



Key Stage 4 Options

Limacon Technical

38, Cheshire Road
London, N22 8JJ

limacon@btinternet.com
www.limacontech.co.uk

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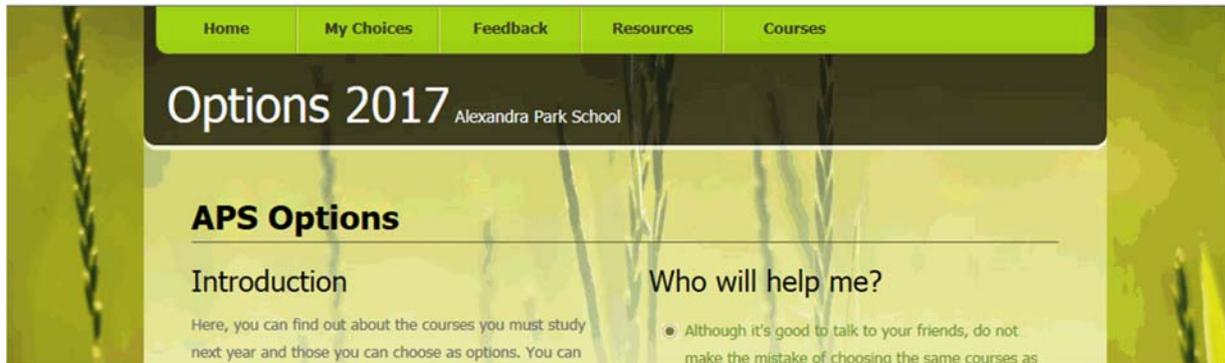
This free-choice method works best in schools when there is a sufficiently large number of teachers to offer the necessary subject staffing flexibility. Even then, it may not always be possible to satisfy all students

A Restricted Choice

* Science Sets 9		* English Sets 9		* Maths Sets 8		A Option A 5		B Option B 5		C Option C 5		D Option D 5		* P.E. Sets 4			
20	Bi ₁ Ch ₁ Ph ₁	9	24	En ₂	9	24	Ma ₂	8	22	Ar ₁	5	20	Bs ₁	5	24	Pe ₄	4
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19	Bi ₁ Ch ₂ Ph ₃	9	23	En ₂	9	23	Ma ₂	8	21	Fi ₁	5	20	Bs ₃	5	23	Pe ₄	4
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19	Bi ₂ Ch ₁ Ph ₂	9	23	En ₃	9	23	Ma ₃	8	21	Ig ₁	5	19	Fi ₂	5	23	Pe ₄	4
19	Bi ₁ Ch ₂ Ph ₃	9	23	En ₂	9	23	Ma ₂	8	21	Ld ₁	5	19	Hi ₂	5	23	Pe ₄	4
19	Bi ₂ Ch ₁ Ph ₂	9	23	En ₃	9	23	Ma ₃	8	21	Mn ₁	5	19	Ig ₂	5	23	Pe ₄	4
19	Bi ₁ Ch ₂ Ph ₃	9	23	En ₂	9	23	Ma ₂	8	21	Mu ₁	5	19	Hi ₃	5	23	Pe ₄	4
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19	Bi ₁ Ch ₂ Ph ₃	9	23	En ₂	9	23	Ma ₂	8	21	Mu ₃	5	19	Pd ₁	5	23	Pe ₄	4
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19	Bi ₂ Ch ₁ Ph ₂	9	23	En ₃	9	23	Ma ₃	8	21	Mu ₅₄	5	19	Pd ₅₂	5	23	Pe ₄	4
19	Bi ₁ Ch ₂ Ph ₃	9	23	En ₂	9	23	Ma ₂	8	21	Mu ₅₅	5	19	Pd ₅₃	5	23		

Options Websites

Original Idea



*About 20 years ago, I came up with a first design for a website that would allow Year 9 students, in the company of their parents, to make their choices online. I called it our **Year 9 Options Website** and I included the following with the idea of making the whole process dynamic, informative and fun:*

- *Personal message from the Headteacher*
- *Names of key staff*
- *Links to careers websites*
- *Useful documents including an indexed and bookmarked options booklet*
- *Course selectors which prevent students making unwise or disallowed subject combinations*

Apart from the last point, all of this could be produced using standard web designs. It is the last point which requires intelligent programming and, as such, has foiled many school Data Managers and Webmasters when they have attempted to copy the idea.

