit)*

This course is an introduction to Selwyn technology. Topics include Word processing, desktop publishing, presentation software, spreadsheets, and building simple e-portfolios. Students delve into creative computing (robotics and programming), explore educational technology like G

Suite, email, and research databases and become well-versed in tech appropriate standards of behavior concerning use of technology in a thorough digital citizen unit.

### *Geometry (1 credit) – Prerequisite Algebra I*

Students will learn the concepts of coordinate and transformational geometry, logical argument of proofs and constructions, congruence, similarity, and trigonometry pertaining to right triangles, two and three dimensional figures, circles and probability.

### *Algebra II (1 credit) – Prerequisite Algebra I and Geometry*

Students will expand their knowledge of quadratic and exponential functions and systems of equations. This class extends the topics of Algebra I with the study of logarithmic, square root, cubic, absolute value, and rational functions and their related equations.

### *Pre-Calculus (1 credit) – Prerequisite Algebra II*

Students will broaden their studies of mathematical skills and knowledge of algebra and trigonometry and extend their ability to recognize and apply concepts and procedures at higher levels.

## Mathematics Electives

The following is a list of Mathematics electives that students may take during their 4 years at Selwyn Upper School.

### *Calculus AB – Advanced Placement (1 credit), Prerequisite Pre-Calculus*

This course is an extension of Pre-Calculus and provides an introduction of differential and integral calculus. Students who successfully complete the course and exam may receive college credit.

### *AP Statistics (1 credit) – Prerequisite Algebra II*

Students are introduced to the major concepts and tools for collecting, analyzing and drawing conclusions from data. Statistical concepts studied are exploring data, sampling and experimentation, anticipating patterns, and statistical inference. Students who successfully complete the course and exam may receive college credit for a one-semester introductory college statistics course.

### *Foundations for College Mathematics (1 credit) – Prerequisite Algebra II*

Students further study functions, their inverses, transformations and their compositions. Statistical concepts of data, regression models and probability are introduced in this course.

Sequences and series and matrices will also be studied. This course is designed to be a bridge between and Algebra II and College Algebra.

### *PSAT/SAT Prep (0.5 credit)*

This course is designed to help students develop their verbal and quantitative skills in preparation for the PSAT and SAT. Test taking skills and specific test items are emphasized. An ACT component will also be included.

## World Languages

### *World Languages Graduation Requirements: 3 credits*

Required classes: Three levels of one language.

At the Upper School level, the World Language Program is designed to help students discover, explore and communicate with people from Spanish–speaking countries in a meaningful way. The courses prepare students to interact with and learn about other cultures. Learning a language opens students' eyes to a whole new world of ideas and insights, and as they learn about other cultures, students gain a better perspective on their own culture. Formal language lessons will help the students understand aspects of diction, grammar, and spelling, while cultural lessons give students a better understanding of contextual cues and "how and why to say" certain words. Spanish is a great language to learn; it is one of the most widely spoken languages and fluency (or even passing familiarity) with Spanish can open up new career opportunities and avenues for communication in the 21st Century world.

### *Spanish I*

This course introduces the student to the culture and language of the Spanish–speaking world in eight units, with emphasis on accuracy in pronunciation, oral fluency, vocabulary development, and grammatical knowledge of the language. This course will include oral exercises; practice answering personal questions and a variety of classroom activities emphasizing personal expression. Spanish culture and Hispanic civilizations are taught, including topics such as geography, cities, historical sites, birthday customs, food, cooking, shopping habits, sports, hobbies and entertainment.

### *Spanish II, Prerequisite: Spanish I*

This course is a continuation of Spanish 1 and includes an introduction to the Spanish language with emphasis on speaking, pronunciation, and the fundamentals of Spanish grammar. The course is taught mainly from an oral standpoint. The course provides students with opportunities to respond to and give oral directions and commands and to make routine requests in the classroom and in public places, understand and use appropriate forms of address, courtesy expressions, tell about daily routines and

events, ask and answer simple questions and to be able to participate in brief guided conversations. Aspects of contemporary Spanish culture are introduced through the media, games and adapted readings.

### *Spanish III, Prerequisites: Spanish I, Spanish II*

This course focuses on language acquisition with communicative competence in listening, speaking, reading, writing and viewing, as well as understanding of Hispanic cultures and issues of identity of the heritage speakers of Spanish in the United States. Students also gain an awareness and understanding of Hispanic cultures, including language variation, customs, geography, history and current events. During this course, students gain confidence using Spanish to express their thoughts on social and academic themes, interact with speakers of the language, and understand oral and written presentations.

