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Appendix 1

CONSTRUCTION MODELS

A series of models was prepared for faculties to summarise the data which would be used to develop the Expert Systems for their domain. The models contained in this Appendix were subjected to faculty scrutiny and modification where necessary.

All subject areas, other than Computing, have a minimum number of units which must be studied to complete the Year ten Junior Secondary Studies Certificate. The school recommended that students enrol in English, Mathematics, Science and Social Education every term in years eight and nine and at least one specific term (the examination term) in year ten. In addition to recommending specific units, the RUS system also prioritised these recommendations as: Urgent and Compulsory, Important and Compulsory, Compulsory, Extension, and Specialisation. The timing recommendation for these subjects was primarily based on the student's progress in satisfying the certification requirements to enrol in the minimum units for each subject area. The timing recommendation for subjects with one or two minimum units reflects the student's current year. Timing recommendations for subjects with three or more minimum units are a combination of certification and year level checks.

A.1.1 ART

Subject background

Ten units are available in this subject area. To satisfy the minimum requirements students need to complete an introduction unit and then the first unit in two of the three genre. Two extension units are available in each genre. The relationship between these units is illustrated in figure A.1.1.

The compulsory introduction unit has three main topics (Stencil cutting and Airbrushing, Painting and Drawing, and Sculpture). During this unit the teachers make suggestions, based on apparent abilities and interests, to individual students on future Art unit selection. The staff reported that students normally have a clear understanding of what art genre they are interested in and successful at; thus Art unit selection tends to be relatively easy.

Recommendation antecedents

1. Students are to complete the minimum requirements before proceeding with extension units.
2. After completing the introductory unit, students have a choice in sequencing the first unit in each genre.
3. The cf <1.00> is applied to the unit recommendations for the three minimum units.
4. The following timing recommendations are applied to these units:

first unit	"Urgent and Compulsory"
second unit	"Important and Compulsory"
third unit	"Compulsory".
5. Extension units are not recommended unless students express the desire to undertake further art studies.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Art	
keen<1.00>, enjoy<1.00>, OK<0.50>,	
prefer not<0.25>, definitely not<-1.00>	
grades achieved in prerequisite units	
A<1.00>, B<0.75>, W<0.75>, C<0.25>,	
D<-0.75>, E<-1.00>	
genre requested <1.00>, genre alternative <0.75>.	
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in a genre until both extension units are completed; after which they will be recommended to the appropriate stage in other genres.
8. The following timing recommendations are applied to extension units:

fourth to sixth	"Extension"
seventh to tenth	"Specialisation".

Solutions

Minimum requirements = 3 units.

Recommend three compulsory units.

If acceptable grades in preferred genre

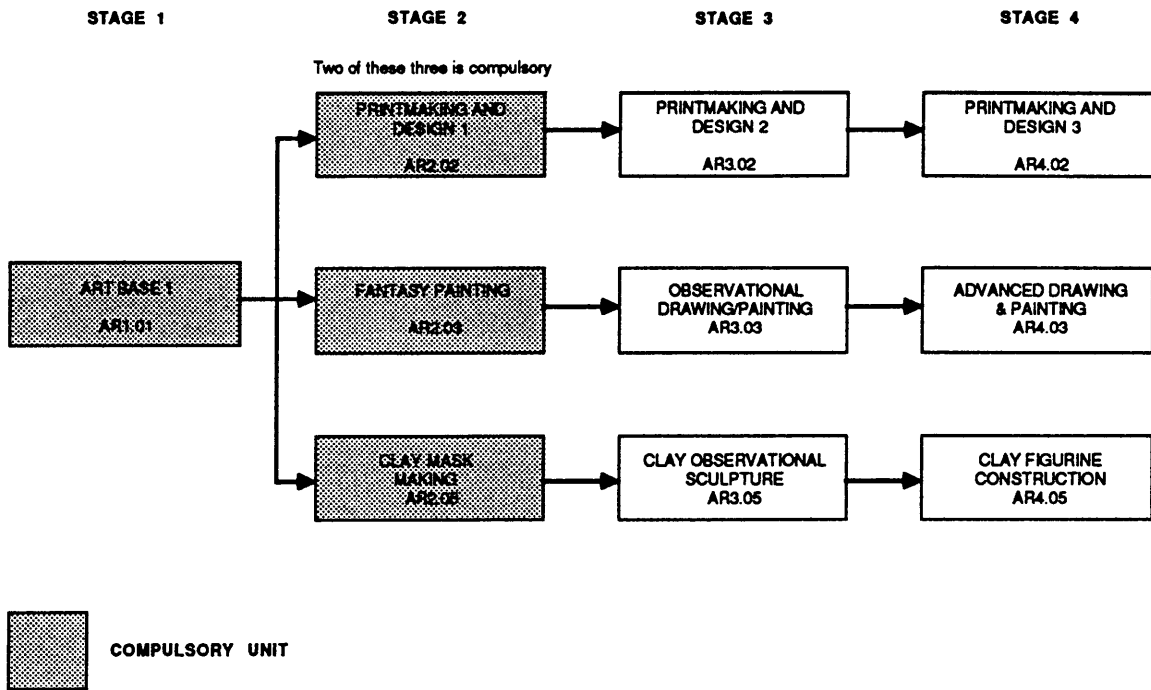
then recommend extension units in selected genre

else recommend appropriate units in other genre.

Because each genre only offered three units, provision was made to suggest alternative genre to students once they had completed one genre.

Figure A.1.1

ART FLOWCHART



MINIMUM REQUIREMENTS: 3 COMPULSORY UNITS

Art Decision Tree

The Art decision tree aims to demonstrate the ninety-five pathway options available for students. For example, having completed the compulsory introduction unit AR101 students may enrol in AR202, AR203 or AR205. After completing AR101 and one of these Stage Two units a student needs to enrol in at least one other Stage Two unit and thus will have completed one of the following patterns:

AR101 AR202 AR203

AR101 AR202 AR205

AR101 AR203 AR205.

Thus to complete the minimum requirements for Art involves at least three combinations. In fact there are more than three patterns if one accommodates the order in which units are undertaken, for example AR202 then AR203 or AR203 then AR202, but as the Stage Two units only have AR101 as their common pre-requisite their order is irrelevant and need not be included in the decision tree. On the other hand, pre-requisites and sequential patterns are more significant when tracing the eighty-eight post-compulsory unit patterns and the twenty-eight duplicate patterns are included to avoid apparent omissions when tracing specific branches.

*Figure A.1.1.2
Art decision tree*

101					
101	202	101	C	101	C
	C		203		C
	C		C		205
101	202	101	202	101	C
	203		C		203
	C		205		205

JSSC
Extensions

101	202 203 C	302 C	C	101	202 203 C	302 C	402
				101	202 203 C	302 303	402 C
				101	202 203 C	302 303	402 403
				101	202 203 C	302 303	C C
			duplicate	101	202 203 C	302 303	402 C
			duplicate	101	202 203 C	302 303	402 403
101	202 203 C	C 303	C	101	202 203 C	C 303	C 403
				101	202 203 C	302 303	C 403
			duplicate	101	202 203 C	302 303	402 403
				101	202 203 C	302 303	C C
			duplicate	101	202 203 C	302 303	C 403
			duplicate	101	202 203 C	302 303	402 403

101	202 205 C	302 C	C	101	202 205 C	302 C	402
				101	202 205 C	302 305	402 C
			duplicate	101	202 205 C	302 305	402 405
				101	202 205 C	302 305	C C
			duplicate	101	202 205 C	302 305	402 C
			duplicate	101	202 205 C	302 305	402 405
101	202 205 C	C 305	C	101	202 205 C	C 305	405
				101	202 205 C	302 305	C 405
			duplicate	101	202 205 C	302 305	402 405
				101	202 205 C	302 305	C C
			duplicate	101	202 205 C	302 305	C 405
			duplicate	101	202 205 C	302 305	402 405

101	203 205 C	303 C	C	101	203 205 C	303 C	403
				101	203 205 C	303 305	403 C
			duplicate	101	203 205 C	303 305	403 405
				101	203 205 C	303 305	C C
			duplicate	101	203 205 C	303 305	403 C
			duplicate	101	203 205 C	303 305	403 405
101	203 205 C	C 305	C	101	203 205 C	C 305	405
				101	203 205 C	303 305	C 405
			duplicate	101	203 205 C	303 305	403 405
				101	203 205 C	303 305	C C
			duplicate	101	203 205 C	303 305	C 405
			duplicate	101	203 205 C	303 305	403 405

101	202 203 205	302 C C	C	101	202 203 205	302 C C	402	
				101	202 203 205	302 303 C	402 C	
				101	202 203 205	302 303 C	402 403	
				101	202 203 205	302 303 305	402 403 C	
				101	202 203 205	302 C 305	402 C	
				101	202 203 205	302 C 305	402 405	
				101	202 203 205	302 303 305	402 C 405	
				101	202 203 205	302 303 305	402 403 405	
				101	202 203 205	302 303 C	C C	
				101	202 203 205	302 C 305	C C	
				101	202 203 205	302 303 305	C C C	
				101	202 203 205	302 303 305	402 C C	
				duplicate	101	202 203 205	302 303 305	402 403 C
				duplicate	101	202 203 205	302 303 305	402 C 405
				duplicate	101	202 203 205	302 303 305	402 403 405

101	202 203 205	C 303 C	C	101	202 203 205	C 303 C	403
				101	202 203 205	302 303 C	C 403
				101	202 203 205	302 303 C	402 403
				101	202 203 205	302 303 305	402 403 C
				101	202 203 205	C 303 305	403 C
				101	202 203 205	C 303 305	403 405
				101	202 203 205	302 303 305	C 403 405
			duplicate	101	202 203 205	302 303 305	402 403 405
				101	202 203 205	202 303 C	C C
				101	202 203 205	C 303 305	C C
				101	202 203 205	302 303 305	C C C
				101	202 203 205	302 303 305	C 403 C
			duplicate	101	202 203 205	302 303 305	402 403 C
			duplicate	101	202 203 205	302 303 305	C 403 405
			duplicate	101	202 203 205	302 303 305	402 403 405

101	202 203 205	C C 305	C	101	202 203 205	C C 305	405
				101	202 203 205	302 C 305	C 405
				101	202 203 205	302 C 305	402 405
				101	202 203 205	302 303 305	402 C 405
				101	202 203 205	C 303 305	C 405
				101	202 203 205	C 303 305	403 405
				101	202 203 205	303 303 305	C 403 405
			duplicate	101	202 203 205	302 303 305	402 403 405
				101	202 203 205	302 C 305	C C
				101	202 203 205	C 303 305	C C
				101	202 203 205	302 303 305	C C C
				101	202 203 205	302 303 305	C C 405
			duplicate	101	202 203 205	302 303 305	402 C 405
			duplicate	101	202 203 205	302 303 305	C 403 405
			duplicate	101	202 203 205	302 303 305	C 403 405

A.1.2 BUSINESS EDUCATION - COMPUTING

Subject background

Seven units are available in this subject area, though both Typing and Music offer units which are specifically computer based. The relationship between these units is illustrated in figure A.1.2. There are no minimum requirements or compulsory units in computing. Many of the other subjects presume keyboard skills for assignments. Some of the other subjects use computers for components of their units, and teach the relevant skills if necessary.

