



ST. ANDREW'S  
COLLEGE  
Cambridge

Law Foundation Syllabus



## Table of Contents

<b>Description</b>	<b>Page</b>
St. Andrew's College – Admissions Policy	3
St. Andrew's Foundation Courses	6
Hours of Study	6
Assessment Structure for the Course	7
Student Support and Guidance	8
Teaching Staff	8
NCFE Accreditation	8
Certification	8
Summary of Syllabus Content	9
Law	9
International Relations	11
Business	13
Mathematics	15
Information & Communications Technology	19
English	19
University Preparation Course (UPC)	19
UCAS	19
Document review	20

## St. Andrew's College, Cambridge Admissions Policy

This policy concerns admissions of students applying for University Foundation courses and should be read in conjunction with the St. Andrew's College, Cambridge prospectus and other policies. The policy applies to all students.

### Characteristics of St. Andrew's College, Cambridge

St. Andrew's College, Cambridge is a co-educational independent Sixth Form College and provides both boarding and on the odd occasion, day places, for approximately 160 students per academic year. It offers two-year A-Level programmes, one-year GCSE, Pre-A level and a ten month and seven-month Foundation programme. It is a limited company owned by Mr Mervyn Martin, David Martin and Hanna Claydon and run on a day-to-day basis by Mr Mervyn Martin, Mrs Hanna Claydon and the Principal Wayne Marshall. A percentage of the profit is reinvested in the college each year to improve the educational provision of the college.

St. Andrew's College, Cambridge is "international" in nature and is characterised by exceptional levels of academic and pastoral support at all stages. The age range is 14.5-21, although the college is pleased to admit a number of more mature students each year according to their individual circumstances.

The main entry point is in September. However, students are also accepted in January when we offer an 18-month A-Level programme and a 7 Month Foundation course. We do have students wishing to join at other times of the year as late joiners. In such circumstances, applications will be considered by the Registrar/Principal on a case-by-case basis. Where possible, such late joiners are integrated into appropriate groups and receive supplementary tuition to facilitate the transition.

### Admissions Criteria

Subject to real limits on student numbers imposed by boarding places, the availability of host families and resources, the college will admit applicants who have the potential to achieve success through the curriculum offered. In particular, applicants must:

- Demonstrate a strong commitment to further study and to the ethos of the college
- Satisfy the requirements for admission to an agreed programme of study
- Agree to adhere to the Rules of the College

The college aims to welcome students from all backgrounds, irrespective of nationality, race, religion, gender, sexual orientation or disability. However, we are not able to cater for all kinds of disability due to the nature of the facilities and any such requirements or needs must be declared to the college from the beginning so that proper assessment can be made.

### Selection Process

The selection process has three elements:

**1. Application.** Applications must be made in hard copy on the official college form, as provided with the prospectus or electronically via the website. In both cases the relevant supporting documentation must be provided before the application can be processed.

In order to comply with UK Border Agency requirements, students requiring visas must provide copies of school reports and references, transcripts and any examination certificates. The originals will have to be presented for scrutiny as part of their visa applications.

**2. Interview.** Interviews are conducted by a senior member of staff, usually the Registrar and on occasions the Principal. There may also be input from relevant teaching staff and other members of the senior management team. The purposes of the interview are to:

- Explain the academic, pastoral and extracurricular provision available at the college and provide advice on appropriate course choice.
- Assess the suitability of a prospective student for a place at St. Andrew's College, Cambridge and for his/her chosen courses. Entry criteria for courses are given at the end of this document.
- Provide an opportunity for a prospective student and parents / guardians / agents to look around the college.
- Provide advice about entry into Higher Education.
- Answer any questions a prospective student and parents / guardians / agents may have about the college.

Although we prefer to interview prospective students in person in Cambridge, it is not always possible for international students to attend. In such cases we will arrange to conduct Skype interviews on-line direct to the applicant, through the offices of an established agent or through any other portal that is workable and convenient for the applicant. If an interview is not possible, the college reserves the right to seek broader testimony to confirm an applicant's suitability for their intended course.

**3. Testing and assessment (where required).** The college undertakes testing and assessment with prospective students whose first language is not English. This is to determine their English and mathematic proficiency and also to determine their ability to succeed with the academic demands of the courses they propose to take.

