

COURSE  
[ SELECTION ]  
HANDBOOK

For students entering Grade 11 & 12



**GEMS**  
World Academy  
(Singapore)



# [INTRODUCTION]





**GEMS World Academy (Singapore) offers an academically demanding and balanced programme of education that helps prepare you for success at university and life beyond.**

We offer the full set of academic and career-related IB options, taught by highly experienced teachers who want to encourage and inspire. This booklet outlines the variety of pathways offered at GEMS (Singapore) and provides you with a wealth of information to help you to make a fully informed positive choice.

It is vital that students consider their course options carefully, as they are committing to studying a subject for two years. In addition, the subject choices that you make for the last two years of school could have a significant impact on the course options available to you at university. Please research the university admission requirements in your home country, or any institution you hope to attend in the future. The school will provide support and advice through the process of researching, shortlisting, applying to and ultimately selecting the university they will attend.

We strive to support you on your journey to finding the university and courses that fit with your academic, personal and career aspirations.

Good luck!

A handwritten signature in blue ink, appearing to read 'S McAuley'.

**Sean McAuley**

Secondary Years Deputy Principal  
& University Guidance Counsellor

A handwritten signature in red ink, appearing to read 'M. Fletcher'.

**Michael Fletcher**

DP/CP Curriculum Coordinator

# Our [ALUMNI]

Meet some of our alumni. After studying at GEMS (Singapore), our graduates have continued their studies in the world's most prestigious universities

George Ponodath



**Currently studying:**  
UCL (Medicine)

**Subjects studied:**

- English A
- Literature SL
- French B SL
- Psychology HL
- Chemistry HL
- Biology HL
- Math SL

Gabrielle Von Sengbusch



**Currently studying:** The Paris Institute of Political Studies (Politics & Government)

**Subjects studied:**

- English A
- Language & Literature HL
- Chinese B SL
- History HL
- Psychology HL
- Biology SL
- Math SL

Anh Quynh Le



**Currently studying:** King's College of London (Law)

**Subjects studied:**

- English A
- Literature HL
- Spanish Ab Initio SL
- Business Management HL
- Psychology HL
- Environmental Systems & Societies SL
- Math SL

Sabrina Sui Heng Ayles



**Currently studying:** Sheffield University (Architecture)

**Subjects studied:**

- English A
- Language & Literature HL
- Spanish Ab Initio SL
- History HL
- Physics SL
- Math SL
- Visual Art HL

Seara Grundhoefer



**Currently studying:** Economics & Political Science (University of California, Berkeley)

**Subjects studied:**

- English A
- Literature HL
- French Ab Initio
- Economics HL
- History SL
- Biology HL
- Maths SL
- TOK

Adam Barcak

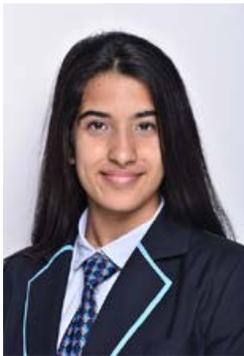


**Currently studying:** Philosophy, Politics, and Economics (King's college London)

**Subjects studied:**

- English A
- Literature HL
- Spanish Ab Initio
- Economics HL
- History HL
- Biology SL
- Maths Std
- TOK

Rebecca Samuel



**Currently studying:**  
Major: Psychology, Minor:  
Behavioral Science & English  
Literature (McGill University)

**Subjects studied:**

- English A
- Literature HL
- French B HL
- History SL
- Psychology HL
- Biology SL
- Maths Std
- TOK

Anirudh Chhatwal



**Currently studying:**  
Accounting & Law  
(University of Adelaide)

**Subjects studied:**

- English A
- Literature SL
- Spanish Ab Initio
- Business Management HL
- Economics SL
- Environmental Systems & Societies
- Maths Std
- TOK

Chiara Cerciello



**Currently studying:**  
Architectural Design  
(Politecnico Di Milano)

**Subjects studied:**

- Italian A
- Literature HL
- Spanish B SL
- Environmental Systems & Societies
- Visual Arts HL
- Physics HL
- Maths SL
- TOK

Tracy Cui



**Currently studying:**  
Fashion Design (Parsons School of  
Design, New York)

**Subjects studied:**

- Chinese A
- Literature SL
- English B SL
- Economics SL
- Physics HL
- Maths HL
- Visual Arts HL
- TOK

Arnav Divaker



**Currently studying:**  
Mechanical Engineering  
(Virginia Tech)

**Subjects studied:**

- English A
- Literature HL
- Spanish Ab Initio
- Economics HL
- Physics HL
- Chemistry SL
- Maths SL
- TOK

Austen Pointer



**Currently studying:**  
Business Administration  
(University of Bath)

**Subjects studied:**

- English A
- Literature HL
- Spanish B SL
- Economics HL
- Psychology HL
- Environmental Systems & Societies
- Maths Std
- TOK

# Graduation [PATHWAYS]

The final two years of High School are an exciting time for students as they prepare for the next stage of their educational journey. We recognise that every student is unique and their aspirations are also different. This is why we offer three graduating pathways:



All GEMS (Singapore) students who successfully complete a selected course of study receive a High School Diploma, which is accredited by the Western Association of Schools and Colleges. In addition to our High School Diploma, GEMS (Singapore) offers the IB Diploma Programme (DP) and the IB Career-related (CP) Programme with advanced academic rigor in many subjects.