Recommendation antecedents

1. Students are to complete the introductory Typing unit (or demonstrate competency) before proceeding with computing units.
2. Extension units are not recommended unless students express the desire to undertake further art studies.
3. The strength <cf> of recommendations for extension units depends on:
 - stated interest in Computing
 - keen<1.00>, enjoy<0.75>, OK<0.30>,
prefer not<0.00>, definitely not<-0.50>
 - grades achieved in prerequisite units
 - A<1.00>, B<0.85>, C<0.70>, D<0.55>, W<0.00>, E<-0.50>
 - unit requested <1.00>, unit alternative <0.75>.
4. The following timing recommendations are applied to these units:

first to third	"Extension"
fourth to seventh	"Specialisation".

Solutions

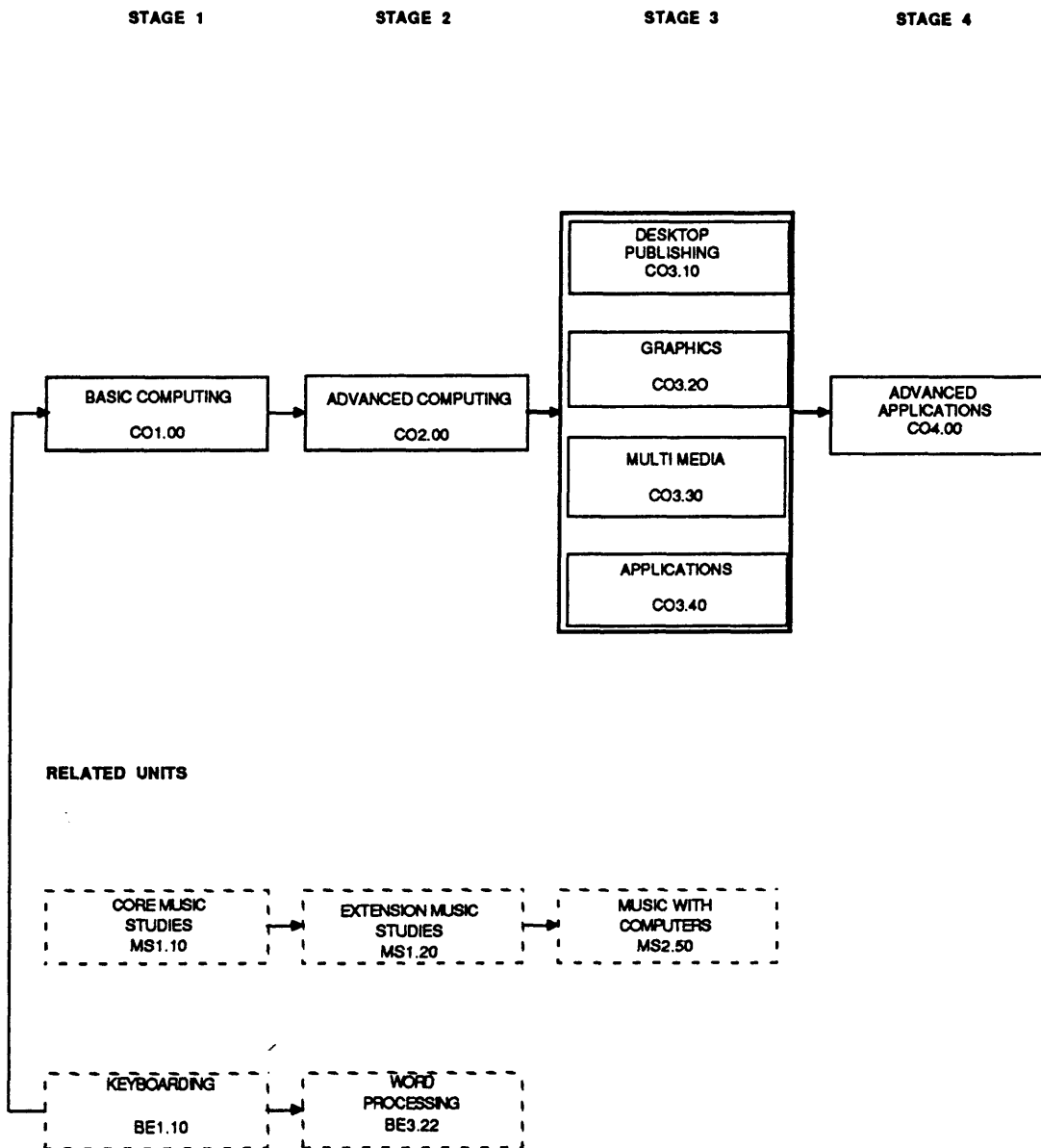
Minimum requirements = 0 units.

If acceptable grades in introduction unit
 then recommend Stage Two extension unit
 then recommend Stage Three extension units in selected genre
 then recommend Stage Four extension unit

If student has completed Stage Four then suggest alternative Stage Three units.

Figure A.1.2

COMPUTING FLOWCHART



A.1.3 BUSINESS EDUCATION - TYPING

Subject background

Five units are available in this subject area. To satisfy the minimum requirements students need to complete an introduction unit. Four extension units are available, catering for different needs and wants after Year ten. The relationship between these units is illustrated in figure A.1.3.

The compulsory unit introduces students to keyboarding skills and also the typewriters and computers used at the school. An increasing number of Primary schools are effectively teaching these skills and students from these schools may seek exemption from the compulsory unit by demonstrating their competence.

Recommendation antecedents

1. Students are to complete the compulsory Stage 1 unit before proceeding with extension units.
2. After completing the Stage 2 unit, students have a choice in sequencing the Stage 3 units.
3. The following timing recommendations are applied to these units:

first unit	"Urgent and Compulsory"
second unit	"Extension"
subsequent units	"Specialisation".
4. Extension units are not recommended unless students express the desire to undertake further art studies.
5. The strength <cf> of recommendations for extension units depends on:

stated interest in Art	keen<1.00>, enjoy<1.00>, OK<0.50>, prefer not<0.25>, definitely not<-1.00>
grades achieved in prerequisite units	A<1.00>, B<0.75>, W<0.75>, C<0.25>, D<-0.75>, E<-1.00>

Solutions

Minimum requirements = 1 unit.

Recommend compulsory unit.

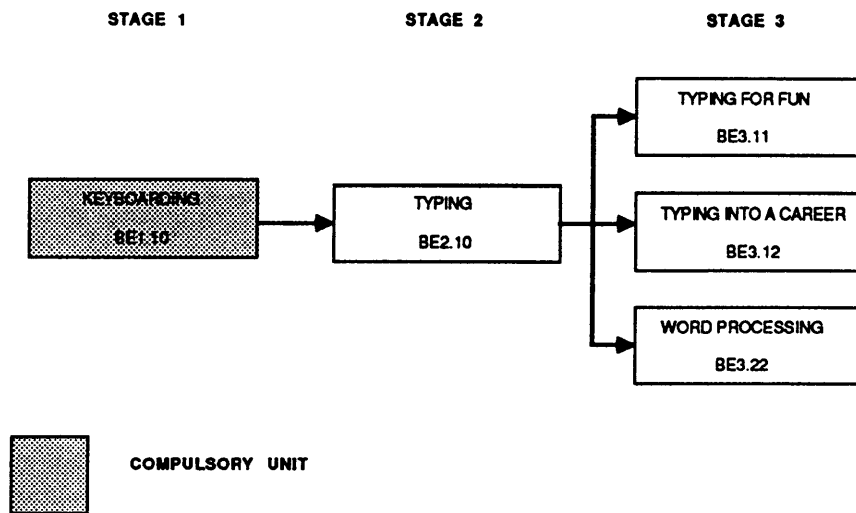
If acceptable grade

then recommend Stage Two extension unit

then recommend Stage Three extension units in selected genre

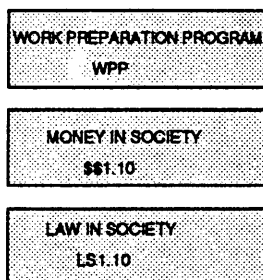
Figure A.1.3

TYPING FLOWCHART



MINIMUM REQUIREMENTS: 1 COMPULSORY UNIT

OTHER BUSINESS EDUCATION UNITS



IT IS RECOMMENDED THAT STUDENTS UNDERTAKE THESE SUBJECTS OR EQUIVALENT IN YEAR 10

A.1.4 DRAMA

Subject background

Ten units are available in this subject area. To satisfy the minimum requirements students need to complete either of the introductory units. The drama units are available in two main genre, one of these has several fields. The relationship between these units is illustrated in figure A.1.4.

Recommendation antecedents

1. Students are to complete the minimum requirements before proceeding with extension units.
2. After completing the introductory unit, students may undertake further study in that genre or enrolling in the introductory unit for the other genre.
3. The cf <1.00> is applied to the unit recommendations for the minimum unit.
4. The following timing recommendations are applied to this unit:
"Urgent and Compulsory"
5. Extension units are not recommended unless students express the desire to undertake further drama studies.
6. The strength <cf> of recommendations for extension units depends on:
stated interest in Drama
keen<1.00>, enjoy<0.75>, OK<0.30>,
prefer not<0.00>, definitely not<-0.50>
grades achieved in prerequisite units
A<1.00>, B<0.85>, C<0.00>, D<0.00>, W<0.00>, E<-0.50>
theme requested <1.00>, theme alternative <0.75>.
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in a theme until both extension units are completed; after which they will be recommended to the appropriate stage in other theme.
8. The following timing recommendations are applied to units:
second and third "Extension"
fourth to tenth "Specialisation".

Solutions

Minimum requirements = 1 units or 2 units if only 1 Music unit.

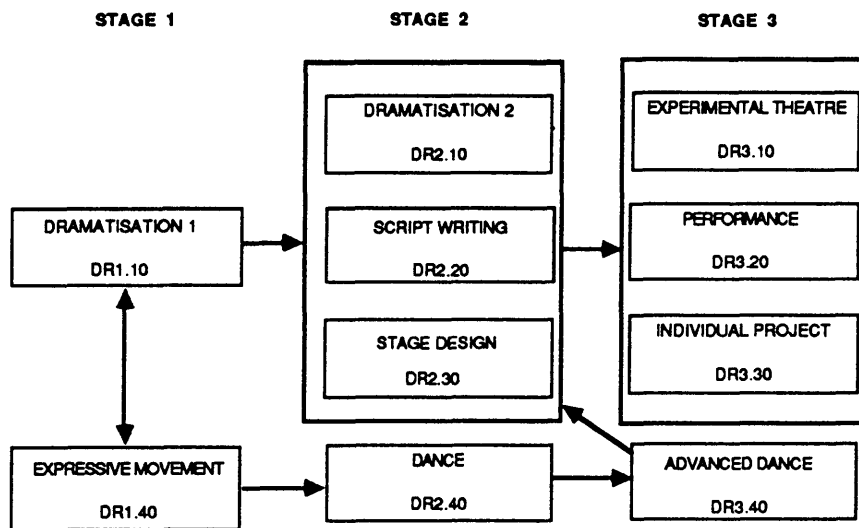
Recommend one compulsory Stage One units.

