

**Survey Section B: Draft Writing Brief (Calculus-based Courses)**

Submission by Derek Buchanan

Please circle the appropriate number and provide comments.

- Key**
- 1 Strongly Agree
  - 2 Agree
  - 3 Disagree
  - 4 Strongly Disagree

1. The **Rationale** in section 5.1 (p 18).

|  | Strongly Agree | Agree | Disagree | Strongly Disagree |
|--|----------------|-------|----------|-------------------|
| a. The <b>Rationale</b> adequately describes the nature of Mathematics in broad terms. | 1              | 2     | ③        | 4                 |
| b. The <b>Rationale</b> reflects a contemporary view of Mathematics.                   | 1              | ②     | 3        | 4                 |
| c. The <b>Rationale</b> reflects the purpose of the calculus-based courses.            | 1              | 2     | ③        | 4                 |

**Comment:**

- a. It is a stultified description. There is too much emphasis on the utility of mathematics.
- b. It is a contemporary view, but only from philistines.
- c. It is a purpose, but not the only purpose. Utility is a minor sideshow to maths and shouldn't be the sole motivation for it.

2. The **Aim** in section 5.2 (p 19).

|   | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|----------------|-------|----------|-------------------|
| The proposed <b>Aim</b> adequately describes the overall purpose of the calculus-based courses. | 1              | 2     | ③        | 4                 |

**Comment:**

- Again - too much emphasis on applications.
- No mention is made of the unity of mathematics.
- Why not?

Mathematics Stage 6 Calculus-based Courses Draft Writing Brief Survey

3. The Objectives in section 5.3 (p 20).

|   | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|----------------|-------|----------|-------------------|
| a. The proposed Objectives demonstrate the intention of the calculus-based courses.   | 1              | 2     | 3        | 4                 |
| b. The proposed Objectives adequately define knowledge, skills and understanding and values and attitudes essential for the calculus-based courses. | 1              | 2     | 3        | 4                 |

Comment:

a. They demonstrate the intention. That's not the problem.

The problem is that it's the wrong intention.

b. Again, no mention of the unity of mathematics.

Rationale + Aim + Objectives could be combined into a single preface.

4. The Content organisation in section 5.4 (p 21).

|  | Strongly Agree | Agree | Disagree | Strongly Disagree |
|--|----------------|-------|----------|-------------------|
| a. The proposed Content organisation assists understanding of the way the study of the calculus-based courses is structured. | 1              | 2     | 3        | 4                 |
| b. The proposed presentation of content is appropriate for the calculus-based courses.                                       | 1              | 2     | 3        | 4                 |

Comment:

This section is unnecessary. It should be self-evident from the content section.

Don't put outcomes etc, into syllabus documents. They are useless platitudes and do not help teachers or students in any way whatsoever.

Mathematics Stage 6 Calculus-based Courses Draft Writing Brief Survey

5. The Outcomes in section 5.5 (p 23).

|   | Strongly Agree | Agree | Disagree | Strongly Disagree |
|---|----------------|-------|----------|-------------------|
| a. The Outcomes for the Mathematics Advanced course are appropriate*.   | 1              | 2     | 3        | 4                 |
| b. The Outcomes for the Mathematics Extension 1 course are appropriate. | 1              | 2     | 3        | 4                 |
| c. The Outcomes for the Mathematics Extension 2 course are appropriate. | 1              | 2     | 3        | 4                 |

\* Outcomes are appropriate if (together with the course content) they clearly express the breadth and depth of study to be undertaken by students. There should not be unnecessary overlap within the set of outcomes or more outcomes than is necessary to serve their purpose.

Comment: None of them are appropriate. It's not necessary to have outcomes + content. Content is quite sufficient thank you.