Students can choose courses of study that specialise in particular areas of interest and ability or meet the admission requirements of more narrowly focused national education systems.

## GEMS (Singapore) High School Diploma

Students in Grades 11 & 12 who undertake the DP Courses, instead of the full IB Diploma Programme, will graduate with a GEMS (Singapore) High School Diploma that is accredited by the Western Association of Schools and Colleges (WASC). With the GEMS (Singapore) High School Diploma and additional American standardised testing (SAT or ACT admissions tests) students can gain admission to most English-speaking university programs around the world.

While students pursuing the IB Diploma undertake six IB Diploma courses at either Higher Level or Standard Level, the High School

Diploma students have more flexibility in the subject areas and level they wish to pursue. For example, students can take five subjects at Standard Level and one Higher Level subject.

In addition, all High School Diploma students are required to take English A or B to meet our graduation requirements.

### High School Diploma Graduation Criteria

Subject Area	Minimum for a High School Diploma <sup>2</sup>	Recommended for many US Universities
English	4	4
World Language	2	4
Individuals and Society	2	4
Sciences	2	4
Mathematics	2	4
Electives (other courses)	9	6
<b>TOTAL</b>	<b>21</b>	<b>26</b>

### How it Works

- One credit is awarded for every full year course passed in Grades 9 – 12
- In order to gain credit for a subject, students must attend at least 85% of classes
- Achieve a minimum Level 1 for their Semester grade
- Credit is awarded per Semester at a rate of 0.5 credits per subject per Semester
- The maximum transfer credit that may be awarded is equal to 4 credits per Semester

### Additional Graduation Requirements

- Complete the Theory of Knowledge (TOK) or Personal & Professional Skills Course
- Complete an Extended Essay or Reflective Project
- Fulfil the Creativity, Activity, Service (CAS) requirements in Grades 11-12

<sup>1</sup> GEMS (Singapore) High School Diploma is accredited by WASC

# International Baccalaureate Diploma Programme

The IB Diploma Programme (IBDP) is an academically challenging two-year pre-university curriculum and highly regarded qualification, recognised and welcomed by many of the top universities around the world. Beyond completing college-level courses and examinations, your child will also be required to engage in community service, individual research and inquiry into the nature of knowledge.

## How it works

The IBDP involves choosing three subjects to study in detail at Higher Level and three subjects at Standard Level. Students must select six subjects by choosing one from each of the following groups. In addition, the programme has three core compulsory requirements that are included to broaden the educational experience and challenge students to apply their knowledge and understanding:

- Creativity, Activity, Service (CAS)
- Extended Essay (EE)
- Theory of Knowledge (TOK)



## Grading

- A grade from 1 to 7 will be given for each subject attempted, with 7 being highest
- The final diploma result score is the combined scores for each subject
- The student will be awarded a diploma if they gain at least 24 points, subject to certain minimum levels of performance, including successful completion of the three essential elements of the DP core
- The maximum score for a diploma is 45 points

<sup>2</sup> <http://bit.ly/3714UUT>

## Diploma Programme Core

The IBDP core elements are Theory of Knowledge, Extended Essay and Creativity, Activity and Service. These are compulsory if you wish to receive the full IB Diploma.

### Theory of Knowledge

The Theory of Knowledge (TOK) course invites students to reflect on their learning experience by considering ways of knowing and how we use them in the different areas of knowledge so that they can address fundamental questions about themselves as knowers. The fundamental question of the Theory of Knowledge (TOK) is *'how do we know what we know'*. The TOK course looks at the ways in which we acquire knowledge and the knowledge problems involved in the IBDP subject areas, as well as in areas such as ethics, law, politics and religion. It also focuses on other influences on our understanding of the world such as the media or our different cultural backgrounds.

The TOK is assessed through an oral presentation and a 1600-word essay on one of the six prescribed titles for the examination session. Full IB Diploma students are required to have at least 100 hours of TOK course time by the end of Grade 12.

### Extended Essay

The Extended Essay (EE) is an in-depth study of a focused topic of the student's choice. This is normally one of the student's six chosen subjects for those taking the full IB Diploma or a subject that a Diploma Course student has a background in. It is intended to promote academic research and writing skills, providing students with an opportunity to engage in personal research in a topic of their own choice, under the guidance of a supervisor (an appropriately qualified member of staff within the school).

The EE is presented as a formal piece of sustained academic writing containing no more than 4000 words, accompanied by a reflection form of no more than 500 words. It is the result of approximately 40 hours of work by the student.

To find out more about the Extended Essay, please refer to the GEMS World Academy (Singapore) Extended Essay Handbook and Guide<sup>2</sup>.

### Creativity, Activity & Service

To be awarded the IB Diploma, students are required to complete a substantial commitment to each of the three Creativity, Activity & Service (CAS) components. CAS is at the heart of the IBDP, involving students in a range of activities that take place alongside their academic studies. Students are involved in a range of activities beyond the academic classroom and encouraged to develop their own projects:

- **Creative** - exploring and extending ideas leading to an original or interpretive product or performance. This may include visual and performing arts, digital design, writing, film, culinary arts and crafts.
- **Active** - physical exertion contributing to a healthy lifestyle. Pursuits may include individual and team sports, dance, outdoor recreation, fitness training, and any other form of physical exertion that purposefully contributes to a healthy lifestyle.
- **Service** - community and social service activities.