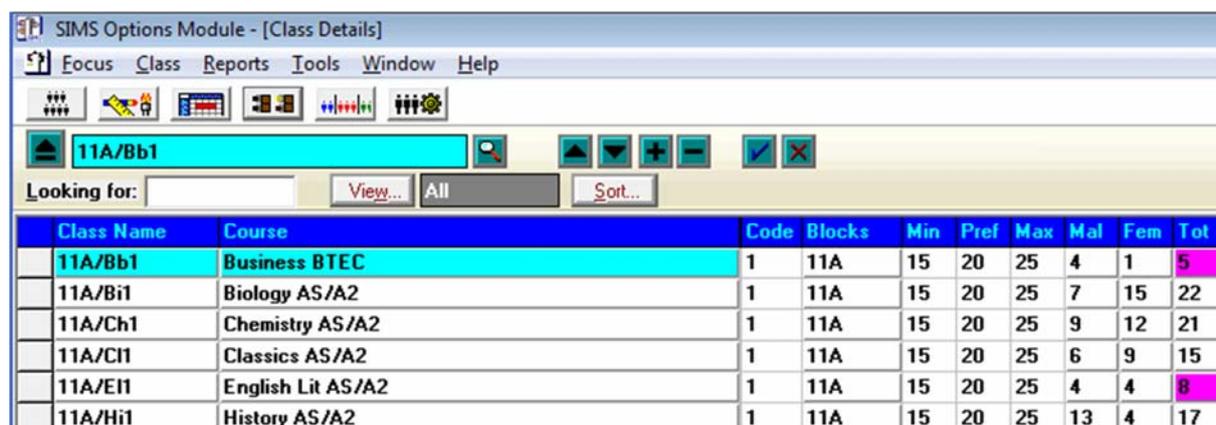
If you wish to restrict or add certain rules concerning the allowable subject combinations, you will probably have to use programmed scripts behind the webpage. If you wish to use programming languages such as PHP or ASP.net, you will need more than a basic package hosted on a server.

Personally, I use ASP.net server-side scripting and, being a programmer rather than a designer, combine the code with free-to-use web templates from reputable sites.

You can see some actual live sites I have designed and still host for various schools at www.limacontech.co.uk

Options Implementations

Sims Options Preparation



Class Name	Course	Code	Blocks	Min	Pref	Max	Mal	Fem	Tot
11A/Bb1	Business BTEC	1	11A	15	20	25	4	1	5
11A/Bi1	Biology AS/A2	1	11A	15	20	25	7	15	22
11A/Ch1	Chemistry AS/A2	1	11A	15	20	25	9	12	21
11A/CI1	Classics AS/A2	1	11A	15	20	25	6	9	15
11A/EI1	English Lit AS/A2	1	11A	15	20	25	4	4	8
11A/Hi1	History AS/A2	1	11A	15	20	25	13	4	17

Although, out of necessity, I have written my own Excel-based **Options Utility**, if you have a licence for Sims, I would recommend using the Sims options module. I have been using it since its first incarnation and have found that I do not need to use the most recent enhancements to produce excellent solutions.

I do not intend to take you through the instructions for using this tool (you will find them in your Sims installation) but I will point out some important ideas not usually understood by users nor covered in the instructions.

Firstly, you do not have to have set up the school's next academic year before you can use Sims Options. Yes, if you want the students' class memberships to transfer automatically and easily to next year's classes, you do indeed need to create the next academic year first. If, like me, you like to leave it late to set up the following academic year (after I'm absolutely certain of dates), you can still create an options implementation but you will have to transfer the outcomes manually to fill next year's option classes.

Whichever method you choose, you start an implementation by loading the curriculum followed by the students into Options from Nova-T6 and Sims respectively. The following lists the stages I go through next:

1. In Courses focus – remove all the courses I don't need, renaming some if useful and adding any extra courses I may need
2. In Bands focus – make sure you have the correct bands you use in the particular year group (9m, 9n for example)
3. In Block focus – add the required number of option blocks (I usually go for A, B, C, D etc) and ensure that each one is linked to all available bands
4. In Student focus - for each student, add all main and reserve choices to their record

How Many Classes?

Courses chosen and allocated

Code	Course Name	Main	Rsrv	Classes	Reqd.	Alloc	Capc.	Max
As	Applied Science 1 BTEC	7	0	2	1	7	40	50
Ar	Art AS/A2	18	0	1	1	17	20	25
Bi	Biology AS/A2	65	0	3	4	65	60	75
Bb	Business BTEC	10	0	2	1	10	40	50
Bs	Business St AS/A2	15	0	2	1	15	40	50
Ch	Chemistry AS/A2	62	0	3	4	61	60	75
Cl	Classics AS/A2	15	0	1	1	15	20	25

If your students had a free choice, it is now time to work out how many classes of each subject you will need to satisfy their requests. The following report will help:

Reports – Course – Choices and Allocations (see above)

Using the Max and Min class sizes which you can dictate, this table will offer some suggestions for how many classes you will require. This is the table to which you should refer when negotiating required staffing for next year.

Until you have a final decision as to how many classes you can offer, you should not waste any time experimenting with option block construction.