Recommend one Stage Two Unit if necessary.

Students who continue with drama beyond the minimum tend to either specialise in one theme or work across several themes. Figure A.1.4.2 illustrates some common patterns. Students who achieve grades of A or B usually complete one unit at each stage and then perhaps do an additional Stage Three unit. Students achieving grades of C or D are restricted from starting or continuing Stage Three units but may undertake additional Stage Two units or commence the other genre.

Figure A.1.4

DRAMA FLOWCHART



MINIMUM REQUIREMENTS: 1 UNIT FROM STAGE 1

Figure A.1.4.2
Some drama selection patterns.

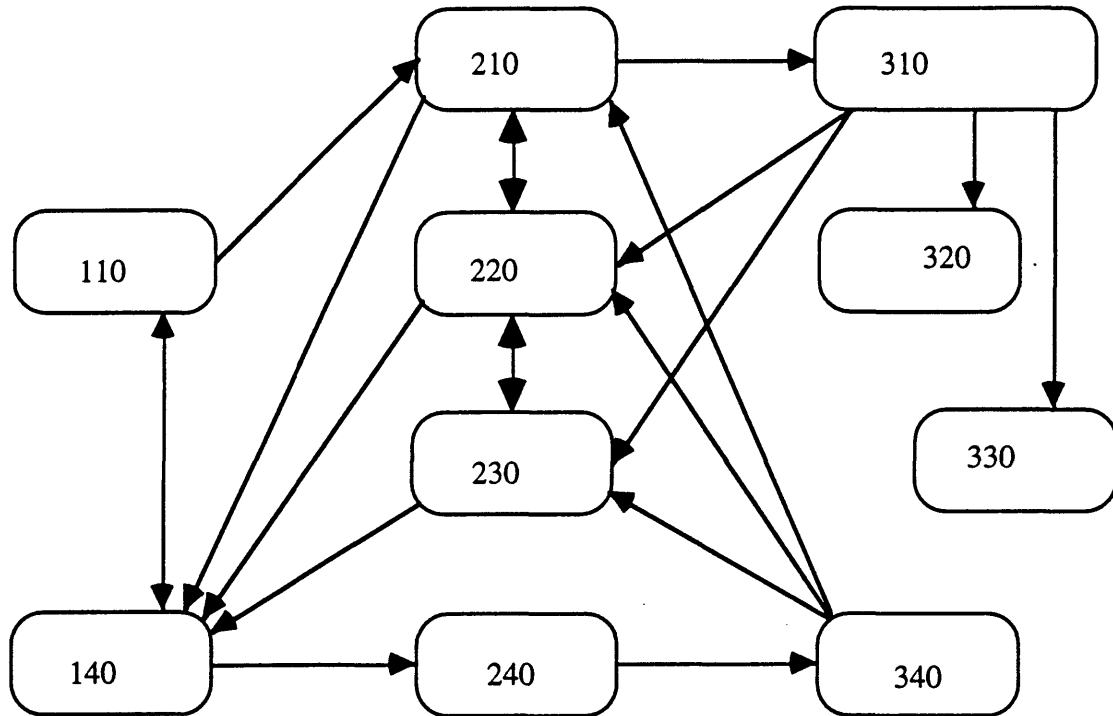


Figure A.1.4.3 illustrates some of the 756 potential combinations, though students would normally only be faced with at least one and at most ten.

Figure A.1.4.3
Drama potential unit combinations

Drama	110	start					
110							
110	210						
110	220						
110	230						
110	210	220					
110	210	230					
110	210	310					
110	210	320					
110	210	330					
110	220	230					
110	220	310					
110	220	320					
110	220	330					
110	230	310					
110	230	320					
110	230	330					
110	210	220	230				
110	210	220	310				
110	210	220	320				
110	210	220	330				
110	210	230	310				
110	210	230	320				
110	210	230	330				
110	220	230	310				
110	220	230	320				
110	220	230	330				
110	210	220	230	310			
110	210	220	230	320			
110	210	220	230	330			
110	210	220	230	310	320		
110	210	220	230	310	330		
110	210	220	230	320	330		
110	210	310	320				
110	210	310	330				
110	210	320	330				
110	220	310	320				
110	220	310	330				
110	220	320	330				
110	230	310	320				
110	230	310	330				
110	230	320	330				
110	210	310	320	330			
110	220	310	320	330			
110	230	310	320	330			
110	210	220	230	310	320	330	

Drama	110 & 140			
110	140			
110	140	210		
110	140	220		
110	140	230		
110	140	240		
110	140	210	220	
110	140	210	230	
110	140	210	240	
110	140	210	310	
110	140	210	320	
110	140	210	330	
110	140	220	230	
110	140	220	240	
110	140	220	310	
110	140	220	320	
110	140	220	330	
110	140	230	240	
110	140	230	310	
110	140	230	320	
110	140	230	330	
110	140	210	220	230
110	140	210	220	240
110	140	210	230	240
110	140	220	230	240
110	140	210	220	310
110	140	210	220	320
110	140	210	220	330
110	140	210	220	340
110	140	210	230	310
110	140	210	230	320
110	140	210	230	330
110	140	210	230	340
110	140	210	240	310
110	140	210	240	320
110	140	210	240	330
110	140	210	240	340
110	140	220	230	310
110	140	220	230	320
110	140	220	230	330
110	140	220	230	340
110	140	220	240	310
110	140	220	240	320
110	140	220	240	330
110	140	220	240	340
110	140	230	240	310
110	140	230	240	320
110	140	230	240	330
110	140	230	240	340

110	140	210	220	230	240				
110	140	210	220	230	310				
110	140	210	220	230	320				
110	140	210	220	230	330				
110	140	210	220	230	340				
110	140	210	220	240	310				
110	140	210	220	240	320				
110	140	210	220	240	330				
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110	140	240	340	210	310	320	330		
110	140	240	340	220	310	320	330		
110	140	240	340	230	310	320	330		
110	140	210	220	230	240	310	320	330	340

Drama	140							
	start							
140								
140	240							
140	240	340						
140	240	340	210					
140	240	340	220					
140	240	340	230					
140	240	340	210	220				
140	240	340	210	230				
140	240	340	210	310				
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140	240	340	220	310				
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140	240	340	230	320				
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140	240	340	210	220	310			
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140	240	340	210	220	320			
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140	240	340	210	310	320	330		
140	240	340	220	310	320	330		
140	240	340	230	310	320	330		
140	240	340	210	220	230	310	320	330

A.1.5 ENGLISH

Subject background

Forty-five units are available in this subject area. To satisfy the minimum requirements students need to complete two compulsory introduction units and at least one other at Stage One; at least two Stage Two units including one of three designated Stage Two units; at least one unit from each of three Stage Three groups; and a minimum of nine units overall. The relationship between these units is illustrated in figure A.1.5.

The teachers are actively involved in the unit selection process and allocation to specific classes. A primary reference is the students Level, supplemented by personal knowledge (such as behaviour and social development) of the student and other students who may be in the same class. Although faculty members support the availability of a mechanism to ensure that the 'mechanical' requirements are monitored, and which are available to others (such as students and parents), it is felt that the final recommendation within each Stage and Level needs to remain the product of individual counselling.

Recommendation antecedents

1. Students are to complete the minimum requirements at each Stage before proceeding to the next Stage.
2. Level Two and level Three students are recommended to undertake more than the minimum requirements at each Stage before proceeding to the next Stage.

Recommendations are rated <1.00> for each Stage are at the students highest attained Level, but <0.50> for alternative Levels.

3. The cf <1.00> is applied to the unit recommendations for the six compulsory units.
4. The following timing recommendations are applied to these units:

first unit	"Urgent and Compulsory"
second and third	"Important and Compulsory"
fourth unit	"Compulsory".
5. The strength <cf> of recommendations for extension units depends on:

stated interest in English	
keen<1.00>	enjoy<0.75>, OK<0.30>
	prefer not<0.00>, definitely not<-0.50>
grades achieved in prerequisite units	
A<1.00>	B<0.85>, C<0.70>, D<0.55>, W<0.00>, E<-0.50>
	genre requested <1.00>, genre alternative <0.75>.
6. The following timing recommendations are applied to extension units:

fifth to seventh	"Extension"
eighth to tenth	"Specialisation".

Solutions

Minimum requirements = 9 units.

Recommend two compulsory Stage One units.

Recommend

one additional Stage One Level One unit, or
one or two additional Stage One Level Two unit, or
two Stage One Level Three units.

Recommend one compulsory Stage Two unit.

Recommend at least seven Stage One or Stage Two units before Stage Three.

Recommend three compulsory Stage Three units
during terms one to three in Year Ten.

Recommend additional Stage Three units after the overall minimum requirements have been satisfied.

Rule structures were necessary to ensure that students completed the minimum requirements at each Stage as well as the overall minimum requirements. Yet also allow students to undertake additional studies at each Stage without jeopardising the minimum requirements.

At Stage One and Stage Two in particular, it was necessary to ensure that students did not undertake too many units and have insufficient time left to satisfy the Stage Three requirements before the end of Year Ten.

Units are offered at four Levels within each of the three stages. Level 0 are suitable for all students, Level 3 are below the year level, Level 2 are at the year level, and Level 1 are at an advanced level. Entry to the Level at each Stage is determined by the unit results at each Stage; initially by the Level 0 compulsory units, and then by progress in other units. Figure A.1.5.2 indicates the minimum grades required in Stage One units for subsequent enrolment in Level One, Two or Three units. For example, a student achieving a C in either of the compulsory units would be ranked Level 2 and be recommended for either Level 2 or Level 0 units; but could raise this status to Level 1 by achieving an A in either the Level 0 units (EN103, EN104 or EN105) or an A in either of the Level 2 units (EN121, EN122 or EN123).