**Disclosure.** Parents or guardians / agents are required to disclose any particular known or suspected circumstances relating to their son/daughter from the beginning of the application process. These circumstances may relate to the following:

- The student's physical, mental or emotional health.
- The student's disability or disabilities.
- The student's learning difficulties.
- Any disciplinary issues at the student's previous school(s).

The college reserves the right to terminate the studies of a student for whom it becomes obvious that information pertaining to the above was withheld during the admissions process.

## **Registration and Enrolment**

### **Offers and enrolment**

On completion of the selection process, applicants will be advised of the outcome and, where appropriate, formal offers will be made. All offers will be conditional upon a satisfactory reference being obtained from a student's most recent school or college. Final enrolment will only be confirmed once all the necessary registration documentation and payments have been completed as detailed in the college's Terms and Conditions of Acceptance.

### **Grounds for rejection**

The following list details possible grounds for not being offered a place at St. Andrew's College, Cambridge but is not exhaustive:

- Insufficient academic ability for the programme applied for.

- Exclusion from the previous school.
- Unsatisfactory reference.
- Unsatisfactory disciplinary or attendance record.
- Insufficient capacity to accommodate a student's entry point or chosen courses.
- Failure to provide the necessary supporting documentation and evidence in reasonable time.

The college will write to rejected applicants explaining the reasons for rejection, if requested.

### **Special circumstances**

We recognise that a student's academic history can be affected by particular circumstances, for example: If he/she has been unwell when sitting examinations or tests, or has been absent for any significant period from the previous school; If there are family circumstances such as divorce or bereavement; If the student's first language is not English; If the student has a disability or specific learning difficulties. Where appropriate, these factors will be taken into account and the college may request additional information to be provided such as an Education Psychologist's report, medical certificates or samples of work to assist us in the assessment of the student's suitability.

### **English Requirement**

Those students enrolled on Foundation courses and for who English is not a first language, will be required to achieve a minimum IELTS score of 5.0 for September and 5.5 for January. Students who cannot provide satisfactory evidence of a pass at this level or proof of English level by means of an internal test and interview will not be allowed to join St. Andrew's College, Cambridge.

## **Foundation Course Requirements**

### **10-month Foundation programme**

The 10-month Foundation programme is an intensive, fast-track programme and is suitable for students who have already completed one or more years of A-Level study, or who have graduated with good grades from a high school system abroad. Applicants will have to demonstrate a good level of academic ability. A pass at Grade A\*-C in GCSE/IGCSE English Language, IELTS 5.0 or the internal mechanism will be required for those students whose first language is not English.

## St. Andrew's Foundation Courses 2016-2017

The Foundation courses are accredited by NCFE, and inspected by OFSTED.

The Foundation Programmes offered by St Andrew's College are designed for students who may wish to specialise in a particular subject at higher education. It allows the student to become familiar with the vocabulary, culture and ethos of a particular subject and to familiarise themselves with the key learning methods and texts. As such it is a necessary introduction to both the subject and the learning strategies which will be employed at a higher education level.

### Law Foundation Programme September

#### Foundation Course Hours of Study per

Week

Subject	Number of hours per week 10-month course
Law	4
International Relations	4
Business	4
Maths	4
PSHE	3
English Language	3
Tutorials (including UCAS)	1
<b>Total Hours</b>	<b>23</b>

#### Core subjects

Please see the scheme of work at the end of the document for more details on areas covered by each subject. Both 10-month and 7-month courses follow the same syllabus.

**The assessment structure for the course is as follows:**

### **January Exam**

All students will take an exam in each of the core subjects in January of each course. This exam is to gather an understanding of the performance to date. On completion of the results transcript the student will be spoken to by his/her tutor and an Individual Learning Plan (ILP) will put together if applicable. The first exam is to monitor performance in the first term it will not be used for the overall results of the course.

### **Research Paper**

Students will be given a research brief by their core subject teachers, which will be due for completion by the end of the spring term each year. The research paper will be no less than 3000 words and produced using appropriate software package, e.g. Word, Excel and Power Point (not exclusively). The research paper will be reviewed 4 weeks prior to the completion by the teacher and comments will be given to the students for guidance. The research paper will carry 40% of the overall mark.

### **Final Exam**

The final assessment of the course will take place in the penultimate week. Each of the core subjects (Maths, Business, Economics and International Relations) will be examined twice (2 hours per paper). The final exams will carry 60% of the total grade.