## Spanish Electives

### *AP Spanish Language and Culture (Spanish IV)*

The AP Spanish Language and Culture course emphasizes communication (understanding and being understood by others) by applying interpersonal, interpretive, and presentational skills in real-life situations. This includes vocabulary usage, language control, communication strategies, and cultural awareness. The AP Spanish Language and Culture course strives not to overemphasize grammatical accuracy at the expense of communication. To best facilitate the study of language and culture, the course is taught almost exclusively in Spanish.

## English

### *English Graduation Requirements: 4 credits*

Required classes: English I, English II, English III, English IV

At the Upper School level, Selwyn's English courses prepare students to write with a strong understanding of the mechanics of grammar, spelling, and punctuation. Upon graduation the students communicate effectively in writing, which is not only specific, concise, and contextually appropriate, but also write as a form of creative expression. Students apply critical thinking and contextual understanding to the study of literature and leave with an understanding of how literature both reflects and modifies cultural trends in society.

### *English I*

In this mechanics-focused course, students begin a more rigorous program of reading and writing at the high school level. This course includes a focus on grammar, spelling, and mechanics of writing, and will derive literary selections from non-American Literature with specific focus on works from multiple time periods, genres, and forms. Students will create a working definition of "canon," which will provide practice with scholarly critical analysis and research skills.

### *English II*

In this course, students are exposed to the high school level study of literature and the discipline of Language Arts through reading, writing, speaking, and listening. Students practice reading and discussing literature, literary research, and creative writing at an introductory level. In this course, students are exposed to the foundational texts of American Literature and create a working definition of American identity. Students will practice reading, writing, speaking, and listening at a level which will prepare them for entry into an AP course.

### *English III*

In this literature-focused course, students practice the analysis of literature, from reading and discussion to independent research. Building on skills acquired in previous courses, students begin to create a synthesis of their reading in a scholarly manner as appropriate in a third-year high school level class. Students write a variety of essays and resumes in preparation for college applications.

### *English IV*

In this critical analysis-focused course, students learn about major literary works within the framework of historical and social/cultural context. Students practice situating works within context and are introduced to the concepts of various schools of philosophy and literary criticism.

## English Electives

The following is a list of English electives that students can take during their four years at Selwyn Upper School:

### *AP English Language and Composition (11th grade)*

In this AP-level course, students will conduct a rigorous survey of rhetorical and written persuasive techniques. The focus of this course is on analysis of classic literary sources from a critical standpoint. Students will create a working definition of "effective writing" which will provide a framework for and their work throughout the course.

### *AP English Literature and Composition (12th grade)*

In this AP-level course, students conduct a rigorous survey of classic literature, with particular emphasis on critical analysis skills and understanding the social/historical context of canon literature. Students will create a working definition of "canon" which will provide a framework for their work throughout the year.

### *Creative Writing (0.5 credit)*

In this workshop-style class, students explore the forms of creative expression available through the discipline of writing. This exploration occurs through the practice of various forms of writing, including (but not limited to): poetry, short fiction, creative nonfiction, scriptwriting, and journalism.

### *Genre Fiction (0.5 credit)*

In this course, students explore non-literary genres of fiction, including science fiction, horror, fantasy, and mystery. Students read a number of texts from each of these genres, critically analyze standard tropes and conventions, and practice writing in these genres and styles.

### *Speech (0.5 credit)*

This course introduces students to the fundamentals of speech, with a particular focus on public speaking skills and oration. Students explore the practice of various types of speech and practice the elements of effective public communication

### *Speech and Debate (0.5 credit)*

This course introduces students to the fundamentals of speech and debate, with a focus on performances and interscholastic competition. Students explore different speech and debate formats, then select and practice the events they choose to compete in.

### *English Independent Study (0.5 credit)*

This course is a literature-based topical course. The topic will be predetermined through conferencing with the students and may change each semester. Students will read novels for class discussions from which they will chose an individual topic for research. With guidance from the instructor, the course will culminate with a formal presentation of the research to faculty and/or classmates.

## Fine Arts

At the Upper School level, Selwyn's Fine Arts courses offer a multicultural view of the arts through history and various genres.  Students will have multiple opportunities to perform and display their art form.

### *Fine Arts Requirements: 2 credits*

### *Photography: (9th-12th grade, 0.5 credits, Prerequisite(s): none)*

Black and white (darkroom) photography and digital editing via Adobe Photoshop.

### *Film and Audio Editing: (This can be split into 2 separate classes) (10th-12th grade, 0.5 credits, Prerequisite(s): Photography preferred))*

Basics of filmmaking, pre-production planning, filming, and post-production editing along with sound design.

### *Studio Arts (1 credit)*

This course will be a student interest-directed survey course in which the students will explore art involving different techniques, processes, materials, and studies from cultures around the world. Under the teacher's guidance the students will experiment with drawing and painting, sculpture, printmaking and screenprinting, fabric design, and metal and woodworking.