Figure A.1.5
ENGLISH FLOW CHART

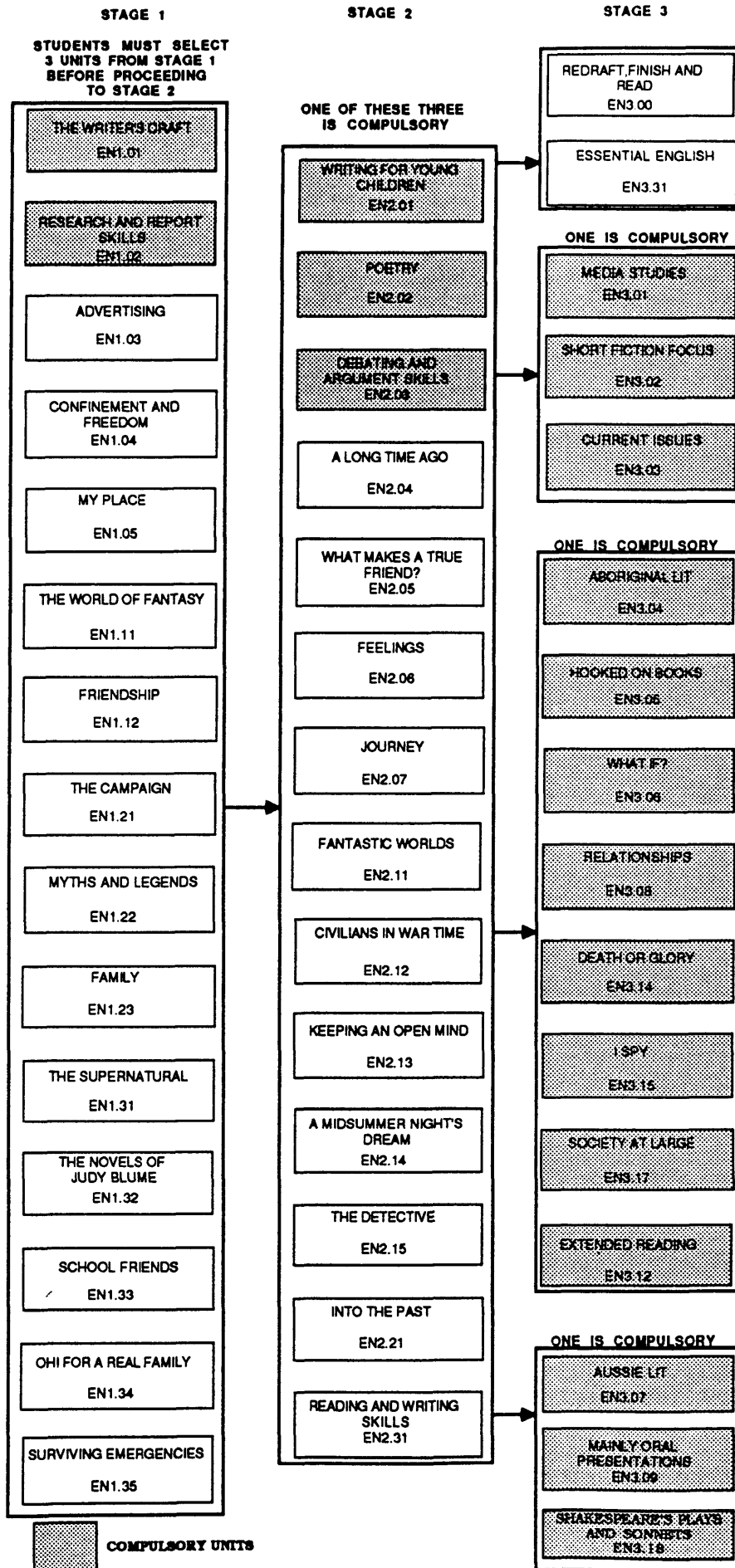


Figure A.1.5.2
Association between prior grades and Stage One English levels

Units completed		Required for Level 1 entry	Required for Level 2 entry	Required for Level 3 entry
Compulsory	EN101	A or B	C	D or E
	EN102	and A or B	or C	or D or E
Suitable for all	EN103	A	B C	D E
	EN104	A	B C	D E
	EN105	A	B C	D E
Level One	EN111	A B C	C D E	
	EN112	A B C	C D E	
Level Two	EN121	A	B C	D E
	EN122	A	B C	D E
	EN123	A	B C	D E
Level Three	EN131			A B C D E
	EN132			A B C D E
	EN133			A B C D E
	EN134			A B C D E
	EN135			A B C D E

A.1.6 HOME ECONOMICS

Subject background

Thirteen units are available in this subject area. To satisfy the minimum requirements students need to complete an introduction unit in each of the two genre. Six extension units are available in each genre. The relationship between these units is illustrated in figure A.1.6.

Recommendation antecedents

1. Students are to complete the minimum requirements before proceeding with extension units.
2. The cf <1.00> is applied to the unit recommendations for the two minimum units.
3. The following timing recommendations are applied to these units:

first unit	"Urgent and Compulsory"
second	"Important and Compulsory"
4. Extension units are not recommended unless students express the desire to undertake further art studies.
5. The strength <cf> of recommendations for extension units depends on:

stated interest in Art	
keen<1.00>	enjoy<0.75>, OK<0.30>
prefer not<0.00>	definitely not<-0.50>
grades achieved in prerequisite units	
A<1.00>	B<0.85>, C<0.70>, D<0.55>, W<0.00>, E<-0.50>
6. The following timing recommendations are applied to extension units:

fourth and fifth	"Extension".
sixth to fourteenth	"Specialisation".

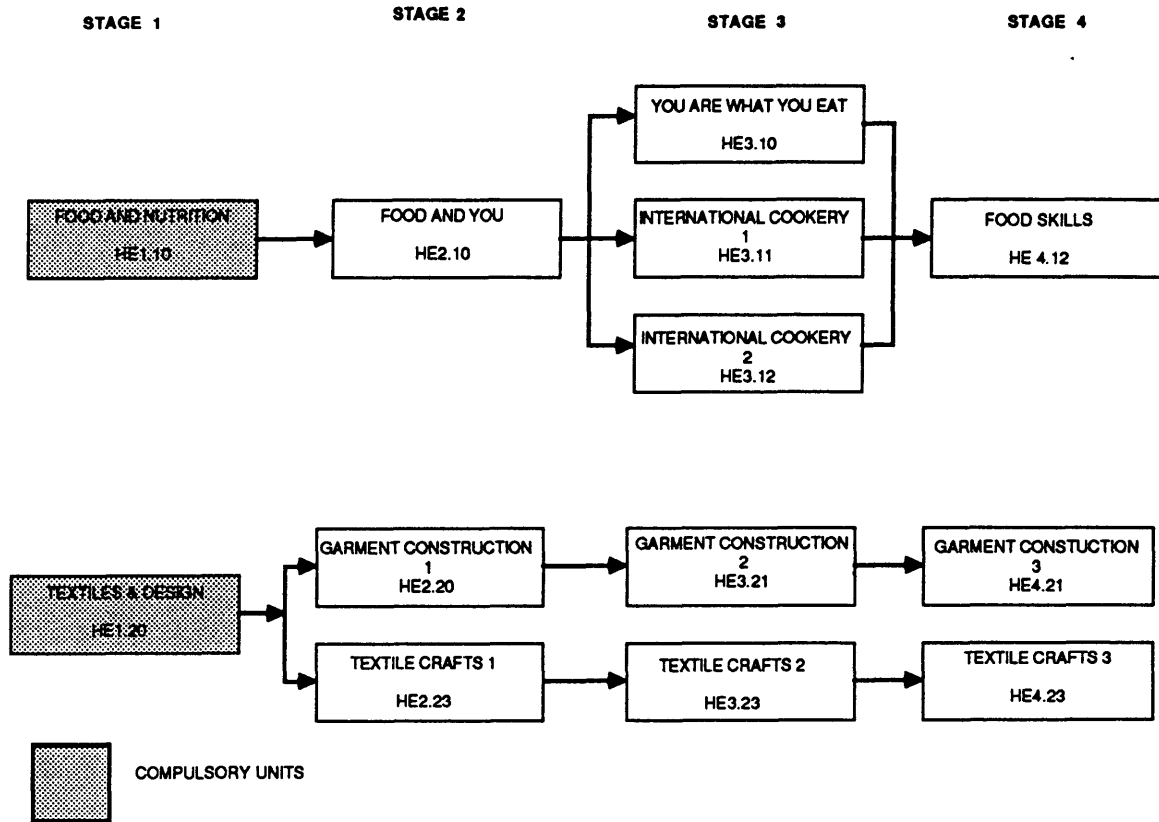
Solutions

Minimum requirements = 2 units.
 Recommend two compulsory Stage One units.

Extension and Specialisation units.
 If acceptable grades in prerequisite units
 then recommend higher units in selected genre
 else recommend another unit at current stage in alternative genre.
 If completed one or more Stage Four units
 then recommend other Stage Four units in selected theme.

Figure A.1.6

HOME ECONOMICS FLOWCHART



MINIMUM REQUIREMENTS : TWO COMPULSORY UNITS

A.1.7 INDONESIAN

Subject background

To satisfy the minimum requirements students need to complete at least three units of Languages Other Than English. Students may satisfy this requirement by completing units in one or more of the three languages offered. All three languages offer units which are 'language rich' (necessary for further study), and 'cultural rich' which are intended to extend student's empathy and/or prepare them for travel to the appropriate countries.

Eleven units are available in the Indonesian subject area. The relationship between these units is illustrated in figure A.1.7.

Recommendation antecedents

1. Students are to complete either of the Stage 1 units before proceeding with extension units.
2. The cf <1.00> is applied to the unit recommendations for the Stage 1 units.
3. Students have a choice in sequencing one or more Stage 2, and then Stage 3 units.
4. The Stage 4 unit has a specific Stage 3 pre-requisite.
4. The following timing recommendations are applied to these units:

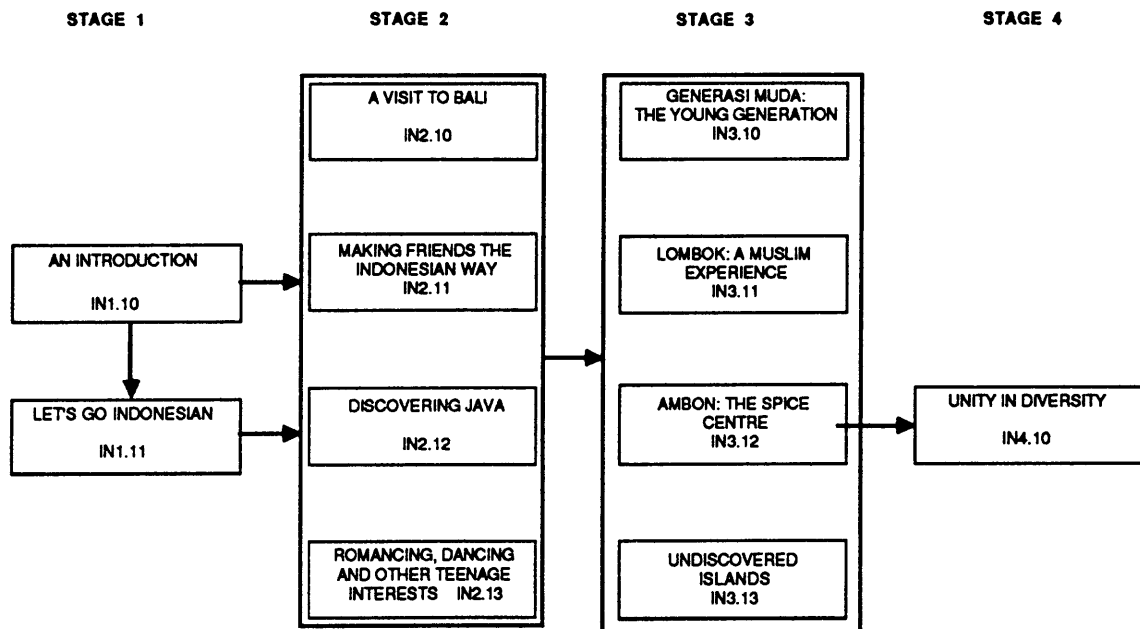
first unit	"Urgent and Compulsory"
second unit	"Important and Compulsory"
third unit	"Compulsory".
5. Extension units are not recommended unless students express the desire to undertake further LOTE studies.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Indonesian	keen<1.00>, enjoy<1.00>, OK<0.50>, prefer not<0.25>, definitely not<-1.00>
grades achieved in prerequisite units	A<1.00>, B<0.75>, W<0.75>, C<0.25>, D<-0.75>, E<-1.00>
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in additional Indonesian at each Stage.
8. The following timing recommendations are applied to extension units:

fourth to sixth	"Extension"
seventh to tenth	"Specialisation".