### **Subject Weighting**

Each of the core subjects will carry a 25% weighting.

### **Support subjects**

The foundation course will be supported by the following non-examined subjects:

- English
- PSHE Personal Social and Health Education
- English for Academic Purposes (EAP)
- General Studies
- Study Skills

The above-named subjects are put in place to build on and support academic performance whilst on the course.

### **Awards**

- Pass: 50 to 59%
- Merit: 60 to 69%
- Distinction: 70 to 79%
- Distinction with Honours: 80% and above
  
- Attendance: Students must have a 95% or above attendance rate in all subjects in order to receive an award.
  
- Completion of work: Students must complete all work on time.

### **Student Support and Guidance**

Each student is given guidance in tutor groups and then individually for their university application through UCAS and assistance at the end of the year with university placements.

Each student has a personal tutor throughout the academic year to provide not only academic support, but also pastoral care.

Extra lessons are arranged when necessary to support the progress of students. The students have the opportunity to use three student common rooms and a computer lab area in order to facilitate study groups and a community atmosphere.

Students are provided with a social programme consisting of various opportunities to improve their social skills and to broaden their horizons through sport, the arts, travel and friendly competition.

Students are encouraged to attend special talks and lectures in various places throughout the UK during the academic year.

### **Teaching Staff**

The teaching staff on the Foundation programs are all highly qualified and experienced teachers who strive to empower their students with the confidence and skills needed to achieve their best and to prepare for university and their future careers. The teachers set high standards and reinforce them whilst assisting the students in their own individual needs and learning styles.

### **National Council for Further Education (NCFE) Accreditation**

Our course has been accredited by NCFE, an awarding organisation recognised by the qualification regulators for England and Wales. NCFE's regulators are the Office of Qualifications and Examinations Regulation (Ofqual) in England, and the Welsh Government in Wales. This course is not regulated by Ofqual but has been accredited by NCFE under our IIQ Licence.

### **Certification**

St. Andrew's College, Cambridge provides the students with a certificate of completion of the course and also a full transcript of the course with explanations to the calculations on the reverse of the transcript. Students will also receive a certificate and a transcript from the awarding body NCFE.

### **Summary of Syllabus Content for Each Subject:**

#### **Law:**

The question is sometimes asked: why study law unless you plan to be a lawyer? At St. Andrew's Law is a hugely interesting subject to study and very rewarding in terms of the skills and abilities students acquire. By the end of the course the student will have developed ability to present arguments, learned how to analyse situations, improved the ability to express him or herself with clarity, improved their skill at judging what is relevant, and developed the ability to discern situations where they need more information. All these skills and attributes will help with success in business and all careers.

As the course progresses and students become more familiar with legal concepts, they are encouraged to present and discuss their own legal arguments. Skills such as analytical thinking and legal reasoning are learned and become invaluable as students engage with every day, practical legal problems. Students develop the professional skills and confidence necessary for the future in law, business, problem solving and negotiating with others both in and out of a legal setting.

Studying this course will be of special benefit to the student contemplating a future in the world of business. Many legal principles are simply the embodiment of good business practice. Putting this legal principle into practice when a business enters into a binding agreement, such as a contract of sale, will help avoid misunderstandings and



disappointments on either side in the performance of the contract.

The course is divided into six modules over the three terms:

Module 1 Introduction to Law

Module 2 Sources of Law

Module 3 Concepts of Criminal Law

Module 4 Contract Law

Module 5 Employment Law

Module 6 Tort Law

Much of the law studied in the St. Andrew's course is concerned with the Common Law. This is the law which, although originating in England, has over a long period of time become the basis of the law in dozens of other countries. Examples of such countries include the United States, Australia, New Zealand, Canada and many countries in Africa and Asia. Thus, the fundamental principles learned on this course will be familiar to millions of people living under legal systems other than the English legal system.

In addition, knowledge of Common Law has an even greater value today since many overseas businesses entering international transactions choose to have their contracts subject to English law and the disputes decided in the courts of the United Kingdom. This is thanks to the international reputation for integrity and independence enjoyed by the UK courts.

If a student has not yet settled on a future career route law is an interesting subject to study and an introduction to law might just help them settle that question.