Clashing Subjects

Clash Table

	As	Ar	Bi	Bb	Bs	Ch	Cl	Cm	Dr	Ec	El	Fr	Mf	Gg	Go
As	[7]		1	2							2				
Ar		[18]	5			3		1		2	4			3	1
Bi	1	5	[65]		3	40	3	1	1	11	1		2	8	9
Bb	2			[10]		1			2	1	3				3
Bs			3		[15]	2			1	2	2			1	2
Ch	3	40	1	2		[62]	5	2	2	15	2		8	6	7
Cl			3			5	[15]		1	1	6		1	5	5
Cm		1	1			2		[11]		4			1		2
Dr			1	2	1	2	1		[10]	1	3				1
Ec		2	11	1	2	15	1	4	1	[39]	2	1	3	3	5

Once you have the final decisions on how many classes you will be offering, I recommend you take a look at the following report

Reports – Course – Clash Table

You can choose which courses to include. Initially, I like to include only my single class courses as these will tend to cause the most problems when deciding in which blocks they should be located.

The grid shows you how many students have chosen pairs of subjects. For example, in the above table, 2 students have chosen As and Bb, 5 students Ar and Bi.

A grid cell with no entry is good news as this means there are no students wanting to do both subjects (no clash). This creates the possibility that I can put both subjects in the same option block without causing problems for students.

From this point onwards, as long as you understand how the Clash table works, you can start experimenting with putting subjects into blocks. Be assured, every timetabler has an individual preference for the order in which they attack the problem. However, many timetablers miss the importance of the most useful aspect of the *Classes* menu.

The Classes Menu

Class Name	Course	Code	Blocks	Min	Pref	Max	Mol	Fem	Tot
11A/Bb1	Business BTEC	1	11A	15	20	25	4	1	5
11A/Bi1	Biology AS/A2	1	11A	15	20	25	7	15	22
11A/Ch1	Chemistry AS/A2	1	11A	15	20	25	9	12	21
11A/Ci1	Classics AS/A2	1	11A	15	20	25	6	9	15
11A/E11	English Lit AS/A2	1	11A	15	20	25	4	4	8
11A/Hi1	History AS/A2	1	11A	15	20	25	13	4	17
11A/Mb1	Music Perf BTEC	1	11A	15	20	25	1	3	4
11A/Mn1	Mandarin Pre-U	1	11A	15	20	25	1	3	4
11A/Ms1	Media St AS/A2	1	11A	15	20	25	8	8	16
11A/Ph1	Physics AS/A2	1	11A	15	20	25	12	1	13

In the Classes menu you can add, delete and move classes from block to block. I like to add my classes gradually by testing each one to see where (at present) it fits best. To test a class:

Click on the class and press F6 on the top of your keyboard

Block	Others	Fits	MisFits
11A	0	28	4
11B	1	20	12
11C	0	27	5
11D	0	24	8
11E	0	25	7

Class	Pref
11A/Ms1	20

This tells you in which block you could place it and how many problems doing so will create. In the above diagram, you can see that this class currently fits best in Block A. Additionally, by clicking on each block, you will see the names and choices of

the students who would be presented with a problem should you decide to locate it here.

Although the latest menu to enhance the software (the Solution Editor) is a powerful tool, I still prefer to carry out my experiments within the Classes menu, using the F6 testing method.

After a period of testing a typical result for an implementation dealing with 240 students might be that I can achieve 230 perfect fits and 10 partial fits (meaning that 10 students may have to choose an alternative to one of their subjects)

The Best Solution

How do you know when you have found the very best solution? You will not know for sure but it will be obvious you are getting very close!

I am often asked if there are any rules regarding the subjects in an option block. Here are some pointers:

- *In subjects which are only offered in a single class, think about the teacher. If Mr Tenby is the only teacher of Turkish and the only teacher of Classics, you can't put the two classes in the same block even if there are no students wanting to do both. Otherwise Mr Tenby is going to have to teach two classes at the same time!*
- *Make sure there are roughly the same number of classes in each option block. If one option block gets much bigger than the others, it is possible you will run out of rooms when the block occurs in the timetable and the classes in the smaller blocks may have far too many students in them!*
- *Look out for part-time teachers teaching in option blocks. If Ms Bart does not teach Thursdays and Fridays and Mr Homer does not teach Mondays, Tuesdays and Wednesdays, if they appear in the same option block (where the classes are always scheduled at the same time), you will **never be able to schedule it!***

Unlike Sixth Form option blocks, KS4 blocks in different years (Year 10 and Year 11 for example) are not usually scheduled at the same time as each other. Instead, schools often synchronise Year 10 against Year 11 so that:

- *When Year 10 have options, Year 11 have Core*
- *When Year 11 have options, Year 10 have Core*

This means that, when constructing Year 10 option blocks, the timetabler does not need to worry about the structure of Year 11 blocks. This is very different to Sixth Form options when the Year 13 blocks will partially dictate the structure of the new Year 12 blocks but that's another story for another article!

About the Author

Paul Vant worked for 35 years in secondary school as a Maths teacher, Senior Teacher, Timetabler and Systems Manager. He has acted as a consultant to many schools in timetabling and assessment. He designs software and web applications to solve problems relating to all his fields of expertise. In 2000 he designed the Student Sorting Kit (used for creating balanced groups of students, now in use in secondary schools throughout the UK and in other international institutions.)