Figure A.1.7

INDONESIAN FLOWCHART



MINIMUM REQUIREMENTS:

1. THREE UNITS OF LANGUAGE OTHER THAN ENGLISH
2. NINE UNITS FOR FURTHER INDONESIAN STUDY

A.1.8 ITALIAN

Subject background

To satisfy the minimum requirements students need to complete at least three units of Languages Other Than English. Students may satisfy this requirement by completing units in one or more of the three languages offered. All three languages offer units which are 'language rich' (necessary for further study), and 'cultural rich' which are intended to extend student's empathy and/or prepare them for travel to the appropriate countries.

Eleven units are available in the Italian subject area. The relationship between these units is illustrated in figure A.1.8.

Recommendation antecedents

1. Students are to complete either of the Stage 1 units before proceeding with extension units.
2. The cf <1.00> is applied to the unit recommendations for the Stage 1 units.
3. Students have a choice in sequencing one or more Stage 2, Stage 3, and then Stage 4 units.
4. The following timing recommendations are applied to these units:

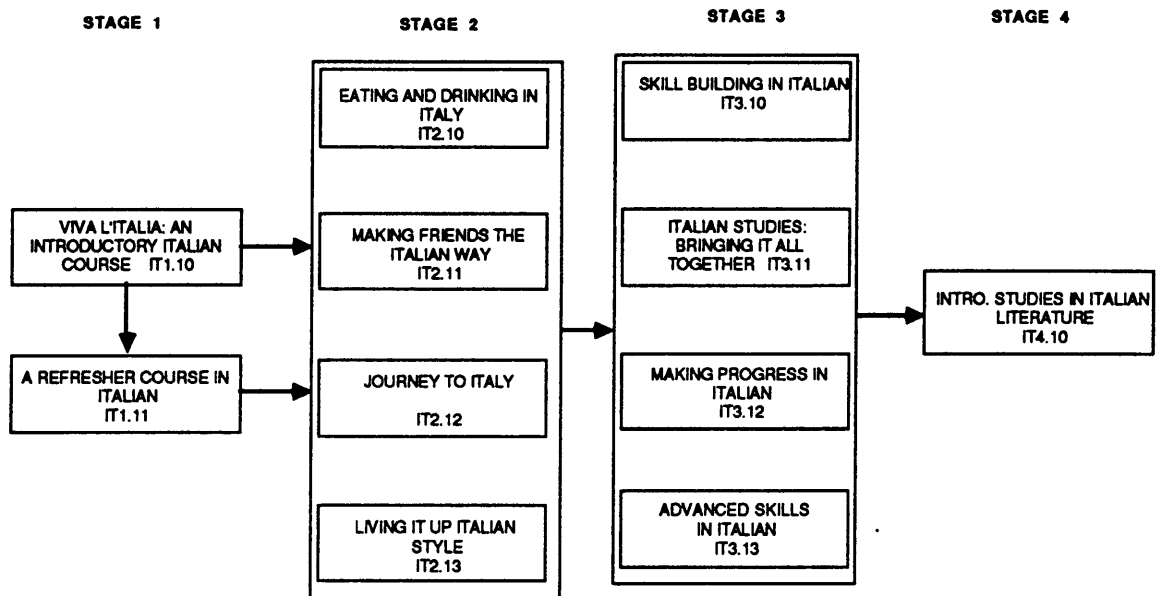
first unit	"Urgent and Compulsory"
second unit	"Important and Compulsory"
third unit	"Compulsory".
5. Extension units are not recommended unless students express the desire to undertake further LOTE studies.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Italian	keen<1.00>, enjoy<1.00>, OK<0.50>, prefer not<0.25>, definitely not<-1.00>
grades achieved in prerequisite units	A<1.00>, B<0.75>, W<0.75>, C<0.25>, D<-0.75>, E<- 1.00>
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in additional Italian at each Stage.
8. The following timing recommendations are applied to extension units:

fourth to sixth	"Extension"
seventh to tenth	"Specialisation".

Figure A.1.8

ITALIAN FLOWCHART



MINIMUM REQUIREMENTS:

1. THREE UNITS OF LANGUAGE OTHER THAN ENGLISH
2. NINE UNITS FOR FURTHER INDONESIAN STUDY

A.1.9 MODERN GREEK

Subject background

To satisfy the minimum requirements students need to complete at least three units of Languages Other Than English. Students may satisfy this requirement by completing units in one or more of the three languages offered. All three languages offer units which are 'language rich' (necessary for further study), and 'cultural rich' which are intended to extend student's empathy and/or prepare them for travel to the appropriate countries.

Nine units are available in the Modern Greek subject area. The relationship between these units is illustrated in figure A.1.9.

Recommendation antecedents

1. Students are to complete either of the Stage 1 units before proceeding with extension units.
2. The cf <1.00> is applied to the unit recommendations for the Stage 1 units.
3. Students have a choice in sequencing one or more Stage 2, and then Stage 3 units.
4. The following timing recommendations are applied to these units:

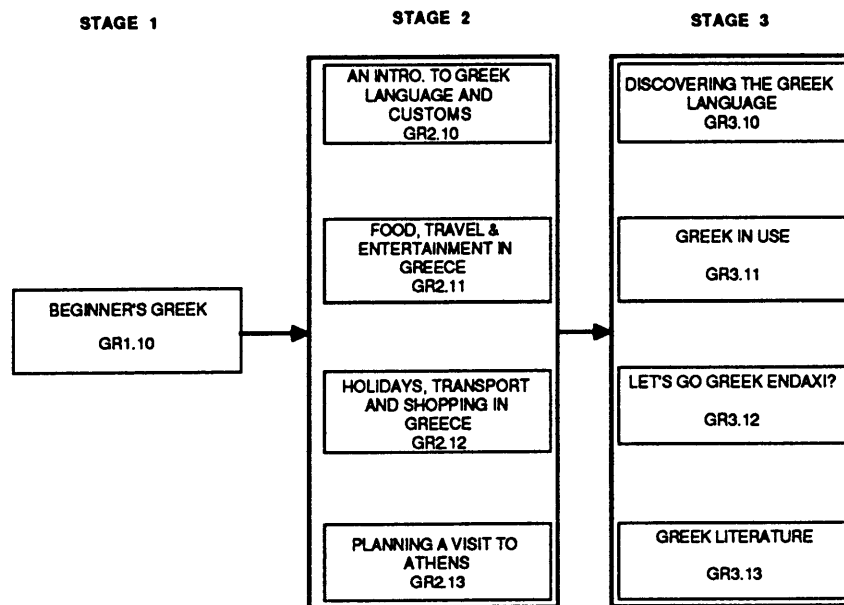
first unit	"Urgent and Compulsory"
second unit	"Important and Compulsory"
third unit	"Compulsory".
5. Extension units are not recommended unless students express the desire to undertake further LOTE studies.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Modern Greek	keen<1.00>, enjoy<1.00>, OK<0.50>, prefer not<0.25>, definitely not<-1.00>
grades achieved in prerequisite units	A<1.00>, B<0.75>, W<0.75>, C<0.25>, D<-0.75>, E<-1.00>
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in additional Modern Greek at each Stage.
8. The following timing recommendations are applied to extension units:

fourth to sixth	"Extension"
seventh to tenth	"Specialisation".

Figure A.1.9

MODERN GREEK FLOWCHART



MINIMUM REQUIREMENTS:

1. THREE UNITS OF LANGUAGE OTHER THAN ENGLISH
2. NINE UNITS FOR FURTHER INDONESIAN STUDY

A.1.10 MATHEMATICS

Subject background

Thirty-one units are available in this subject area. Students need to satisfy the minimum requirements in at least one of three 'Levels', with the end-point primarily based on achievement rather than volume. Students usually undertake at least ten mathematics units. The relationship between these units is illustrated in figure A.1.10. The student level, for the year ten examinations and certificate, is predominantly determined by the Stage they reach: for Level 3 they have to complete the four units in Stage 3; for Level 2 they need to complete at least one Stage 5 unit; and for Level 1 they need to complete both Stage 6 units.

Students commencing in Year 8 are placed into one of the three 'Transition Maths' units on the recommendation of their Year 7 (Primary) teacher's report. Approximately 65 percent in Transition Maths 2, 15 percent in the higher Transition Maths 3, and 15 percent in the lower Transition Maths 1. The remaining 5 percent enter the Remedial unit RR11M. During the first term a number of students usually transfer from Transition Maths 1 to the Remedial unit.

The mathematical concepts covered in Transition Maths 1 are the same as the four Remedial 1.1-4 units, the later taking longer. Similarly, the mathematical concepts in Transition Maths 2 are the same as the two Remedial 2.1-2 units; and Transition Maths 3 is equated with the two Remedial 3.1-2 units. The same philosophy applies in Stages One to Six where the 'Development Mathematics' units examine concepts in a more 'academic' setting than in the 'Essential Mathematics' units which emphasise practical rather than theoretical examples.

Thus students can enrol laterally where necessary for further study in a concept, without being 'locked' in to, or out of, a mathematics level.

Recommendation antecedents

1. Students are to complete at least one of the compulsory Stage 1 units before proceeding with Stage 2 units.
2. Students have a choice in sequencing the units undertaken in each Stage.
3. The strength <cf> of recommendations for minimum units depends on:
grades achieved in prerequisite units
A<1.00>, B<0.75>, W<0.75>, C<0.25>, D<0.10>, E<0.05>
4. The following timing recommendations is applied to all units until the minimum requirements for Level 3 are satisfied
"Urgent and Compulsory"
After which the timing recommendation is
"Extension"
6. The strength <cf> of recommendations for extension units depends on:
stated interest in Mathematics
keen<1.00>, enjoy<1.00>, OK<0.50>,
prefer not<0.25>, definitely not<-1.00>
grades achieved in prerequisite units
A<1.00>, B<0.75>, W<0.75>, C<0.25>,
D<-0.75>, E<-1.00>

7. Students are not allowed to specialise in either of the 'Development' genres and are required to have completed the unit in the other genre at the previous Stage.

Solutions

STAGE 1

Minimum requirement MA13T or RR32M

Initial placement in Transition Maths by Year Seven teacher recommendation.