For the student who does plan a career in law - or to at least undertake a Law degree - then their legal studies at St. Andrew's will give them a flying start in their future studies. They will embark on their Law degree at university familiar with the UK legal system and the methods of study met in UK university Law faculties, in particular the case-law method, and practised in the use of legal terminology. Much of what is learnt on the foundation course will feature in the first year of undergraduate study on the LLM Law programme at many universities. The St. Andrew's course provides an invaluable grounding for future studies of Law at degree level.

Term 1	Term 2	Term 3
<p><b>Module 1 Introduction to Law</b> Law in Everyday Life Classification of Law: Criminal/Civil Court Hierarchy</p> <p><b>Module 2</b> <b>Sources of Law</b>, Law making and the pressures for Law Reform Advantages and Disadvantages of Reform Advantages and Disadvantages of Judicial Law-making Statutory Interpretation The Separation of Powers</p> <p><b>Module 3</b> <b>Concepts of Criminal Law</b> Offences Against the Person</p>	<p><b>Module 4</b> <b>Contract Law</b> (Formation of Contract, Terms, Discharge of Contract, Breaches; consumer contracts and consumer protection)</p> <p><b>Module 5 Employment Law</b> (introduction): employment relations and equality at work Research study</p>	<p><b>Module 6</b> <b>Tort Law</b> (Negligence – the concept of liability: duty of care, breach of duty, defences) Bringing an action in the civil courts Legal Skills and Arguing Mooting/Role Play of Legal Disputes</p>

## **International Relations:**

The Foundation Course in International Relations is a lively and provocative programme of study which encourages and enables students to understand the links between contemporary political, economic and social issues and the theory of International Relations in perspective with historical events. The student is encouraged to consider matters that lead to disputes or cooperation between states and also events that contribute to war, insurrection, riot and peace movements.

The role of international bodies such as the United Nations and NATO, which are crucial to this subject, are evaluated by considering their historical context, their achievements and their failings. Students are encouraged to look for current news and reviews in both English and their own language in order to consider their own country's role and contribution to international relations.

The teaching of International Relations covers six modules:

- Introduction to International Relations
- Formation of the United Nations
- The Cold War
- The role of the NGOs and other organisations in Economics Society and Political Perspectives of IR
- Globalisation and International Relations
- Twenty-first Century Challenges and International Relations

The first term outlines the foundation of theory and practice within the subject, the second term concentrates on helping the student formulate their own procedures and practice in research methods. The third considers contemporary issues via case studies which evaluate different issues within continents and countries. There are examinations, independent study and research, including work outside the classroom using a variety of source material including the internet, specified websites, handouts, film clips, role play and quizzes. The students are encouraged to prepare for each session by reading articles and searching for information relevant to the topics.

Research topics on the role of individuals covered by students have included Nelson Mandela, Gandhi, J F Kennedy, Winston Churchill and Margaret Thatcher. The case studies considered in class have included the Spanish Civil War, development of South Africa, formation of the League of Nations leading to development of United Nations, the Cold War, the formation of Israel in the Middle East, the nuclear arms race, the role of the European Union, the Commonwealth and Independence and other related topics.

Students of International Relations have found this a very relevant and dynamic module to study, primarily because the subject has drawn its existence from significant events, people and places in the 19<sup>th</sup>, 20<sup>th</sup> and 21<sup>st</sup> centuries. International Relations is appropriate for Business Foundation students as it pivots on the social, economic, and political environments and repercussions whilst considering the people who have propelled and influenced events. This links very well with the students' other modules and in many cases students have continued their studies at university level.

Term 1	Term 2	Term 3
<p><b>Module 1</b>  <b>Introduction to International Relations</b>  Nation States  Europe in the Twentieth century  Revolution</p> <p><b>Module 2</b>  <b>Formation of the United Nations</b>  World Wars and peace  NATO</p> <p><b>Module 3</b>  <b>The Cold War</b>  Development of the Superpowers Foreign Policy</p>	<p><b>Module 4</b>  <b>The role of NGOs and other organisations and Economics, Society and Political perspectives of IR: IGOs</b>  NGOs  Research Topic</p> <p><b>Module 5 Globalisation and IR</b> Trading groups  Sport, Music and Environmental influences  Cultural awareness</p>	<p><b>Module 6</b>  <b>Twenty-first Century challenges and IR: The World Today: case studies</b>  USA, Russia, China, Africa, Asia, Europe  The role of Religion, the Military and Non-States</p>

## Business:

Creative, inspiring, resilient, determined, passionate about your ideas, able to persuade others to invest in you?