The CAS programme formally begins at the start of the Diploma Programme and continues regularly (ideally on a weekly basis) for at least 18 months with a reasonable balance between creativity, activity, and service.

## IB Diploma Programme Eligibility Requirements

A student must satisfy either one of the following academic criteria:

- Minimum MYP final grades of 4 in English, Language Acquisition, Maths, Science, Individuals & Societies and Arts in both Semester 1 and Semester 2 of Grade 10
- A minimum of 5 IGCSEs at Grade C or above (if taken)
- A minimum of 5 GCSEs at Grade 4 or higher (if taken)

The school will also consider the student's attitude towards school and their learning, this includes, but is not limited to the student's:

- ability to meet deadlines (i.e. homework)
- attendance
- general behaviour

Prior to being accepted onto the Diploma Programme, the student's teachers and the Secondary Years Educational Leadership Team will carefully consider his/her eligibility for the Diploma Programme. If a student fails to satisfy the criteria, they will not be accepted onto the Diploma Programme.

Students who meet the criteria will be accepted onto the Diploma Programme if they:

- Maintain a minimum point score of 25 Diploma Points across six DP subjects throughout the Diploma Programme.
- Maintain exemplary attitudes towards the school and their learning, including but not limited to:

- Meet all deadlines
- Maintain attendance above 85%
- Behave in line with school's expectations and policies

Students who have been accepted onto the Diploma Programme and subsequently fail to meet above mentioned conditions by each reporting period may be removed from the IB Diploma Programme.

## International Baccalaureate Career-Related Programme

GEMS (Singapore) empowers graduates to be successful in their post-secondary education, career and life. The IB Career-related Programme (CP) is designed for students from 16 to 19 years of age who wish to combine academic study with career-related learning in the last two years of high school.

Our unique partnerships with Embry-Riddle Aeronautical University (ERAU) and the Savannah College of Arts & Design (SCAD) provide university freshman courses and credits, accelerating progress towards your child's career in anything from Fine Arts to User Experience, Aeronautics and Aeronautical Engineering.

Through applied knowledge, critical thinking, communication and cross-cultural engagement, your child will be well prepared to succeed at institutions of higher learning and will gain transferable and lifelong skills.

### How it works

- Students are required to study at least three Diploma Programme courses alongside a unique Career-related Programme core, in conjunction with modules of study from ERAU<sup>3</sup> or SCAD<sup>4</sup>.
- All components of the core are mandatory and provide students with a wealth of skills necessary to succeed in a rapidly changing world and pursue their dream career.

The core consists of the following:

- Personal and Professional Skills
- Service Learning
- Language Development
- Reflective Project

<sup>3</sup> For aviation- and aeronautics-related studies

<sup>4</sup> For arts- and design-related studies



- ◉ In Grade 11, students are provided with an opportunity to specialise, spending up to 70% of their time working in their field of choice.
- ◉ The courses taken are assessed in accordance with rigorous international standards and each written examination is marked by external IB examiners.

## Career-Related Programme Core

### Personal and Professional Skills

The personal and professional skills course aims to develop responsibility, practical problem-solving, good intellectual habits, ethical understandings, perseverance, resilience, an appreciation of identity and perspective and an understanding of the complexity of the modern world. Emphasis is on the development of skills needed to successfully navigate higher education, the workplace and society.

A minimum of 90 timetabled hours is expected to be devoted to the personal and professional skills course.

### Service Learning

Service Learning is the practical application of knowledge and skills towards meeting an identified community need. Through service, students develop and apply personal and social skills in real-life situations involving decision-making, problem-solving, initiative, responsibility and accountability for their actions.

A minimum of 50 hours is expected to be devoted to service learning.

### Language Development

Language development ensures that all students are exposed to an additional language, which is a central tenet of an IB education and will increase their understanding of a wider world. Students are encouraged to begin or extend the study of a language other than their best language that suits their needs, background and context. It develops students in the areas of oral, visual and written linguistic and communicative abilities.

A minimum of 50 hours is expected to be devoted to language development.

### Reflective project

The reflective project is an in-depth body of work produced over an extended period and submitted during the second year of the course. Through the reflective project, students identify, analyse, discuss and evaluate an ethical dilemma associated with an issue from their career-related studies. This work encourages students to engage in personal inquiry, intellectual discovery, creativity, action and reflection. It also develops strong thinking, research and communication skills.

The reflective project is assessed using grades from A to E, with A representing the highest level of achievement. A minimum of 50 hours is expected to be devoted to the reflective project.

## IB Career-Related Programme Eligibility Requirements

A student must satisfy either one of the following academic criteria:

- ◉ Minimum IGCSE Grade C in their respected Career-Related subjects
- ◉ Minimum GCSE Grade 4 in their respected Career-Related subjects
- ◉ Minimum MYP Grade 4 in their respected Career-Related subjects\*

\*For example, students studying the CP-SCAD (The Arts) Pathway must have a minimum MYP Grade 4 in Visual Arts or Design.

\*For example, students studying the CP-ERAU (Aeronautics) Pathway must have a minimum IGCSE Grade C in Maths.

The school will also consider the student's attitude towards school and their learning, this includes, but is not limited to:

- general behaviour
- ability to meet deadlines (such as homework)
- attendance & punctuality

Prior to being accepted onto the Career-Related Programme, the student's teachers and the Secondary Years Educational Leadership Team will carefully consider the student's eligibility for the Career-Related Programme. If a student fails to satisfy the criteria, they will not be accepted onto the Career-Related Programme.

