

## **MATHEMATICS**

### **AWARD RECEIVED – ADVANCED HIGHER: MATHEMATICS OF MECHANICS**

#### **ENTRY LEVEL**

*This is at the discretion of the school, but you would normally be expected to have attained Higher Mathematics and Higher Physics, preferably Grade A or B.*

This course is delivered by the Mathematics department. There are 4 periods per week allocated to this course and you must also choose to study Advanced Higher Mathematics and Advanced Higher Physics.

#### **COURSE CONTENT**

The course is made up of three compulsory units.

##### *Compulsory Units*

These units build on the mathematical knowledge and skills you have gained at Higher level.

##### ***Unit 1: Linear and Parabolic Motion***

Content of the unit includes

- motion in a straight line
- vectors associated with motion
- projectiles moving in a vertical plane
- forces associated with dynamics and equilibrium

##### ***Unit 2: Force, Energy and Periodic Motion***

Content of the unit includes

- principles of momentum, impulse, work, power and energy
- motion in a horizontal circle with uniform angular velocity
- simple harmonic motion
- centres of mass

##### ***Unit 3: Mathematical Techniques for Mechanics***

Content of the unit includes

- partial fractions
- techniques of differentiation
- techniques of integration
- solving differential equations

## **ASSESSMENT**

This course is assessed by a combination of internal assessment by the teacher and an external examination, set and marked by the SQA.

There is an assessment for Unit 1 and Unit 2, each of which needs to be passed in order to gain the full award.

These are done in normal class time.

If you have passed all three Units of AH Mathematics, you will not need to sit an assessment for **Unit 3: Mathematical Techniques for Mechanics** as all the work in this Unit is covered in the AH Mathematics course.

One resit is allowed for each Unit, where necessary.

Any resits will take place at lunchtime.

The prelim is 2 hours duration.

The external examination is a single, calculator-allowed paper of 100 marks.

This exam lasts for 3 hours.

## **HOMEWORK**

Homework from the course text book is set on a regular basis to consolidate the work covered in class.

## **PROGRESSION**

HNC/HND/Degree or Employment