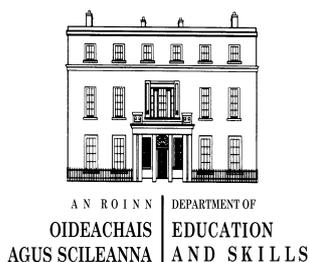


Rannóg Pholasaí, Cháilíochtaí,
Churaclaim agus Mheasúnachta,
An Roinn Oideachais agus Scileanna,
Bloc 2,
Sráid Maoilbhríde,
Baile Átha Cliath 1

☎ (01) 8892384



Qualifications, Curriculum
and Assessment Policy Unit,
Department of Education and
Skills, Block 2
Marlborough Street,
Dublin 1

Fax (01) 8892040

Circular Number 0059/2011

To: The Management Authorities of Post Primary Schools – Applied Mathematics, Leaving Certificate

Applied Mathematics for Examination at Leaving Certificate in 2012 and subsequent years

As a consequence of the introduction of Strand 5 (Functions) in the Leaving Certificate Mathematics syllabus from September 2010 in the 24 initial schools in Project Maths, it is necessary to introduce changes to the Applied Mathematics syllabus in the Leaving Certificate course for examination in 2012 and subsequent years **for all candidates.** Although integral calculus is included in both mathematics syllabuses, the range of integration techniques required is significantly reduced under Project Maths. There are other changes/omissions which also affect Applied Mathematics, but the principal concern arises in respect of integration for Higher Level candidates.

While the Applied Mathematics syllabus states that ‘knowledge of the relevant parts of the Mathematics course is assumed’, candidates for the LC Applied Mathematics examination in 2012 and 2013 will have followed different mathematics courses, depending on whether or not they were in one of the initial schools for Project Maths. For the LC Applied Mathematics examination in 2014 and subsequent years all candidates will have followed the Project Maths syllabus. There are a number of topics which are treated differently, or omitted (such as vectors), under Project Maths and which impinge on those studying Applied Mathematics. Of these, a general technique referred to as “*integration by substitution*”, which arises for Higher level candidates, is the most significant. The remainder can be dealt with as part of the Applied Mathematics course – in fact, they are usually taught by the Applied Mathematics teacher before they arise in mathematics class. The specific integration item referred to here would add significantly to the workload in Applied Mathematics if it were to be taken on *ab initio*.

Although there is significant choice in the Applied Mathematics exam, this particular topic/question is a popular one. It also provides a good example of applying in a realistic context what otherwise might be a difficult concept to grasp.

To minimise the effect of the changes, the following arrangement has been agreed by the Department, the National Council for Curriculum and Assessment, and the State Examinations Commission.

In the Leaving Certificate Higher Level Applied Mathematics examinations of 2012 and subsequent years, any differential equations that arise will not require the use of “*integration by substitution*” in their solution. They may require integration of functions of the following forms, and sums or differences of these:

- x^n
- $\sin nx, \cos nx, \sin^2 nx, \cos^2 nx$;
- functions of the form:

$$\frac{1}{x+a}, \frac{1}{a^2+x^2}, \frac{1}{\sqrt{a^2-x^2}}$$

This is an extract from the current (old) mathematics syllabus, with the particular requirement in relation to *integration by substitution* omitted.

Under this arrangement, all candidates in the 2012 and 2013 examinations would have experienced the same *relevant parts of the mathematics* course in respect of integral calculus and therefore any disadvantage in relation to this would be removed. As all Leaving Certificate Mathematics candidates will have followed the Project Maths syllabus in 2014 and subsequent years this arrangement will continue to apply until revision of the Applied Mathematics syllabus.

General

Please bring this circular to the notice of all teachers of Applied Mathematics in the school.

A copy of this circular should also be provided to the appropriate representatives of parents and teachers for transmission to individual parents and teachers.

Margaret Kelly
Principal Officer
September 2011