Recommend next Transition Maths if satisfactory grades

Recommend Remedial Maths if unsatisfactory Transition Maths grades

Recommend next remedial Maths within Transition Maths alternative

Offer MA1EL and MA1BL to interested students following MA12T or RR22M

STAGE 2

Recommend Development units

Recommend Essential units if unsatisfactory Stage 2 Development grades
or in response to student preference

STAGE 3 - 6

Recommend Development units if satisfactory Development grades

or additional Essential unit if unsatisfactory Development grades

Recommend Essential units if unsatisfactory Development grades

or in response to student preference

Recommend units at next Stage

when current Stage and intended Level requirements satisfied

Offer MAO1E if satisfactory Development grades MA23D and MA24D

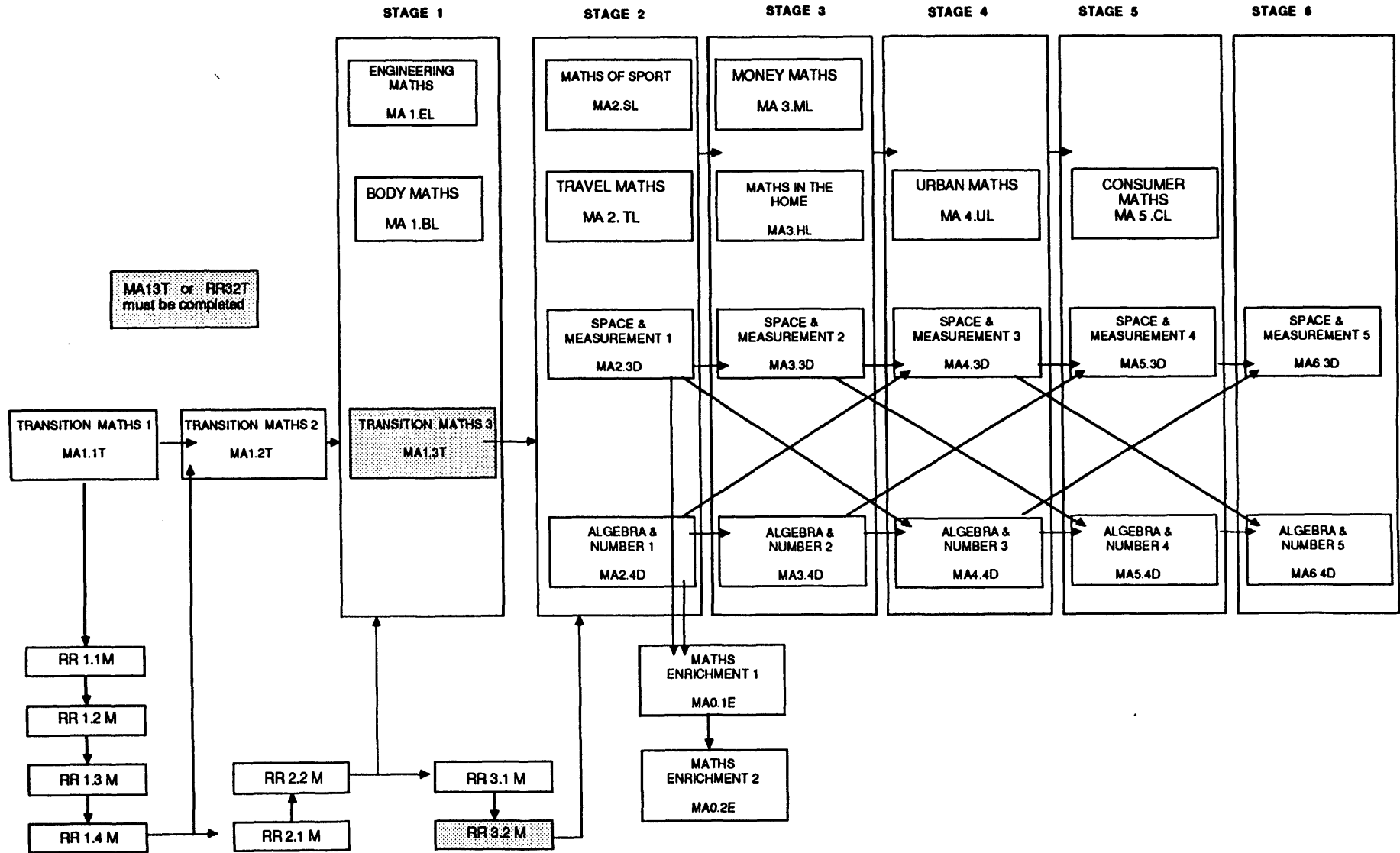
Offer MAO2E if satisfactory MAO1E grades

Maintain balance between genre and Stage requirements

Monitor unit selection in compliance with stated desired Level

MATHEMATICS FLOWCHART

Figure A.1.10



A.1.11 MUSIC

Subject background

Thirteen units are available in this subject area. To satisfy the minimum requirements students need to complete an introduction unit and one other Music or a second Drama unit; that is, at least three 'performing arts' units. After the compulsory introduction unit, students may participate in musical studies relating to the theory of music, performances with small or large groups, and using computers to assist in the composition or presentation of music. The relationship between these units is illustrated in figure A.1.12.

Recommendation antecedents

1. Students are to complete the compulsory unit before proceeding with extension units.
2. After completing the introductory unit, students have a choice in sequencing the other units in each genre.
3. The following timing recommendations are applied to these units:

first	"Urgent and Compulsory"
second performing arts unit	"Important and Compulsory"
4. Extension units are not recommended unless students express the desire to undertake further art studies.
5. The strength <cf> of recommendations for extension units depends on:

stated interest in Music	
keen<1.00>	, enjoy<0.75>, OK<0.30>
prefer not<0.15>	, definitely not<0.15>
7. The following timing recommendations are applied to extension units:

third	"Extension"
fourth plus	"Specialisation".

Solutions

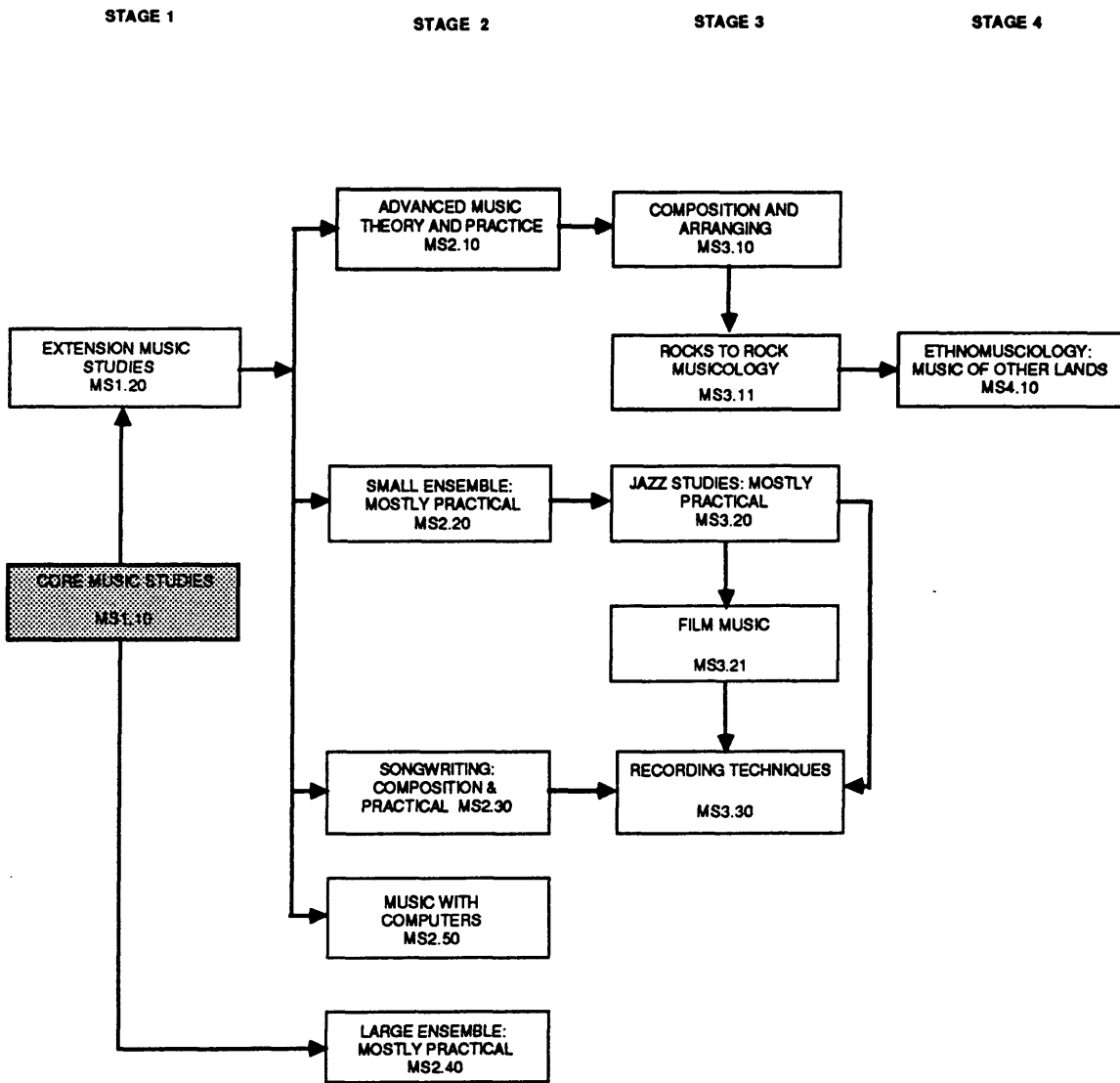
Minimum requirements = 1 units.
Recommend compulsory Stage One unit.

Minimum Performing Arts requirements = 3 units.
If no second Drama unit recommend additional Music unit.

Extension and Specialisation units.
If acceptable grades in prerequisite units
then recommend consequential units in selected theme.

Figure A.1.11

MUSIC FLOWCHART



COMPULSORY UNIT

MINIMUM REQUIREMENTS: 1 COMPULSORY UNIT

A.1.12 PHYSICAL EDUCATION & HEALTH

Subject background

Twenty units are available in this subject area. To satisfy the minimum requirements students need to complete an introduction unit and one other in the Health genre, and two introductory units and one other in the Physical Education genre. Two further extension units are available in Health, and thirteen further units in Physical Education. The relationship between these units is illustrated in figure A.1.12.

Recommendation antecedents

1. Students are to complete the minimum requirements before proceeding with extension units.
2. After completing the introductory unit, students have a choice in sequencing the other units in each genre.
3. The cf <1.00> is applied to the unit recommendations for the three minimum units.
4. The following timing recommendations are applied to these units:

first and second	"Urgent and Compulsory"
third	"Important and Compulsory"
fourth unit	"Compulsory".
5. Extension units are not recommended unless students express the desire to undertake further art studies.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Art	
keen<1.00>, enjoy<0.75>, OK<0.30>, prefer not<0.00>, definitely not<-0.50>	
grades achieved in prerequisite units	
A<1.00>, B<0.85>, C<0.70>, D<0.55>, W<0.00>, E<-0.50>	
7. The following timing recommendations are applied to extension units:

fifth and sixth	"Extension"
seventh plus	"Specialisation".