Are you already running your own business successfully and you just want to learn why money talks? Are you looking for a route to a top 30 UK university? The Business Foundation Course taught at St. Andrew's Cambridge, over either 10 months or an accelerated 7 months period, could be the course you are looking for.

Located in the safe, beautiful, historic and academically renowned City of Cambridge, less than an hour from the centre of London, the Business Foundation Course at St. Andrew's College Cambridge will prepare you for your transition from school to a leading UK university.

You will be taught in average class sizes of 15 students, the basics of business namely: -

- What is a business
- Managers leadership and decision making
- Decision making to improve marketing performance
- Decision making to improve operational performance
- Decision making to improve financial performance
- Decision making to improve human resource performance

You will be tested at regular intervals during the course and there will be examinations at the start of term 2 and in the final term. In term 2 you will be asked to carry out a substantial research project and produce a written report on your findings. If successful you will be awarded an NVQ Level 3 qualification accredited by NCFE at the end of your course, depending on your grades.

You will gain the skills needed and required by UK universities- being able to communicate in English and to work as part of a team.

You will need to have a good understanding of both written and spoken business English, (IELTS at a minimum of 6 will be required for university entrance), be literate, numerate, be able to develop your own thoughts and present your own ideas, both in the classroom and to wider audiences. You will be set and be expected to complete independent study based on case studies and your own research using the college's IT suite. You will have the opportunity to participate in a Young Enterprise company whilst at the college, involving yourself in setting up and running your own business. You will also have the opportunity to participate in enterprise workshops with students from other schools across East Anglia.

If you have had some work experience or running your own business, so much the better, as you will be more able to contribute fully and share your ideas with other students from around the world.

Don't come on this course if you are choosing business as an easy option or you are expecting to pass with distinction with no effort. You will have to work hard to achieve the highest grades. If you are not interested in business, or merely choosing to study business as an easy option, don't waste our time and yours. You need to want to be successful and have the necessary determination to succeed. You need to be passionate about your business!

Term 1	Term 2	Term 3
<p><b>Module 1</b>  <b>What is business?</b> Understanding the nature and purpose of business  Understanding different business forms  Understanding that businesses operate within an external environment</p> <p><b>Module 2</b>  <b>Managers leadership and decision making</b> Understanding management leadership and decision making  Understanding management decision making  Understanding the role and importance of stakeholders</p> <p><b>Module 3</b>  <b>Decision making to improve marketing performance</b> Setting marketing objectives  Understanding markets and customers  Segmentation targeting and positioning  Using the marketing mix</p>	<p><b>Module 4</b>  <b>Decision making to improve operational performance</b> Setting operational objectives  Analysing operational performance  Increasing efficiency and productivity  Improving quality  Managing inventory and supply chains</p> <p><b>Module 5</b>  <b>Decision making to improve financial performance</b> Setting financial objectives  Analysing financial performance  Sources of finance  Improving cash flow and profits</p> <p><b>Research Project</b></p>	<p><b>Module 6</b>  <b>Decision making to improve human resource performance</b>  Setting human resource objectives  Analysing human resource performance  Improving organisational design and human resource flow  Improving motivation and engagement  Improving employer employees relations</p>

# Mathematics

This mathematics programme has been reviewed to reflect and cater for the actual mathematical requirements of students as they progress towards their university courses. It's designed to lay the foundation for developing and consolidating effective reasoning and a methodical approach while building a good set of mathematical skills relevant to most science and humanities studies. The programme aims to provide students with a valuable range of tools and techniques for analysing, modelling, formulating and solving general mathematical problems that can arise in their further studies or future practice.

## Mathematics – Specification Summary

Term 1	Term 2	Term 3
<ul style="list-style-type: none"><li>○ Elementary Algebra</li><li>○ Coordinate Geometry</li><li>○ Functions and their graphs</li><li>○ Differentiation</li><li>○ Integration</li></ul>	<ul style="list-style-type: none"><li>○ Exponential and Logarithm functions</li><li>○ Sequences and Series</li><li>○ Probability and Statistics</li><li>○ Numerical methods</li><li>○ Linear programming</li></ul>	<ul style="list-style-type: none"><li>○ Financial Mathematics</li><li>○ Composite functions</li><li>○ Inverse function</li><li>○ Further Differentiation</li></ul>

NB: To keep the same standard for assessment purpose, effort should be made to cover the material for each term in the term indicated. However, within each term the content may be covered in any suitable order and some components may be exceptionally moved from one term to another to respond to the students' level of attainment or if required for use by other subjects.