6. The Content in section 5.6 (pp 29–41).

|  | Strongly Agree | Agree | Disagree | Strongly Disagree |
|--|----------------|-------|----------|-------------------|
| a. The proposed Content for the Mathematics Advanced course is appropriate*.   | 1              | 2     | 3        | 4                 |
| b. The proposed Content for the Mathematics Extension 1 course is appropriate. | 1              | 2     | 3        | 4                 |
| c. The proposed Content for the Mathematics Extension 2 course is appropriate. | 1              | 2     | 3        | 4                 |

- \* Content is appropriate if it is relevant to the aim and objectives of the course and provides the means for students to achieve the stated knowledge, skills and understanding and values and attitudes outcomes, and therefore the intended educational benefits, of the course.

Comment:

No mention of Component A/B? Component B is the best thing about 3/3/4 Unit, so to remove it constitutes dumbing down. The writing brief defends itself by saying "rigour is maintained". So bring in the Central Limit Theorem without proof? Is that maintaining rigour? I don't think so. More statistics without the appropriate level of calculus is likewise not going to maintain rigour. Nor is the removal of Harder 3 Unit.

7. The use of technology in section 5.7 (p 42)

|  | Strongly Agree | Agree | Disagree | Strongly Disagree |
|--|----------------|-------|----------|-------------------|
| The proposed approach to the use of technology in the HSC examinations is appropriate. | 1              | 2     | 3        | 4                 |

Comment:

Mathematicians use computers. They do not use graphics calculators. We can have scientific calculators in examinations, but to allow graphics calculators would be silly and constitute dumbing down.



9. **Support Materials** in section 7 (p 47).

The Board will provide various materials to support the teaching and learning of the calculus-based courses. This will include a support document 'Guide to planning, programming and assessment'. (Professional development and training of teachers for the implementation of the courses is the responsibility of school authorities.)

Please provide your views on the type of support that should be included in the materials to accompany the syllabuses:

|  | Strongly<br>Agree | Agree | Disagree | Strongly<br>Disagree |
|--|-------------------|-------|----------|----------------------|
| a. Teaching and learning units   | 1                 | ②     | 3        | 4                    |
| b. Advice on programming   | 1                 | ②     | 3        | 4                    |
| c. Program overviews   | 1                 | ②     | 3        | 4                    |
| d. Advice in relation to teaching 'new' areas of course content                            | 1                 | ②     | 3        | 4                    |
| e. Teaching suggestions to assist the development of meaningful and engaging units of work | 1                 | ②     | 3        | 4                    |
| f. Sample HSC assessment programs  | 1                 | ②     | 3        | 4                    |
| g. Advice on the utilisation of different types of assessment tasks                        | 1                 | ②     | 3        | 4                    |
| h. Sample assessment tasks   | 1                 | ②     | 3        | 4                    |
| i. Suggestions for the utilisation of technology in teaching and learning                  | 1                 | ②     | 3        | 4                    |
| j. Applications that relate to real world problems   | 1                 | ②     | 3        | 4                    |

Comment:

*It is good to provide these as professional development sessions & in printed and electronic formats preferably on the Board of Studies website.*

---



---



---



---



---

## General Comments

10. Please provide below any further comments on the draft writing brief.

It is good that  $e^{i\theta} = \cos\theta + i\sin\theta$  has been brought back. But for the last 26 years, & Unit teachers have been teaching it anyway - despite it not being in the current syllabus. This is one example where the syllabus is the floor not the ceiling. So a statement to the effect that the syllabus represents the minimum requirements only and that good teachers and good students can go beyond the syllabus if they wish should be introduced. We need to get rid of the "just stick to the syllabus" culture which has arisen over the years - mostly from uneducated maths teachers. This is one way you can do it. Another way is to bring back Component A/B. Yet another way is to require students & teachers to be well attuned to current developments in mathematical research.

Other comments already submitted to the Board are in the document

<http://users.tpg.com.au/nanahub/submission.pdf>

a copy of which has been sent to Margaret Bigelow and David Howe.

Thank you for responding to the survey.

Burdman

31/05/2007