Students who meet the criteria will be accepted onto the Career-Related Programme on the following conditions:

- They maintain adequate grades from their Career-Related studies
- Their attitudes towards school and their learning is not brought into question:
  - Behaviour in line with school's expectations and policies
  - Meets all deadlines
  - Attendance (>85%) and punctuality

Students who have been accepted onto the Career-Related Programme and subsequently fail to meet the aforementioned conditions, may be removed from the IB Career-Related Programme.

# How to [ ASSEMBLE ] your courses

## To earn a High School Diploma you need to select:

- Either IB English Literature, English Language & Literature, or English B
- Five additional courses to fulfil the GEMS (Singapore) graduation requirements
- Theory of Knowledge (TOK) or/either Personal & Professional Skills Course

The subjects you choose can be at Higher or Standard Level.

## To earn the IB Diploma Programme you need to select:

- Six IB Courses (1 each from Groups 1-5 and 6 or another group)
- Three courses at Higher Level
- Three courses at Standard Level
- Theory of Knowledge (TOK)

## To study the IB Career-related Programme you need to select:

- Either: IB English Literature, English Language & Literature, or English B
- At least two additional Diploma Programme courses at Higher Level (up to three)
- Personal and Professional Skills
- Modules of study from ERAU /SCAD.

# DP [ SUBJECT ] groups

DP students select courses from the following subject groups to fulfil DP requirements and GEMS (Singapore) graduation requirements.

DP students must choose one course from each of five subject groups delivering a breadth of knowledge and understanding in their best language, additional language(s), individuals and societies, the sciences and mathematics. Furthermore, students must also choose either an art course from the arts group or a second course from one of the other subject groups.

## Group 1 – Studies in language and literature

- English A: Literature (SL/HL)
- English A: Language and literature (SL/HL)
- Language A Self taught (SL)<sup>1</sup>
- Chinese A: Language and literature (SL/HL)
- French A: Language and literature (SL/HL)
- Japanese A: Language and literature (SL/HL)

## Group 2 – Language Acquisition

- Spanish Ab Initio (SL)
- French Ab Initio (SL)
- Spanish B (SL/HL)
- French B (SL/HL)
- Chinese B (SL/HL)
- English B (SL/HL)

## Group 3 – Individuals & Societies

- History (SL/HL)
- Economics (SL/HL)
- Environmental Systems & Societies (SL, Group 3 or 4)
- Business Management (SL/HL)
- Psychology (SL/HL)

## Group 4 – Sciences

- Biology (SL/HL)
- Chemistry (SL/HL)
- Physics (SL/HL)
- Environmental Systems and Societies (SL, Group 3 or 4)
- Sports, Exercise and Health Science (SL/HL)
- Design Technology (SL/HL)

## Group 5 – Mathematics

- Mathematics: Analysis & Approaches (SL/HL)
- Mathematics: Applications & Interpretation (SL)

## Group 6 – The Arts

- Visual Arts (SL/HL)
- Theatre (SL/HL)

Note: Higher Level (courses require 240 teaching hours) and Standard Level (courses require 150 teaching hours).

<sup>1</sup>Students are able to take this subject offering in lieu of any Language A subjects should GEMS (Singapore) not offer the language of your choice.

Our course offerings potentially provide access to all university degree and foundation programmes anywhere in the world.

## Group One - Language A

The main emphasis of Group 1 courses is on the acquisition and use of language in a range of contexts and for different purposes while, at the same time, promoting an understanding of another culture through the study of its language.

### English Language & Literature

The focus of the course is directed towards developing skills of textual analysis and understanding the constructed nature of meanings generated by language and texts. An understanding of the ways in which formal elements are used to create meaning in a text is combined with an exploration of how that meaning is affected by reading practices that are culturally defined and by the circumstances of production and reception.

### English Literature

The course is built on the assumption that literature is concerned with our conceptions, interpretations and experiences of the world. The study of literature can therefore be seen as an exploration of the way it represents the complex pursuits, anxieties, joys and fears to which human beings are exposed in the daily business of living. It enables an exploration of one of the more enduring fields of human creativity, and provides opportunities for encouraging independent, original, critical and clear thinking. It also promotes respect for the imagination and a perceptive approach to the understanding and interpretation of literary works.

### School-supported self-taught Literature

School-supported self-taught Literature course is designed for motivated, independent students to be able to access what is usually their native language and fulfil their Group 1 subject selection to achieve the IB Diploma. Students can only study this course at Standard Level.

Responsibilities of the Parents:

- Find and hire a suitable private tutor to support their child in the target language
- Supervise their child's progress

## Group 2 - Language Acquisition

These courses are designed to provide students with the necessary skills and intercultural understanding to enable them to communicate successfully in an environment where the language studied is spoken. This process encourages the learner to go beyond the confines of the classroom, expanding an awareness of the world and fostering respect for cultural diversity.

### Language ab initio

The language ab initio course is a language acquisition course for students with limited experience of the target language. This course is offered at Standard Level only. Students develop the ability to communicate in the target language through the study of language, themes and texts. In doing so, they also develop receptive skills and conceptual understandings of how language works.

### Language B

Language B courses are designed to provide students with the necessary skills through the study of language and enable them to communicate successfully in the target language. Students will develop conceptual understandings of how language works, as appropriate to the level of the course. Most Language B subjects are available at both Standard and Higher Level.