## Performing Arts

### *Instrumental Music (1 credit)*

In this course students will learn to read music notation and music history, understand fundamental music theory, perform various skills and techniques on an instrument.

### *Theatre Arts (1 credit)*

In this course students will learn the elements of theatre, acting techniques, and theatre appreciation. Students will also explore improvisation, character analysis and performance, scene and play analysis, voice, movement, audition skills, and theatre history.

## Electives

Electives Graduation Requirements: 2 credits

Required Class: Speech (0.5 credits)

Students choose electives to deepen their knowledge of previous subjects, personal interests and passions and to meet the graduation requirements of 26 credits.

### *Physical Education*

P.E. Graduation Requirements: 2 credits

## Technology

### *Technology 101 (0.5 credit)*

This course is an introduction to Selwyn technology. Topics include Word processing, desktop publishing, presentation software, spreadsheets, and building simple e-portfolios. Students will delve into creative computing (robotics and programming), explore educational technology like G Suite, email, and research

databases, and become well-versed in the appropriate standards of behavior concerning use of technology in a thorough digital citizenship unit.

### *Technology and Design (0.5 credit)*

This course is created to bridge creativity and computer science. Topics covered include 2D design (photo manipulation and website design/HTML) and 3D design (Autocad programs, 3D printing, e-Textiles). Students will be encouraged to use the design process to solve problems creatively using all types of materials and technology.

### *Computer Science (0.5-1 credit)*

This is a traditional computer science course that teaches several programming languages, how to fix computer hardware/build a computer, and about issues dealing with information technology (installing software, troubleshooting issues).

## Outdoor Education (K-12)

Outdoor education will consist of coordination between all teachers, across all grades and subjects, on project-based learning activities. This program will help complement skills and knowledge taught in the traditional classroom. In this sense, outdoor education should be understood as an extension of the classroom, allowing students to combine multiple skills, technologies, and lessons taught in the regular classroom with project learning activities. Activities are designed so that older students can help lead lessons, allowing for peer teaching and development of leadership and community. Below are some examples of project-based activities that Selwyn students participate in.

### *Selwyn Garden*

This is a school-wide garden offering students the opportunity to learn about gardening, seasons, microbes, vermiculture, what can grow locally, cooking with local foods, and more. The garden is organized soeach grade can take ownership and responsibility of their own plot, allowing classes to take charge and decide what to plant and more (with one central person in charge). For the lower school, this weekly outdoor class consists of tending to their section and a lesson relating the garden back to their in-class learning. At the middle school level, students will work on composting Selwyn's food waste, thereby learning how to reduce and reuse their food waste from lunch, the importance of temperature in composting, and how to create a more sustainable ecosystem. At the upper school level, the Varsity Cooking Club and health classes will learn about growing and using locally sourced foods. Through these garden lessons, students of all ages will have the opportunity to learn about pH levels, water qualities, and more.

### *Stream Ecology and Tree Canopy*

Utilizing a combination of field experience, classroom lessons, and computer programs, students will work on collecting data and field observations. After inputting the data into different programs, students will analyze the health of the local streams, and map and calculate the existing tree canopy at Selwyn's location.

### *Renewable Energy*

Students will learn about different forms of renewable energy, how they produce energy, the pros and cons of each, where certain types of energy are found, and the social issues surrounding each. Lesson plans are designed to allow students the opportunity to work with different sources of renewable energy, such as wind, sun, and water.

### *Nature Hikes*

These nature hikes will be used to introduce students to their local regions. Students will have the opportunity to explore the Elm Fork trail system, located directly behind campus. The length and duration of these hikes progressively increase as students age. Nature hikes are used as an opportunity for students to simply relate to and enjoy nature, and to tie in various class topics from their in-class learning, ranging from ecology to art.

### *Kayaking*

Starting at the middle school, students will learn the basics of kayaking and water safety. A wide variety of activities can be designed around and combined with kayaking, allowing Selwyn to take advantage of its proximity to Lake Lewisville.

### *Recycling*

Along with composting and renewable energy, students will have the opportunity to tour the city of Denton's recycling center, landfill, and wastewater treatment center. This will give them an up close and personal look at how we can live more sustainably, work with the environment, and how waste is managed at a city-wide level.

### *Shelter Building*

The shelter building program is several weeks long and for all grades. Each grade level will focus on building a specific type of shelter. Students will learn about the culture behind each type of shelter, the environment it is designed for, and the type of people that live within. Along with social studies, classes such as physics, biology, and art will use this project as an extension of their classroom.

### *BioBlitz*

The BioBlitz program is designed to teach kids about their local biodiversity, while utilizing complex, cloud-based technologies. Students will observe their local schoolyard and conduct a biodiversity survey. Students can observe all living things near their school, including plants, animals, and even microbial life. Students then record their observations and the geographical location of their findings into iNaturalist, an app contributing to a global biodiversity count.