## Specification content

### TERM I

#### 1. Elementary Algebra

##### What students need to learn:

- Types of number: Natural, integer, decimal, rational, irrational and real numbers
- Common sets of numbers **N**, **Z**, **D**, **Q** and **R**, together with the correct use of related set notations such as  $\{ \}$ ,  $\in$ ,  $\cup$ ,  $\cap$  ...etc.
- Working with particular forms of number such as reciprocals, indices (or powers), fractions and surds. Students should in particular learn the properties and know how to work with fractions, indices and surds including how to rationalise the denominator
- Working with ratios and percentages to express or find shares from a whole quantity
- Algebraic expressions and related operations including determining the degree and coefficients of a polynomial, addition, subtraction, multiplication, simplification, expansion, factorisation and completing the square for trinomials
- Algebraic fractions and related operations including simplification, long division by a linear term, the remainder theorem and the factor theorem
- Equations: differentiating between, expressions, equations, identities and functions. Solving quadratic and simple cubic equations using factorisation, completing the square or the discriminant method for quadratic equations. Solving simultaneous linear equations using elimination or substitution as appropriate. Solving simultaneous mixed equations (linear and non-linear) and presenting the solutions in a suitable form
- Inequalities: solving linear, quadratic and simultaneous inequalities. For quadratic inequalities, the curve can be used along the sign inspection methods

#### 2. Coordinate Geometry

##### What students need to learn:

- Recognising common 2D shapes and recalling their basic properties with particular focus on quadrilateral shapes including Trapeziums, Parallelograms, Rectangles, Squares and triangular shapes including Isosceles, Right-angled and Equilateral triangles

- Determining and using the Cartesian equation of a straight line in a system of axes (Ox, Oy) in different forms such as  $Y = mX + c$ ,  $aX + bY + c = 0$  or  $Y - Y_1 = m(X - X_1)$
- Parallel and perpendicular straight lines
- Intersection of 2 or more straight lines
- Coordinates of the midpoint of a segment AB
- Distance between two points A and B
- Cartesian equation of a circle in a system of axes in different forms such as  $(x - a)^2 + (y - b)^2 = r^2$  and  $x^2 + y^2 + px + qy + r = 0$
- Circle properties and their use in solving problems
- Solving general problems involving straight lines and other common shapes

### 3. Functions and their graphs

#### What students need to learn:

- Precise definition of a function and the related concepts of domain and range. One-to-one functions
- Basic combinations of 2 or more functions using addition, subtraction, multiplication and division
- Sketching graphs of simple functions including linear, quadratic, cubic and simple homographic functions ( $y = \frac{c}{x}$ ). The concepts of limits and continuity are not in the scope of this specification, but the vertical or horizontal asymptotes and infinite branches must be determined and used where required
- Transformation of curves:  $y = f(x + a)$ ,  $y = f(x) + a$ ,  $y = f(ax)$ ,  $y = af(x)$ ,  $y = -f(x)$  and  $y = f(-x)$ . Students should be able to correctly describe each transformation and apply it to sketch the corresponding curve based on the curve  $y = f(x)$

### 4. Differentiation

#### What students need to learn:

- Basic rules of differentiation for polynomials and algebraic functions with rational Indices
- Second derivative
- Equation of the tangent and equation of the normal at a given point on the curve  $Y = f(X)$
- General problems involving differentiation and coordinate geometry
- Use of differentiation to determine the set of values for which a differentiable function is increasing or decreasing
- Use of differentiation to find stationary points and determine their nature
- Use of differentiation to solve simple optimisation problems

### 5. Integration

#### What students need to learn:

- Indefinite integration as the reverse process of differentiation
- Basic rules of integration for polynomials and algebraic functions with rational Indices
- Finding the constant of integration given the initial conditions
- Definite integral
- Area under a curve, area between a curve and a straight line

## TERM 2

### 6. Exponential functions and Logarithm functions

#### What students need to learn:

- The function  $a^x$  and its graph and properties
- Graph of logarithm function with base a
- Logarithm laws including the formula for changing the base
- Solving logarithm and exponential equations and simple inequalities
- Use of exponential and logarithm functions to model growth and decay in a population