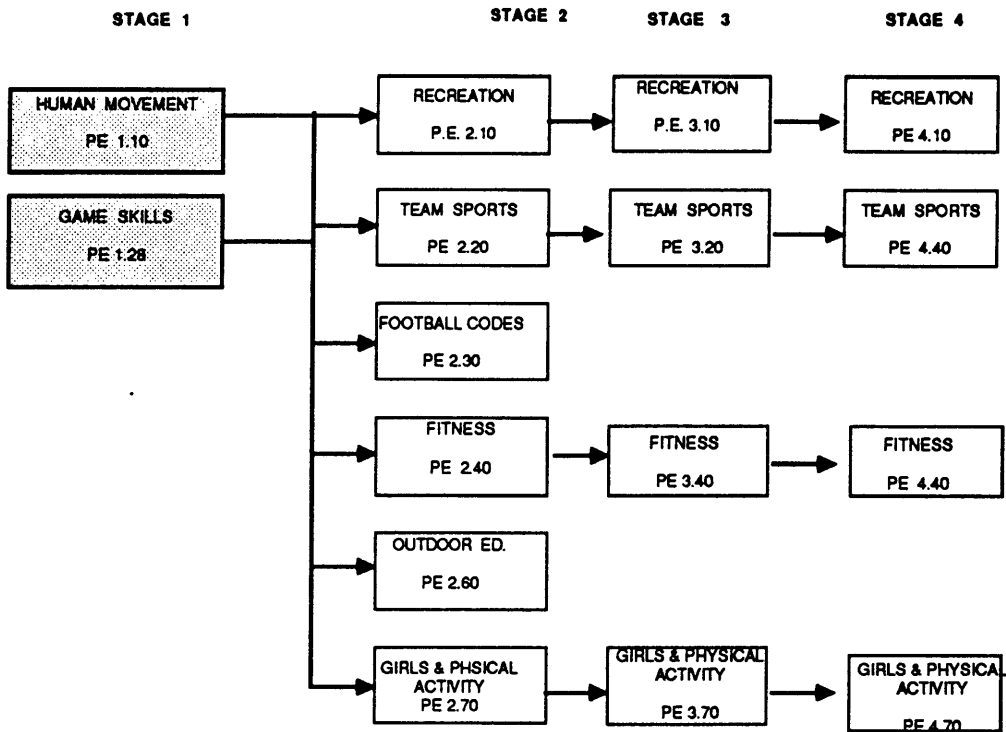
Solutions

Minimum requirements = 5 units.
 Recommend three compulsory Stage One units.
 Recommend one unit from each of Health and PE genre.

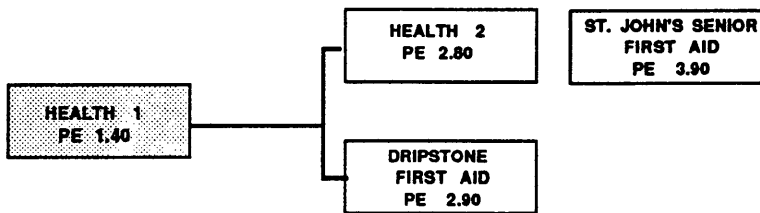
Extension and Specialisation units.
 If acceptable grades in prerequisite units
 then recommend Stage Three units in selected theme
 then recommend Stage Four units in selected theme.

Figure A.1.12

PHYSICAL EDUCATION & HEALTH FLOWCHART



Stage 1 units compulsory and pre requisite for any stage 2, 3 or 4 unit
 Stage 1 units should be completed in years 8 / 9
 Students to complete both Stage 1 units and should attempt at least one Stage 2 unit



All students must complete Stage 1 PE 1.40 (Health)
 and should attempt at least one advanced Health unit.
 St. John's age requirement for Senior First Aid (15 years)

A.1.13 SCIENCE

Subject background

Twenty-four units are available in this subject area, including five 'remedial' units. To satisfy the minimum requirements students need to complete the compulsory introduction unit or its remedial alternative; a compulsory Stage One unit in each of the four genre and a Stage Two unit in two genre; plus two other units one of which has to be from Stage Three. Further extension units are available in each genre. The relationship between these units is illustrated in figure A.1.13.

Recommendation antecedents

1. Students are to complete the minimum requirements before proceeding with extension units.
2. After completing the introductory unit, students have a choice in genre sequencing.
3. The cf <1.00> is applied to the unit recommendations for the compulsory units.
4. The following timing recommendations are applied to these units:

Introduction and Stage One units	"Urgent and Compulsory"
Stage Two compulsory units	"Important and Compulsory"
remaining two minimum units	"Compulsory".
5. Extension units are not recommended unless students express the desire to undertake further art studies.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Science	
keen<0.50>, enjoy<0.05>, OK<0.05>, prefer not<-1.00>, definitely not<-1.00>	
grades achieved in prerequisite units	
A<1.00>, B<1.00>, C<1.00>, D<0.05>, W<0.00>, E<-0.02>	
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in a genre until all extension units are completed; after which they will be recommended to the appropriate stage in other genres.
8. The following timing recommendations are applied to extension units:

tenth and eleventh	"Extension"
eleven plus	"Specialisation".

Solutions

Minimum requirements = 9 units.

Recommend compulsory introduction unit.

Recommend four compulsory Stage One Units.

Recommend two compulsory Stage Two Units.

Recommend one Stage Three Unit.

Recommend a further Unit.

If unsatisfactory grades in compulsory introduction or Stage One units
then recommend remedial unit for that genre prior to continuing genre.

Extension and Specialisation units.

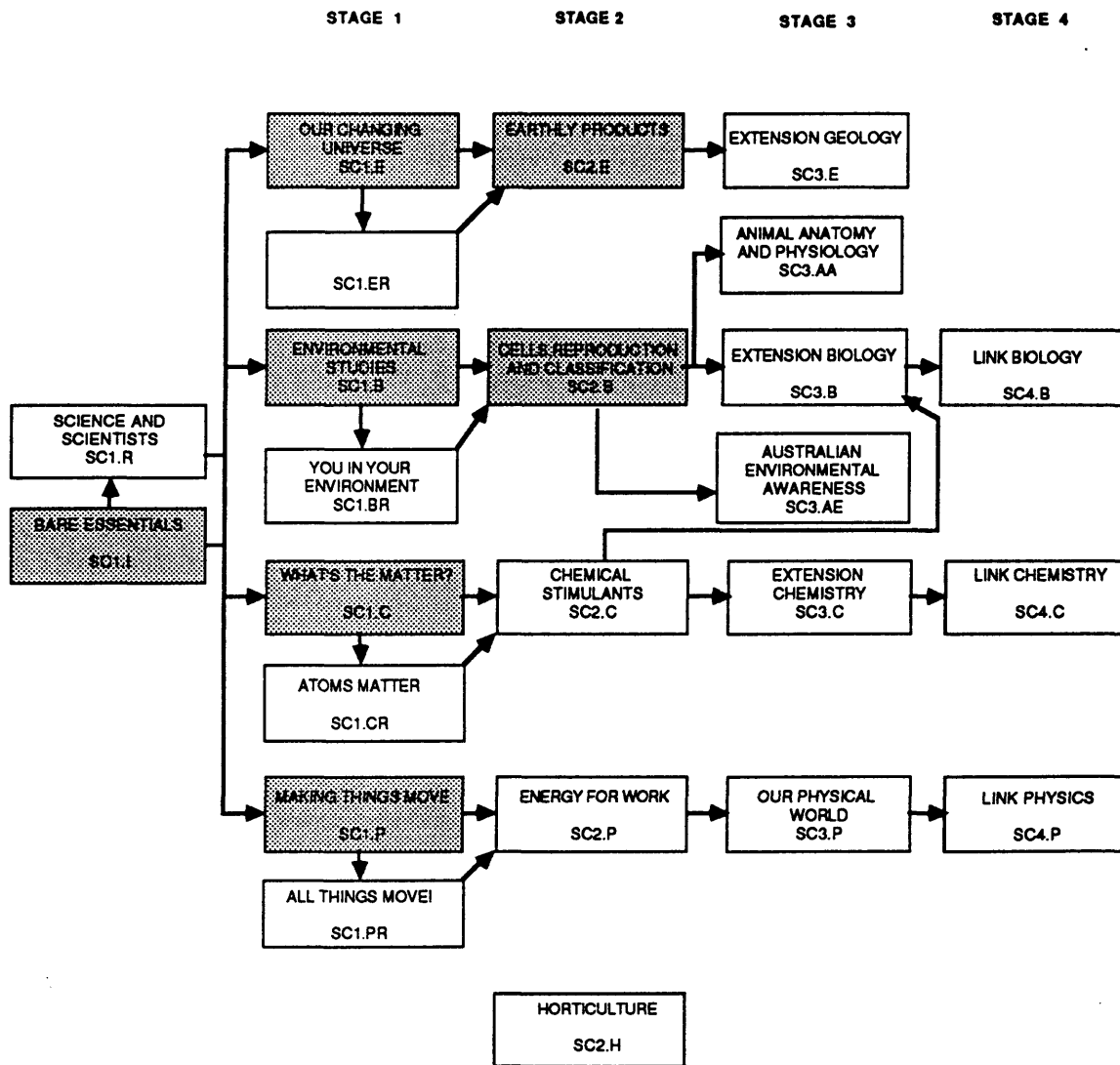
If acceptable grades in prerequisite units

then recommend consequential units in selected theme.

The rule structure had two particular situations to accommodate: remedial units and flexibility in satisfying the minimum requirements. The faculty experts are of the opinion that most students having completed one 'remedial' tended to continue with other 'remedial' units rather than return to parallel mainstream units, but should to be encouraged to mainstream if their grades and grades are satisfactory. Flexibility in satisfying minimum requirements requires checks to ensure students are not busy doing science but not satisfying the certificate conditions. The optional units within the minimum requirements could be satisfied by Stage One, Stage Two, Stage Three or Stage Four units which individually had their own pre-requisites.

Figure A.1.13

SCIENCE FLOWCHART



COMPULSORY UNITS

MINIMUM REQUIREMENTS:

1. COMPLETE 7 COMPULSORY UNITS PLUS 2 OTHER UNITS (ONE OF WHICH MUST BE A STAGE 3 UNIT)

A.1.14 SOCIAL EDUCATION

Subject background

Twenty five units are available in this subject area. To satisfy the minimum requirements students need to complete two Stage One compulsory units, at least four of the six Stage Two units, one Stage Three compulsory unit, and at least two other units. The relationship between these units is illustrated in figure A.1.14.

Until recently, Social Education was divided into Themes and Stages and students were required to undertake units within a double matrix. Accompanying the removal of Themes, there has been an increase in the variety of units available after Stage One. In counselling students, the teachers still make some reference to traditional themes (History, Geography, Politics), but only to elicit possible interests. Unit selection is usually a reflection of interest rather than ability.

