Subject:	Further Mathematics	Teachers:	Mr Heighway Mrs Roberts	Exam Board:	Edexcel

NEWPORT GIRLS' HIGH SCHOOL KS5 CURRICULUM OVERVIEW

Curriculum Intent & Organisation	
The Edexcel A level further mathematics course is designed for students who are looking to study mathematics or mathematical related disciplines beyond A level. The course will encourage learning the knowledge and understanding of sophisticated mathematical ideas and techniques. With 50% of the course comprising of pure material and the other half made up of mechanics and statistics, this enables a good balance between breadth and depth of mathematical knowledge. The course will be taught in parallel to the mathematics A level.	
Examination Information	**Facilitating Subject?**
Further mathematics examinations consist of four 1.5 hour papers: Core pure paper 1 and 2 plus Further Mechanics and Further Statistics.	Yes

Impact of Prior Learning from KS4
Studying the further mathematics A level requires strong algebra skills which are developed throughout the GCSE course. It is advantageous to have completed the further mathematics level 2 course (but not essential) as it covers more complex algebra and introduces topics such as matrices that feature heavily in the further mathematics A level.

Equipment Required for this course
• Standard classroom stationery • Calculator that has an iterative function, statistical distributions and matrix calculations for example the Casio Classwiz FX-991EX • Own lined/squared paper

Subject:	Further Mathematics	Teachers:	Mr Heighway Mrs Roberts	Exam Board:	Edexcel

Curriculum Implementation – Areas of Focus Year 12		
Autumn Term	**Spring Term**	**Summer Term**
• Introduction to complex numbers • Matrices and transformations • Poisson and binomial distribution • Complex numbers and geometry • Momentum and impulse • Discrete probability distributions • Work, energy and power • Roots of polynomials	• Work, energy and power • Roots of polynomials • Series • Proof by induction • Poisson and binomial distribution • Vectors • Elastic collisions in one-dimension	• Momentum and impulse • Complex numbers • Chi-squared testing

Curriculum Implementation – Areas of Focus Year 13		
Autumn Term	**Spring Term**	**Summer Term**
• Geometric and negative binomial distributions • Probability generating functions • Hypothesis testing • The Central Limit Theorem • Chi-squared tests • Probability generating functions • Quality of Tests • Further algebra and functions – series • Further calculus • Volumes of revolution • Hyperbolic functions • Polar coordinates	• Elastic string and strings and elastic energy • Elastic collisions in two-dimensions • Differential equations • Hyperbolic functions • Polar coordinates	• Elastic collisions in two-dimensions • Differential equations • Revision and exam practice

Subject:	Further Mathematics	Teachers:	Mr Heighway Mrs Roberts	Exam Board:	Edexcel

Impact / Outcomes

Learning will be assessed throughout the course by:

- Homework tasks marked using the NGHS marking policy
- Topic assessments
- Mock examinations during the spring term in year 12, the summer term in year 12 and the spring term in year 13.

Homework / Self Study

Homework comprises of a variety of exercise sheets, questions from the ActiveLearn online text books, past examination questions and online worksheets completed on the 'drfrostmaths' website. Students are expected spend their self-study time completing tasks from in lesson, working through exercises on 'drfrostmaths' and utilising the support material and as well as ActiveLearn.

Ways to support learning

To support the delivery of the course we currently have access to the websites 'ActiveLearn' and 'drfrostmaths', these allow students to independently work through tutorials on all the topics as well as copious amounts of practice questions with complete solutions to assess themselves. There are weekly lunchtime support sessions with teachers.

Field Work / Extension / Enrichment Opportunities

In the first term they are entered into the senior mathematics challenge, plus there is also the opportunity to take part in the team mathematics challenge, where they get to compete against other schools. Over the last few years during the summer term students have been taken to mathematics courses run at the University of Warwick to help provide insight beyond the curriculum. Students are also provided with support with their mathematics university entrance tests such as TMUA, MAT and STEP.

Next Steps

A further mathematics A level is ideal for students looking to study mathematical related courses such as mathematics, computer science and engineering. This course improves the students' ability to solve complex problems, understand sophisticated mathematical techniques and communicate with logical reasoning which are skills looked on favourably by universities and employers.

For more information, contact Mr A Heighway on a.heighway@nghs.org.uk