*I study Spanish B at Higher Level, we look at current global events in the target language. This allows me to appreciate a new language in an everyday context. Juan-Jose Cebrían G12*

## Group 3 - Individuals & Societies

Group 3 subjects explore the interactions between humans and their environment in time, space and place. These subjects emphasize critical thinking and help students develop multiple perspectives and constructive comparisons

### Business Management

Business Management is a rigorous, challenging and dynamic discipline in the Individuals and Societies subject group. Although Business Management shares many skills and areas of knowledge with other humanities and social sciences, it is distinct in a number of ways. The course considers the diverse range of business organizations and activities and the cultural and economic context in which business operates. Emphasis is placed on strategic decision-making and day-to-day business functions of marketing, production, human resource management and finance.

**Business Management is very transferable, the topics we learn can be used in any industry. I aim to open a physiology clinic and, studying Business gives me the skills to do this.**

*Dario Fedrigo G12*

### Economics

The study of economics is essentially about dealing with scarcity, resource allocation and the methods and processes by which choices are made in the satisfaction of human needs. As a social science, economics uses scientific methodologies that include quantitative and qualitative elements. The Diploma Programme Economics course emphasizes the economic theories of microeconomics, which deals with economic variables affecting individuals, firms and markets, and the economic theories of macroeconomics, which is connected with economic variables affecting countries, governments and societies. These economic theories are not to be studied in a vacuum - rather, they are to be applied to real-world issues. Prominent among these issues are fluctuations in economic activity, international trade, economic development and environmental sustainability. The Economics course encourages students to develop international perspectives, fosters a concern for global issues, and raises students' awareness of their own responsibilities at a local, national and international level. The course also seeks to develop values and attitudes that

will enable students to achieve a degree of personal commitment in trying to resolve these issues, appreciating our shared responsibility as citizens of an increasingly interdependent world.

**The Internal Assessment in Economics requires us to analyse recent news articles and apply economic theory.**

*Yash Lankenpaul G12*

### History

History is a dynamic, contested, evidence-based discipline that involves an exciting engagement with the past. It is a rigorous intellectual discipline, focused around key historical concepts such as change, causation and significance. History is an exploratory subject that fosters a sense of inquiry. It is also an interpretive discipline, allowing opportunities for engagement with multiple perspectives and a plurality of opinions. Studying history develops an understanding of the past, which leads to a deeper understanding of the nature of humans and of the world today.

### Psychology

Psychology is the rigorous and systematic study of mental processes and behaviour. It is a complex subject which draws on concepts, methods and understandings from a number of different disciplines. There is no single approach that would describe or explain mental processes and behaviour on its own as human beings are complex animals, with highly developed frontal lobes, cognitive abilities, involved social structures and cultures. The study of behaviour and mental processes requires a multidisciplinary approach and the use of a variety of research techniques whilst recognising that behaviour is not a static phenomenon, it is adaptive, and as the world, societies and challenges facing societies change, so does behaviour.

## Group 4 - Experimental Sciences

Through studying any of the Group 4 subjects, students should become aware of how scientists work and communicate with each other.

### Biology

Biology is the study of life. The first organisms appeared on the planet over 3 billion years ago and, through reproduction and natural selection, have given rise to the 8 million or so different species alive today. Estimates vary, but over the course of

evolution 4 billion species could have been produced. Most of these flourished for a period of time and then became extinct as new, better adapted species took their place. There have been at least five periods when very large numbers of species became extinct and biologists are concerned that another mass extinction is underway, caused this time by human activity. Nonetheless, there are more species alive on Earth today than ever before. This diversity makes biology both an endless source of fascination and a considerable challenge. Biologists attempt to understand the living world at all levels using many different approaches and techniques. At one end of the scale is the cell, its molecular construction and complex metabolic reactions. At the other end of the scale biologists investigate the interactions that make whole ecosystems function.

### Chemistry

Chemistry is an experimental science that combines academic study with the acquisition of practical and investigational skills. It is often called the central science, as chemical principles underpin both the physical environment in which we live and all biological systems. Apart from being a subject worthy of study in its own right, chemistry is a prerequisite for many other courses in higher education, such as medicine, biological science and environmental science, and serves as a useful preparation for employment. Despite the exciting and extraordinary development of ideas throughout the history of chemistry, certain things have remained unchanged. Observations remain essential at the very core of chemistry, and this sometimes requires decisions about what to look for.



My Chemistry Internal Assessment allowed me to look at chemistry concepts in-depth, I truly enjoyed being able to explore real-world chemistry, by designing my own science experiment.



*George Ponodath G12*

### Physics

Physics is the most fundamental of the experimental sciences, as it seeks to explain the universe itself from the very smallest particles—currently accepted as quarks, which may be truly fundamental – to the vast distances between galaxies. Observations remain essential to the very core of physics, sometimes requiring a

leap of imagination to decide what to look for. Models are developed to try to understand observations, and these themselves can become theories that attempt to explain the observations. Theories are not always directly derived from observations but often need to be created. These acts of creation can be compared to those in great art, literature and music, but differ in one aspect that is unique to science: the predictions of these theories or ideas must be tested by careful experimentation. Without these tests, a theory cannot be quantified. A general or concise statement about how nature behaves, if found to be experimentally valid over a wide range of observed phenomena, is called a law or a principle.