Students are encouraged to move up or sideways rather than back a Stage. Students who fail a non-compulsory unit do not usually repeat that unit, rather they find alternative units at the same Stage.

Students are allowed, but not encouraged, to not study Social Education for a term in Year eight or nine

Recommendation antecedents

1. Students are to complete the Stage One and Stage Two requirements before proceeding with other units.
2. Students are to undertake the compulsory Stage Three unit in either the first or second term of Year Ten.
3. The cf <1.00> is applied to the unit recommendations for the Stage One, Stage Two and Compulsory Stage Three units.
4. The following timing recommendations are applied to these units:

first and second	"Urgent and Compulsory"
third to sixth	"Important and Compulsory"
Stage 3 unit	"Compulsory".
5. Students are recommended for the highest stage possible in preference to broadening their units at lower stages, though students could satisfy the minimum requirements and only study one unit beyond Stage Two, the compulsory SA300.
6. The strength <cf> of recommendations for extension units depends on:

stated interest in Art	
keens <1.00>, enjoy <0.75>, OK <0.10>, prefer not <0.00>, definitely not <-0.50>	
grades achieved in prerequisite units	
A <1.00>, B <1.00>, C <0.75>, D <0.00>, W <0.00>, E <-0.50>	
7. If requested and the pre-requisites are satisfied, students are allowed to specialise in a genre until all extension units are completed; after which they will be recommended to the appropriate stage in other genres.

8. The following timing recommendations are applied to extension units:
- | | |
|--------------------|-------------------|
| eighth or ninth | "Compulsory" |
| tenth and eleventh | "Extension" |
| twelve plus | "Specialisation". |

Solutions

Minimum requirements = 9 units.

Recommend two compulsory Stage One units.

Recommend four of six Stage Two Units.

Recommend two Stage Three units.

Recommend SA300 in first (and if necessary second) term Year Ten.

Extension and Specialisation units.

If acceptable grades in two Stage Three units

then recommend either of the Stage Four units in selected theme

else recommend another Stage Three unit.

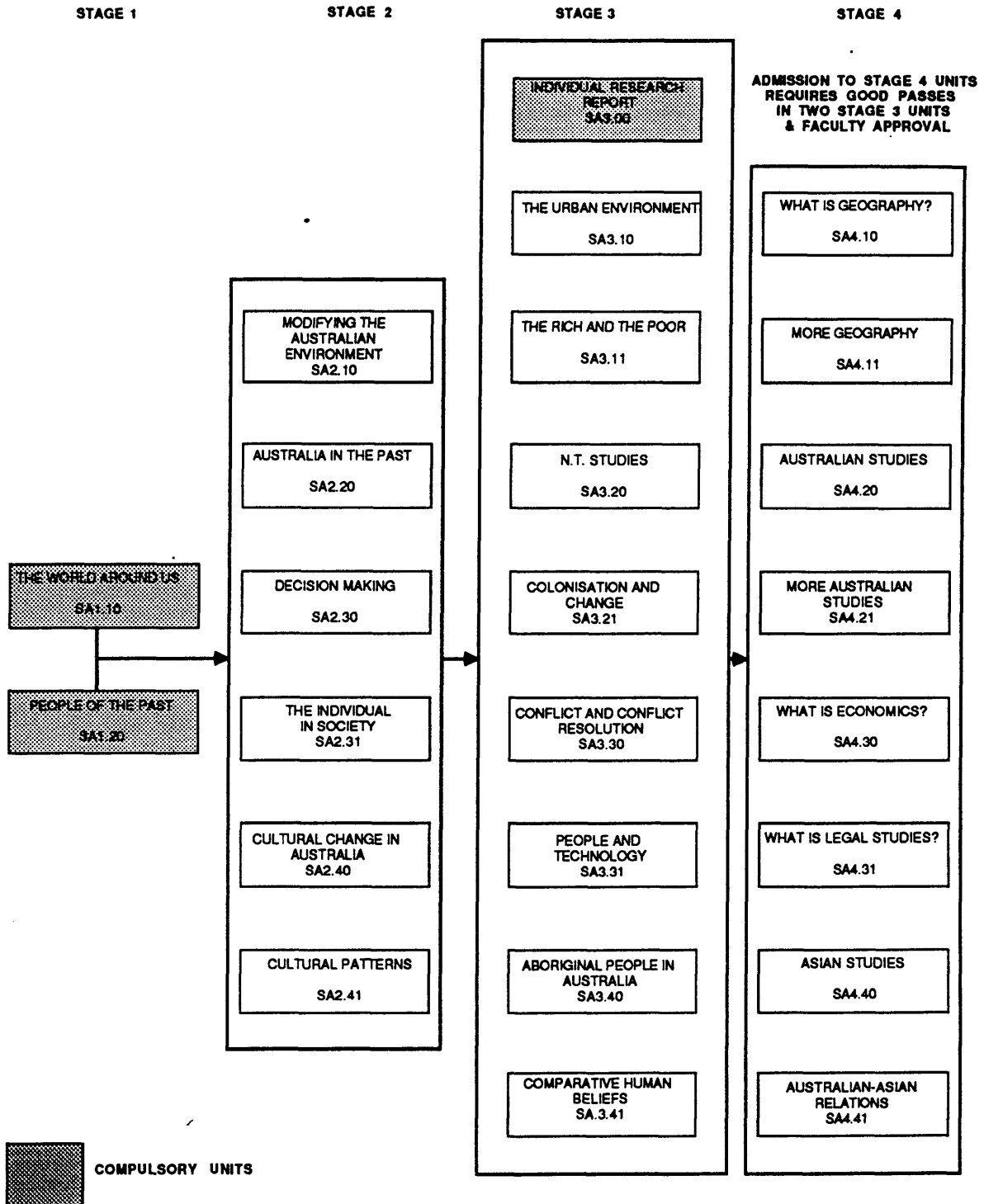
If completed one or more Stage Four units

then recommend other Stage Four units in selected theme.

The Social Education flow chart is relatively simple but the certificate requirements provided two particular challenges. Students needed to satisfy the six pre-requisites for SA300, a compulsory unit in first or second term of Year Ten. The extensive range of units in Stage Two and Stage Three could not be simply grouped into genre and since the pre-requisites were very broad students were often faced with quite a few recommendations; especially those students who had not satisfied the entry requirements for Stage Four (which does have four themes between the eight units). The broad Stage Four entry requirements (good grades in at least two of the nine Stage Three units) necessitated an extra calculation routine.

Figure A.1.14

SOCIAL EDUCATION FLOWCHART



A.1.15 TECHNICAL STUDIES

Subject background

Fifteen units are available in this subject area. To satisfy the minimum requirements students need to complete two introduction units. Extension units are available in five genre. The relationship between these units is illustrated in figure A.1.15.

Recommendation antecedents

1. Students are to complete the minimum requirements before proceeding with extension units.
2. The cf <1.00> is applied to the unit recommendations for the two minimum units.
3. The following timing recommendations are applied to these units:

first unit	"Urgent and Compulsory"
second unit	"Compulsory"
4. Extension units are not recommended unless students express the desire to undertake further art studies.
5. The strength <cf> of recommendations for extension units depends on:

stated interest in Art	
keen<1.00>, enjoy<0.75>, OK<0.30>, prefer not<0.00>, definitely not<-0.50>	
grades achieved in prerequisite units	
A<1.00>, B<0.85>, C<0.70>, D<0.55>, W<0.00>, E<-0.50>	
6. If requested and the pre-requisites are satisfied, students are allowed to specialise in a genre until available extension units are completed; after which they will be invited to the appropriate stage in other genres.
7. The following timing recommendations are applied to extension units:

third and fourth	"Extension"
five plus	"Specialisation".

Solutions

Minimum requirements = 2 units.

Recommend two compulsory units.

If acceptable grades in preferred genre

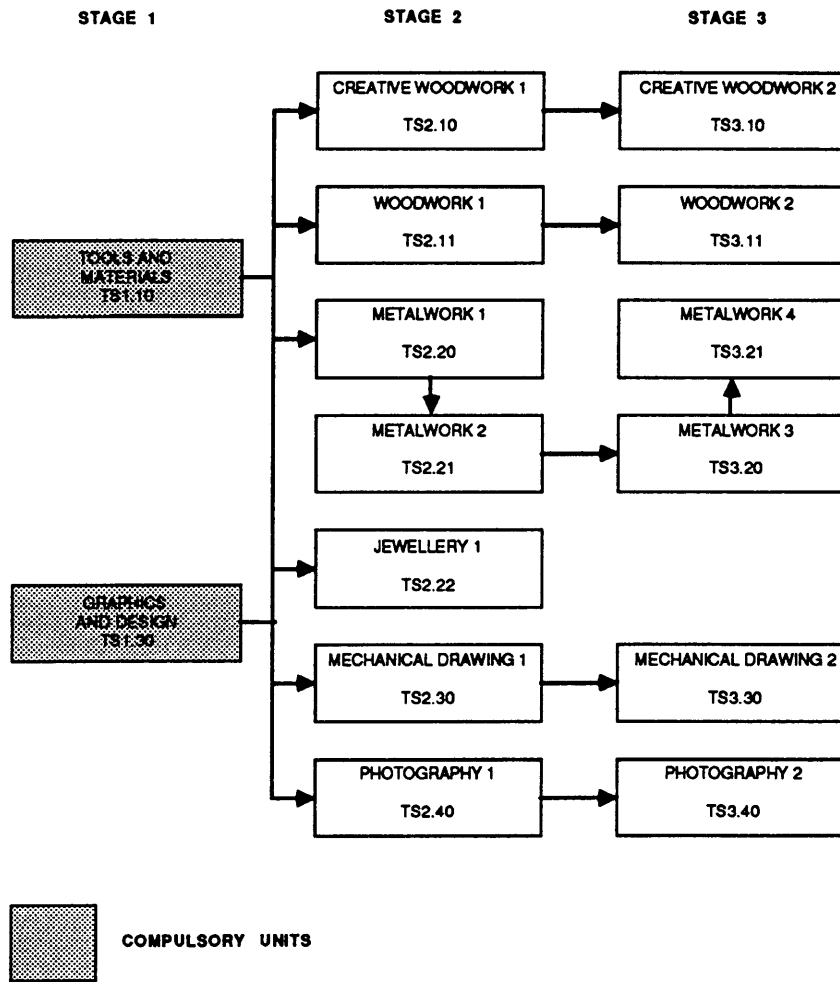
then recommend extension units in selected genre

else recommend appropriate units in other genre.

The *decision table* for Technical Studies (figure A.1.15.2) illustrates potential combinations.

Figure A.1.15

TECHNICAL STUDIES FLOWCHART



MINIMUM REQUIREMENTS: 2 COMPULSORY UNITS

Figure A.1.15.2
Technical Studies Pre-requisites Decision Table

	210	211	220	221	222	230	240	310	311	320	321	330	340
110	Y	Y	Y		Y	Y	Y						
130	Y	Y	Y		Y	Y	Y						
210								Y					
211									Y				
220				Y									
221										Y			
222													
230												Y	
240													Y
320											Y		