### 7. Sequences and Series

#### What students need to learn:

- General concepts of a sequence and series: 1<sup>st</sup> term, general term, recurrence relation, sum of first n terms, the use of Sigma notation



- Arithmetic sequences and series
- Geometric sequences and series including sum to infinity where defined
- General problems involving sequences and series

## 8. Probability and Statistics

### What students need to learn:

- Purpose and uses of statistical methods and statistical models
- Types of data, qualitative, quantitative, discrete and continuous data
- Data representation and summary (for both discrete and continuous data): the use of frequency, cumulative frequency, mode, median and quartiles, inter-quartile range, mean and standard deviation. Stem and leaf diagrams, box plots, bar charts, pie charts and histograms
- Bivariate data: scatter diagrams, types of correlation, product moment correlation coefficient, explanatory and response variable and linear regression
- Probability concepts and probability tools: trial, outcome, sample space, event, complementary event, compound events, mutually exclusive events, independent events,
- Representation of events using multidimensional tables, Venn diagrams and tree diagrams
- Probability Laws
- Conditional probability
- Discrete random variables: probability distribution, expectation and variance
- Particular discrete distributions: Uniform Discrete distribution and Binomial distribution
- Populations and Samples: making the distinction between a population and a sample, knowing some advantages and disadvantages of using a sample for a survey compared to using a census. Statistics and sample statistics

## 9. Numerical methods

### What students need to learn:

- Approximate solution to the equation  $f(x) = 0$
- Finding an interval in which the equation  $f(x) = 0$  has a solution, by checking for a change in the sign of  $f(x)$
- Interval bisection method
- Finding an approximation to  $\int_a^b f(x)dx$  using the trapezium rule

## 10. Linear Programming

### What students need to learn:

- Standard form of a linear problem: the variables, the constraints and the objective function
- Modelling a variety of problems using linear programming: examples can be drawn from business, transport, manufacturing and other sectors
- Graphical representation of the feasible region
- Finding a solution graphically using the objective-line method
- Finding a solution using the vertex inspection method

## TERM 3

## 11. Financial Mathematics

### What students need to learn:

- Simple interest
- Compound interest: interest compounded annually, semi-annually, monthly or n times per year on regular intervals
- Continuously compound interest
- Annual percentage rate
- Future and Present values
- Debt repayment
- Annuities

## 12. Composite functions and Inverse function

### What students need to learn:

- Composite function of 2 or more functions where it's defined
- Solving equations involving the composite function such as  $gf(x) = c$  where  $c$  is a given value
- Finding the inverse function of a one-to-one function
- Domain and range of the inverse function
- Inverse of simple functions such as linear, quadratic, cubic, exponential and logarithm functions. The domain and range will have to be restricted as required to ensure the initial function is one-to-one

### **13. Further differentiation**

#### What students need to learn:

- Differentiating the exponential function  $f(x) = e^x$
- Differentiating logarithm functions  $f(x) = \ln(x)$  and  $f(x) = \log_a(x)$
- The chain rule
- The product rule
- The quotient rule

### **Information and Communication Technology (ICT):**

Is an integral part of the Foundation course and all aspects of this area are included in the core subjects and the study skills components. Although individual lesson time is not given to this subject, the student must be able to demonstrate their appreciation of and ability to integrate ICT within the demands of the course.

### **English:**

English is approached on an individual basis, with each student being tested with in-house IELTS exams or on the basis of previous achievements such as a C or above grade in GCSE or IGCSE English or a proven IELTS grade.

The IELTS classes are established by level and designed to meet the needs of the student at that level to enable progress at a satisfactory pace onto the next level in preparation for the IELTS exam.

Students who obtain a 6.5 in IELTS during their stay at the college or arrive with a 6.5 in IELTS or above will not be required to attend IELTS classes in college. If a student has gained 6.5 in IELTS but needs extra support for university this will be planned and reviewed by the IELTS coordinator on an individual student basis.

### **University Preparation Course (UPC):**

### **Study Skills/General Studies/ Personal, Social, Health and Economic Education**

There is a standalone specification, which explains the course in full.

### **UCAS:**

The UCAS process is given very careful consideration with a lot of time and effort being put aside by the tutors to ensure all the students apply to the correct universities given their ability, potential and preferences.

Document review:

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Review: August 2020.