### Environmental Systems & Societies

Environmental Systems & Societies (ESS) is an interdisciplinary course that can count as both a Group 3 and/or a Group 4 subject, and offered only at Standard Level. As an interdisciplinary course, ESS is designed to combine the methodology, techniques and knowledge associated with Group 4 (Sciences) and with those associated with Group 3 (Individuals and Societies). If students choose the latter option, this leaves the opportunity to study an additional subject from any other Group, including an additional Group 3 or Group 4 subject.

ESS is a complex course, requiring a diverse set of skills from its students. It is firmly grounded in both a scientific exploration of environmental systems in their structure and function and in the exploration of cultural, economic, ethical, political, and social interactions of societies with the environment. As a result of studying this course, students will become equipped with the ability to recognize and evaluate the impact of our complex system of societies on the natural world. The interdisciplinary nature of the course requires a broad skill set from students and includes the ability to perform research and investigations and to participate in philosophical discussion.

### Sports, Exercise & Health Science

Sports, Exercise and Health Science (SEHS) is an experimental science that combines academic study with the acquisition of practical and investigative skills. It is an applied science course within Group 4, with aspects of biological and physical science being studied in the specific context of sports, exercise and health. Moreover, the subject matter goes beyond the traditional science subjects to offer a deeper understanding of the issues related to sports, exercise and health in the 21st century. Apart from being worthy of study in its own right, SEHS is a good preparation for courses in higher or further education related to sports, fitness and health, and serves as a useful preparation for employment in sports and leisure industries.

## Design Technology

The Diploma Programme design technology course aims to develop internationally minded people whose enhanced understanding of design and the technological world can facilitate our shared guardianship of the planet and create a better world.

Design is the link between innovation and creativity, taking thoughts and exploring the possibilities and constraints associated with products or systems, allowing them to redefine and manage the generation of further thought through prototyping, experimentation and adaptation. It is human-centered and focuses on the needs, wants and limitations of the end user.

Designers must think out-of-the-box to develop innovative solutions, whilst thinking in-the-box to conform to the requirements set by clients or research.



Design Technology involves creativity and enhance my practical skills. I am making a motorcycle helmet for my Internal Assessment, which is worth 40% of my final grade.

*Szymon Teodorczyk G12*



## Group 5 – Mathematics

Individual students have different needs, aspirations, interests and abilities. For this reason, there are two different subjects in this group, each available at Standard and Higher Level.

These courses are designed for different types of students, those who wish to:

- study mathematics as a subject in its own right or to pursue their interests in areas related to mathematics
- gain understanding and competence in how mathematics relates to the real world and to other subjects

### Mathematics: Analysis & Approaches

Mathematics: Analysis & Approaches is designed for students who enjoy developing their mathematics to become fluent in the construction of mathematical arguments and develop strong skills

in mathematical thinking. They will also be fascinated by exploring real and abstract applications of these ideas, with and without technology. Students who take this course will be those who enjoy the thrill of mathematical problem solving and generalisation.



I enjoy the logical approach in my IB Mathematics course, and the certainty when completing formulas and problems. In addition, I feel IB Mathematics gives me the skills and analytical ability to help me in the real world.

*Ayane Tezuka, Grade 11*



### This course:

- recognizes the need for analytical expertise in a world where innovation is increasingly dependent on a deep understanding of mathematics,
- includes topics that are both traditionally part of a pre-university mathematics course (for example, functions, trigonometry, calculus) as well as topics that are amenable to investigation, conjecture and proof, for instance the study of sequences and series at both Standard and Higher Level, and proof by induction at Higher Level,
- allows the use of technology, as fluency in relevant mathematical software and hand-held technology is important regardless of choice of course
- has a strong emphasis on the ability to construct, communicate and justify correct mathematical arguments.

### Mathematics: Applications & Interpretation

Mathematics: Applications & Interpretation is designed for students who are interested in developing their mathematics for describing our world and solving practical problems. They will also be interested in harnessing the power of technology alongside exploring mathematical models. Students who take this course will be those who enjoy mathematics best when seen in a practical context.

### This course:

- recognizes the increasing role that mathematics and technology play in a diverse range of fields in a data-rich world,

- emphasizes the meaning of mathematics in context by focusing on topics that are often used as applications or in mathematical modelling,
- includes topics that are traditionally part of a pre-university mathematics courses, such as calculus and statistics,
- makes extensive use of technology to allow students to explore and construct mathematical models,
- develops mathematical thinking, often in the context of a practical problem and using technology to justify conjectures.

## Group 6 - Arts & Electives

Group 6 subjects encourage an active exploration of arts within the student’s own culture and foreign cultures. The subjects focus on creativity in the context of disciplined, practical research into the relevant genres. Each subject is designed to foster critical, reflective and informed practice, help students to understand the dynamic and changing nature of arts and express themselves with confidence.

### Visual Arts

The course encourages students to challenge their own creative and cultural expectations and boundaries. It is a thought-provoking course in which students develop analytical skills in problem-solving and divergent thinking, while working towards technical proficiency and confidence as art-makers. In addition to exploring and comparing visual arts from different perspectives and in different contexts, students are expected to engage in, experiment with and critically reflect upon a wide range of contemporary practices and media. The course is designed for students who are planning to pursue a study of visual arts in higher education as well as for those who are seeking lifelong enrichment through visual arts.

Visual Art enables us to explore various types of Art that interest me, then create my own artwork based on inspiration I have acquired throughout the course.

