



Mathematics in Education and Industry



## **OCR FREE STANDING MATHEMATICS QUALIFICATION (ADVANCED)**

# **ADDITIONAL MATHEMATICS (6993)**

### **An overview**

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## 1. For Whom is Additional Mathematics designed?

- (i) Students following some vocational or academic course for which a set of FSMQ's might be more appropriate than an AS or A level in Mathematics. It might be because students are pursuing other A levels, who need some further mathematics, but do not wish to extend the work as far as an AS.
- (ii) Students who have completed their GCSE a year or two terms early and who wish to extend their experience without dipping too deeply into an AS Mathematics course.  
This might be because they are moving on to another college where gaining one or more module certifications may not be helpful.
- (iii) Students in schools where taking GCSE early is not an option, but who may benefit from taking this qualification alongside their GCSE at the end of year 11.

The certification title of this specification is:

*Free Standing Mathematics Qualification (Advanced): Additional Mathematics*

The unit is a level 3 qualification.

*It is designed with a maximum number of guided learning hours of 60. It is, however, anticipated that most students will complete the course in less time than this.*

## 2. What is the content?

The content of this specification is a sub-set of the AS Modules in both OCR Mathematics specifications, Core 1, Statistics 1, Mechanics 1 and Decision Mathematics 1. This is by and large also true for all other specifications, though some of the pure topics may be covered in Core 2 of other specifications.

## 3. Prior learning.

This unit builds on and expands the work of Higher Tier at GCSE. It is therefore expected that students will have gained an A\*, A or B at Higher Tier.

For students with other GCSE grades the recommended pre-A level course is *Foundations of Advanced Mathematics* which builds on the work of Intermediate Tier.

#### 4. Where has the course come from?

MEI was set up in 1965 and Additional Mathematics was the first syllabus offered. The format of this course has remained largely unchanged for 22 years, though the content has changed and the assessment model adjusted from time to time. This syllabus was assessed for the last time this last Summer. OCR offered two other AO syllabuses. One was supported by SMP which ceased a few years ago, and a rather more traditional syllabus, also assessed for the last time this Summer. MEI has always been concerned to apply mathematics, to set the mathematics in context. The rather more traditional syllabus (8645) was concerned to lay down firm foundations in Pure Mathematics. Thus, in 8645, there were two papers of equal weight covering the same syllabus and containing the same proportion of Pure and Applied topics. It was therefore possible to gain the highest grade by studying the pure topics only. In MEI (8647) the two papers were split into “Pure” topics and “applied” topics, so it was not possible to gain a high grade without at least a basic understanding of some of the applied topics. These were split into Statistics and Mechanics and it was possible to get full marks by studying one branch, though the vast majority obtained their marks from a mixture.

This new specification is an attempt to marry these two models together. It is possible that the result may have failed and will please neither groups.

The specification was constructed by “representatives” from the users of both syllabuses brought together by OCR. MEI has had a strong input to the syllabus with the Project Leader and the Professional Support Officer in the team and the latter (the Principal Examiner for 8647/2) has been appointed as the Principal Examiner for this new specification.

#### 5. What is the structure of the specification?

There are four main pure topics, each supporting a branch of applied mathematics. The structure of the assessment (see later) will enable candidates to obtain high marks, but not necessarily 100% by answering only the pure questions.

##### Algebra

Binomial Theorem and applications to probability

##### Coordinate Geometry

Graphical solution of inequalities and applications to maximisation and minimisation problems

##### Trigonometry

2 and 3 dimensional problems

##### Calculus

Application of maxima and minima problems

Application of integration to find areas

Kinematics, including constant and variable acceleration

## 6. Aims and Objectives

The aims of the specification are to offer a course following the above topics in order to

- introduce students to the power and elegance of advanced mathematics
- allow students to experience the directions in which the subject is developed post-GCSE
- develop confidence in using mathematical skills in other areas of study

The objectives that will be assessed are:

<b>Objective</b>	<b>Weighting</b>
1. recall and use manipulative techniques	25 - 35
2. interpret and use mathematical data, symbols and terminology	25 - 35
3. recognise the appropriate mathematical procedure for a given situation	10 - 20
4. formulate problems into mathematical terms and select and apply appropriate techniques of solution	10 - 20
5. pursue a mathematical argument rigorously and with a high level of algebraic skill	10-20

## 7. Assessment

There is to be one paper only of two hours, set in the Summer of each year.

There is no coursework requirement.

There is currently no formula sheet.

The results will be reported as a grade A, B, C, D, E or U.

## 8. Credit for the course.

UCAS points will be awarded as follows:

A	20
B	17
C	13
D	10
E	7

## 9. The specification content

The specification can be found at [www.ocr.org.uk](http://www.ocr.org.uk).

## 10. Resources

These will be outlined further in the next session.

Briefly they comprise:

- A specimen paper
- Two practice papers
- Past papers (June 2003, 2004, 2005 and 2006)
- Specification summary sheets for students
- A revision formula sheet
- A dedicated Text book
- On-line resources

On-line resources include student resources, teachers resources and a draft programme of study.

## 11. Support

OCR offer the following support for this specification:

- Direct access to a member of the mathematics subject team
- A report of each examination, compiled by the senior examining personnel after each examination
- OCR web-site ([www.ocr.org.uk](http://www.ocr.org.uk))

In addition, as this FSMQ replaces the MEI Additional Mathematics qualification, MEI are keen to promote and resource this specification.

- Enquiries may be made to the office (01225 776776, [office@mei.org.uk](mailto:office@mei.org.uk)) or the Professional Support Officer (0115 9732979, [Michael.Ling@mei.org.uk](mailto:Michael.Ling@mei.org.uk))
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