

## KIST DP Course Descriptions 2011-2012

**Group: Group 5**

**Level: SL Only**

**Subject: Math Studies**

**Grade: 12**

**Unit Number: 1**

**Unit Title: Statistics**

**Approximate Duration: 2 weeks**

**Key Concepts:**  
**Two Variable Statistics**

**LP Link: Communicator**

**TOK Link(s):**  
[Click here to enter text.](#)

### **Description of the Unit:**

The aim of this unit is to develop techniques to describe and analyze sets of data. Students will build on what they learned in statistics last year and investigate the use of linear regression to find the line of best fit and the test of independence. It is expected that most of the calculations required in this unit will be done on a GDC. The main summative assessment will be a test comprised of past paper questions that assess student knowledge of the unit.

### **Key Knowledge/Skills Addressed:**

Scatter diagrams; line of best fit by eye/passing through the mean point

Linear regression; The  $\chi^2$  test of independence

**Main Summative Assessment of the Unit: DP Past Paper Exam**

## KIST DP Course Descriptions 2011-2012

**Group: Group 5**

**Level: SL Only**

**Subject: Math Studies**

**Grade: 12**

**Unit Number: 2**

**Unit Title:** Geometry and Trigonometry

**Approximate Duration:** 1 month

**Key Concepts:**

Geometric Shapes, Coordinate Geometry, Trigonometry

**LP Link: Thinker**

**TOK Link(s):**

[Click here to enter text.](#)

**Description of the Unit:**

The aims of this unit are to develop the ability to draw clear diagrams, to represent information given in two dimensions, and to develop the ability to apply geometric and trigonometric techniques to problem solving. Students will start the unit working with points and lines in coordinate space. Then, they will use equations of lines to determine points of intersection and whether sets of lines are parallel or perpendicular to each other. In the trigonometry component, students will use trigonometric ratios to solve problems and apply the sine and cosine rules. Finally, students will explore the geometry of three-dimensional shapes.

The main summative assessment of this unit will be a test comprised of past paper questions that assess student knowledge of the unit.

**Key Knowledge/Skills Addressed:**

Coordinates in two dimensions: points, lines, midpoints, distance between points

Equation of a line in two dimensions  $y = mx + c$  and  $ax + by + d = 0$

Gradients, intercepts, points of intersection of lines, parallel lines, perpendicular lines

Right-angled trigonometry; sine, cosine, tangent ratios

Solution of triangles using the sine rule:  $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ , cosine rule:  $c^2 = a^2 + b^2 - 2ab \cos C$ ;

formula for the area of a triangle:  $\frac{1}{2} ab \sin C$

Geometry of three-dimensional shapes: cuboid, prism, pyramid, cylinder, sphere, hemisphere, cone

**Main Summative Assessment of the Unit: DP Past Paper Exam**

## KIST DP Course Descriptions 2011-2012

**Group:** Group 5

**Level:** SL Only

**Subject:** Math Studies

**Grade:** 12

**Unit Number:** 3

**Unit Title:** Functions

**Approximate Duration:** 2 months

**Key Concepts:**

Functions, Graphs of Functions

**LP Link:** Communicator

**TOK Link(s):**

[Click here to enter text.](#)

**Description of the Unit:**

The aim of this unit is to develop understanding of some of the functions that can be applied to practical situations. The graphs of various types of functions, such as quadratic functions, exponential functions, trigonometric functions, and some combinations of simple functions will be explored and used to understand examples from real life situations. A GDC will be used extensively in this unit.

The main summative assessment of this unit will be a test comprised of past paper questions that assess student knowledge of the unit.

**Key Knowledge/Skills Addressed:**

Graphs and properties of quadratic functions  $f(x) = ax^2 + bx + c$ ; symmetry, vertex, intercepts

Graphs and properties of exponential functions  $f(x) = ka^{\lambda x} + c$ ; growth and decay

Graphs and properties of sine and cosine functions  $f(x) = a \sin bx + c$ ;  $f(x) = a \cos bx + c$

Using a GDC to sketch and analyze simple, unfamiliar functions and equations involving combinations of functions

**Main Summative Assessment of the Unit:** DP Past Paper Exam