*Nova McGinn G12*

### Theatre

Theatre emphasizes the importance of working both individually and collaboratively as part of an ensemble. It offers the opportunity to engage actively in the creative process, transforming ideas into action as inquisitive and productive artists.

Students experience the course from contrasting artistic perspectives. They learn to apply research and theory to inform and to contextualize their work. The theatre course encourages students to appreciate that through the processes of researching, creating, preparing, presenting and critically reflecting on theatre— as participants and audience members—they gain a richer understanding of themselves, their community and the world. Through the study of theatre, students become aware of their own personal and cultural perspectives, developing an appreciation of the diversity of theatre practices, their processes and their modes of presentation. It enables students to discover and engage with different forms of theatre across time, place and culture and promotes international-mindedness.

The way Theatre is taught and the range of performance techniques we explore in each lesson, makes it extremely impactful and inspiring.

*Avaana Harvey G12*



# Career- related [ ACADEMIC ] Pathways

## Embry Riddle Aeronautical University

The unique partnership of GEMS (Singapore) and Embry-Riddle Aeronautical University provides university-level courses and credits, accelerating progress towards a career in anything from aviation, aeronautics and aeronautical engineering to business management, cybersecurity and finance.

### Areas of study



Aviation



Aeronautical Engineering



Arts & Sciences



Business Management



Finance



Cybersecurity

### Choose your pathway

Each Academic Pathway contains courses (<https://dualenrollment.erau.edu/academics/courses/>) that count toward the ERAU degree requirements. Each course is worth three credits. Students can complete a maximum of 8 courses throughout the IBCP Programme, earning a maximum of 24 university credits in addition to the IBCP award.

#### AVIATION MAINTENANCE PATHWAY

General Aeronautics & Applications	AMNT 240
Aircraft Electrical System Theory	AMNT 260
Airframe Structures & Applications	AMNT 270
Airframe Systems & Applications	AMNT 271
Powerplant Theory & Applications	AMNT 280
Aircraft Propulsion Systems & Applications	AMNT 281

**Total Track Credits** 18 SCH

#### BUSINESS PATHWAY

Microeconomics*	ECON 210
Macroeconomics*	ECON 211
Business Communication	ENGL 222
Business Statistics*	MATH 222
Principles of Management	MGMT 201
Financial Accounting	MGMT 210
Intro to Management Information Systems	MGMT 221

**Total Track Credits** 21 SCH

#### GENERAL STUDIES PATHWAY

Intro to Computers & Applications	CSCI 109
Elements of Biological Science	BIOL 107
English Composition*	ENGL 123
Technical Report Writing	ENGL 221
College Algebra*	MATH 140
Trigonometry*	MATH 142
Explorations in Physics*	PHYS 102
Speech	SPCH 219

**Total Track Credits** 24 SCH

#### AERONAUTICS PATHWAY

Aerospace Fundamentals*	ASCI 100
Introduction to Space Flight	ASCI 110
Private Pilot Operations	ASCI 121
Airmen Knowledge/Part 107 Test Prep	ASCI 121L
Introduction to Aeronautical Science	ASCI 202
Introduction to Flight Physiology	ASCI 221
Introduction to Aerospace Safety	SFTY 210

**Total Track Credits** 18 SCH

#### ENGINEERING PATHWAY

Introduction to Engineering*	ENGR 101
Intro to Computing for Engineers	ENGR 115
Engineering Economics	ECON 225
Calculus and Analytic Geometry I*	MATH 241
Calculus & Analytic Geom II*	MATH 242
Physics I for Engineers*	PHYS 150
Physics II for Engineers*	PHYS 160

**Total Track Credits** 23 SCH

#### UNMANNED SYSTEMS PATHWAY

Aerospace Fundamentals**	ASCI 100
Private Pilot Operations	ASCI 121
Airmen Knowledge/Part 107 Test Prep	ASCI 121L
Introduction to Aeronautical Science	ASCI 202
Unmanned Aerial Vehicles & Systems	ASCI 260
Unmanned Aircraft Systems Operation & Cross-Country Data Entry	UNSY 235
UAS Mission Planning	UNSY 235L

**Total Track Credits** 16 SCH

\*Students must complete prerequisites to take this course.

# Savannah College of Art and Design (SCAD)

Each class lasts for one quarter. Students can earn five credits per class, 25 credits per track.

## Choose your pathway

### Track 1A: General/Foundations

Required for the following majors: Accessory Design, Advertising and Branding, Animation, Architectural History, Art History, Fashion, Fashion Marketing and Management, Fibers, Furniture Design, Graphic Design, Illustration, Industrial Design, Interactive Design and Game Development, Interior Design, Jewelry, Motion Media Design, Painting, Photography, Preservation Design, Production Design, Sculpture, Sequential Art, Service Design, Visual Effects

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DRAW 101</b> Drawing II: Composition and Media (prerequisite: DRAW 100)	<b>DSGN 101</b> Colour: Theory and Application (prerequisite: DSGN 100)	<b>DSGN 102</b> Design II: 3-D Form in Space (prerequisite: DSGN 100)

### Track 1B: General/Foundations (Digital Media Majors)

Required for the following majors: Animation, Interactive Design and Game Development, Motion Media Design, Visual Effects

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DRAW 101</b> Drawing II: Composition and Media (prerequisite: DRAW 100)	<b>DSGN 101</b> Colour: Theory and Application (prerequisite: DSGN 100)	<b>DIGI 130</b> Digital Communications

### Track 2A: General/Foundations and Liberal Arts

Required for the following majors: Accessory Design, Advertising and Branding, Animation, Architecture, Architectural History, Art History, Branded Entertainment, Business of Beauty and Fragrance, Equestrian Studies, Fashion, Fashion Marketing and Management, Fibers, Film and Television, Furniture Design, Graphic Design, Illustration, Immersive Reality, Industrial Design, Interactive Design and Game Development, Interior Design, Jewelry, Motion Media Design, Painting, Photography, Preservation Design, Production Design, Sequential Art, Service Design, Social Strategy and Management, Television Producing, User Experience Design, Visual Effects

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>ENGL 123</b> Ink to Ideas: Critical Concepts in Literature and Writing	<b>CTXT 121</b> Visual Culture in Context: Pre-modern Global Perspectives	<b>CTXT 122</b> Visual Culture in Context: Making Modernities

### Track 2B: General/Foundations and Liberal Arts (No DRAW 100 Required)

Required for the following majors: Dramatic Writing, Performing Arts, Sound Design, Writing

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DSGN 100</b> Design I: Elements and Organization	<b>COMM 105</b> Speaking of Ideas	<b>ENGL 123</b> Ink to Ideas: Critical Concepts in Literature and Writing	<b>CTXT 121</b> Visual Culture in Context: Pre-modern Global Perspectives	<b>CTXT 122</b> Visual Culture in Context: Making Modernities

### Track 3: Advertising and Branding

eLearning degree: BFA in Advertising and Branding; BA in Visual Communication/Concentration in Advertising and Branding

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DIGI 130</b> Digital Communications	<b>ADBR 150</b> Introduction to Advertising: Concept to Content	<b>DSGN 101</b> Colour: Theory and Application (prerequisite: DSGN 100)

### Track 4: Graphic Design

eLearning degrees: BFA in Graphic Design, BA in Visual Communication/Concentration in Graphic Design

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DRAW 101</b> Drawing II: Composition and Media (prerequisite: DRAW 100)	<b>DSGN 101 Colour:</b> Theory and Application (prerequisite: DSGN 100)	<b>GRDS 201</b> Introduction to Graphic Design (prerequisite: DRAW 101 and DSGN 101)

### Track 5: Interactive Design and Game Development

eLearning degree: BA in Digital Media

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DIGI 130</b> Digital Communication	<b>ITGM 130</b> Digital Design Aesthetics (prerequisite: CMPA 110)	<b>DRAW 101</b> Drawing II: Composition and Media (prerequisite: DRAW 100)

### Track 6: Photography

eLearning degree: BA in Photography; BA in Visual Communication/Concentration in Photography

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DIGI 130</b> Digital Communication	<b>PHOT 113</b> Camera Exploration and Technique	<b>PHOT 114</b> Digital Imaging and Compositing (prerequisite: PHOT 113)

### Track 7: Sequential Art

eLearning degree: BFA in Sequential Art; BA in Visual Communication/Concentration in Sequential Art

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DRAW 101</b> Drawing II: Composition and Media (prerequisite: DRAW 100)	<b>DSGN 101</b> Colour: Theory and Application (prerequisite: DSGN 100)	<b>SEQA 100</b> Introduction to Sequential Art (prerequisite: DRAW 101 and DSGN 101)

### Track 8: Business of Beauty and Fragrance

eLearning degree: BFA in Business of Beauty and Fragrance

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DRAW 101</b> Color: Theory and Application (prerequisite: DSGN 100)	<b>CTXT 121</b> Visual Culture in Context: Pre-Modern Global Perspectives	<b>BEAU 210</b> Beauty and Fragrance Through the Ages (prerequisite: CTXT 121)*

\*BEAU 210 is offered through SCADnow (virtual platform), not eLearning

### Track 9: Fashion Marketing and Management

eLearning degree: BFA in Fashion Marketing and Management

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>DRAW 101</b> Drawing II: Composition and Media (prerequisite: DRAW 100)	<b>DSGN 101</b> Color: Theory and Application (prerequisite: DSGN 100)	<b>FASH 105</b> Introduction to Textiles*

\*FASH 105 is offered through SCADnow (virtual platform), not eLearning

### Track 10: Social Strategy and Management

eLearning degree: BFA in Social Strategy and Management

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Quarter 5
<b>DRAW 100</b> Drawing I: Form and Space	<b>DSGN 100</b> Design I: Elements and Organization	<b>ENGL 123</b> Ink to Ideas: Critical Concepts in Literature and Writing	<b>CTXT 121</b> Visual Culture in Context: Pre-Modern Global Perspectives	<b>SOCL 110</b> History and Evolution of Social Media (prerequisite: ENGL 123 and CTXT 121)*

\*SOCL 110 is offered through SCADnow (virtual platform), not eLearning

**Custom Tracks: Students can customize classes based on their needs. Below eLearning courses have no prerequisites.**

General Education:

- ANAT 100 General Anatomy
- ANTH 101 Introduction to Anthropology
- BUSI 101 The Design of Business
- MATH 100 College Mathematics
- PHIL 202 World Religions
- POLS 100 Politics in America: Freedom, Equality, and Power
- PSYC 101 Introduction to Psychology
- DIGI 130 Digital Communication



**GEMS**  
World Academy  
(Singapore)

