Course Review Report of
2230: Bachelor of Biomedical Science
3975: Bachelor of Biomedical Science (Scholar Program)
3976: Bachelor of Biomedical Science Advanced with Honours
4417: Bachelor of Biomedical Science and Bachelor of Commerce
3356: Bachelor of Biomedical Science and Bachelor of Laws
3528: Bachelor of Biomedical Science and Bachelor of Science

15-16 August 2013
| Panel Chair | Professor Wayne Hodgson  
Faculty of Medicine, Nursing & Health Sciences  
Monash University |
| --- | --- |
| Panel Review Members | Professor David Paganin  
Faculty of Science  
Monash University  

Associate Professor Peter Thorn  
School of Biomedical Science  
University of Queensland  

Professor Phillip Poronnik  
School of Medical Sciences  
University of Sydney  

Mr Aaron Mentha  
Counselcorp Pty Ltd  

Ms Tara Navya Jois  
Graduate Student |
| Review Secretary | Ms Reshma Pais |
| Date of Submission Endorsements | 20/11/2013 |
| Faculty Board Meeting: | Date: | Agenda item: |
| Education Committee Meeting: | Date: | Agenda item: |
| Approval | Academic Board Meeting: | Date: | Agenda item: |
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Acknowledgement

The panel wishes to convey their thanks to staff from the School of Biomedical Science (SoBS) for their engagement and co-operation during the course review process. We acknowledge the time and effort involved in preparing the extensive self-review documentation and would like to thank the team who prepared the documentation and participated in the interviews.

We also acknowledge the submissions received from various Faculties and Departments and note the information therein. The information presented in these submissions contributed to the deliberations and review recommendations.

Executive Summary

The Bachelor of Biomedical Science (BBiomedSc) course and associated degrees owned by SoBS are highly valued by the Faculty of Medicine, Nursing and Health Sciences. These courses demonstrate strong alignment with University and faculty strategic directions.

The executive summary lists the following outcomes arising from the course review. An explanatory discussion is provided for each condition in the body of the report under the appropriate Terms of Reference.

The Bachelor of Biomedical Science and associated double degrees were found to meet all the Terms of Reference contained in Monash Coursework Course Accreditation Procedures and the panel recommends that the course is reaccredited for a further five years till 2018– with the following two conditions:

**Condition 1** – That the School Executive instigates a review of core curriculum.

**Condition 2** – That the School Executive modifies the governance structure of the course to enable curriculum development and maintenance.

In addition there is an urgent requirement to upgrade learning spaces and equipment

**Condition 1** - That the School Executive instigates a review of the core curriculum.

The panel highlights the following issues.

The need to:

1. alter the balance of content to reflect current core biomedical concepts including pharmacology, immunology and developmental biology as per previous review recommendations.
2. rationalise assessment tasks to ensure consistency and progression across units (vertical and horizontal)
3. develop innovative curriculum practices
4. develop a program wide approach to building of student knowledge and graduate attributes.
5. increase student and researcher awareness of the 3990 units
6. ensure that all students have the opportunity to learn about a variety of career opportunities during the course.

**Condition 2 – That the School Executive modifies the governance structure of the course to enable and facilitate curriculum development and maintenance**

The panel highlights the following issues.

7. Discipline ownership of the core units is hampering change. The panel strongly recommends that the ownership of core units reside with the School rather than Departments.
8. The apparent lack of a central point of control of the curriculum at the School level.
9. The lack of a central budget to support curriculum development, innovation and maintenance.
10. The lack of strategic and systematic stakeholder engagement including partner faculties.
11. The lack of sufficient administrative support for unit coordinators.
Background to the review

Monash University requires all courses to undergo a quality review and reaccreditation every five years to comply with Coursework Course Review Procedures. The guiding principles for review are based on the University’s quality cycle of Plan, Act, Evaluate (monitor and review) and Improve. Course reviews are run on a five year cycle and ensure that the University’s education programs are subject to regular and systematic evaluation and internal reaccreditation.

The three step self-accreditation process involves the following

1. **Self-review**: Internal review of the course followed by a report which is compiled based on standard terms of reference set by the University.

2. **External review**: The self-review report is subjected to an external review panel scrutiny that will deliberate on the report and consider whether the degree should be re-accredited for offering (in its current form, or with modifications). The purpose of the external review is to validate the self-review report and supporting evidence associated with it and offer independent recommendations.

3. **Implementation**: Within four weeks of receiving the External Review Panel's Report, the Dean in consultation with the Deputy Dean (Education) and Course Coordinator:
   - Reviews the findings and recommendations; and
   - Submits findings and recommendations to faculty board for approval.

Within three weeks of receiving faculty board approval, the Dean prepares and submits to Academic Board a Summary Course Review Advice Statement which provides the Faculty's response to each of the Panel's recommendations with a link to the External Review Panel's Report and the Self-review Portfolio and develops an Improvement Plan.

Academic Board having considered the External Review Panel's Report together with the summary advice statement will decide upon one of the following outcomes:

- To reaccredit the course with no conditions
- To reaccredit the course with specified conditions
- To stop further intakes until specified conditions are met
- To disestablish the course effective from xxxx

The decision of Academic Board will be recorded on the Accreditation site. The Academic Board decision is communicated to Faculty Board which has ongoing responsibility to monitor the implementation of the course improvement plan if reaccreditation is approved or monitor the teach-out plan if the course is to be disestablished.
The courses are assessed using the Terms of Reference (ToR) as prescribed by the Coursework Course Review Procedures and are as follows:

1) **Alignment to the strategic direction**
   a) Course alignment to the strategic direction of the University, as outlined in Monash Directions 2025 and the Education Strategic Plan 2011 – 2015

2) **Business Case**
   a) Prepare a Course Profitability model and provide an analysis on the financial performance of the course.
   b) Discuss the demand and load trends over the last five years.

3) **Curriculum**
   - Review the objectives, structure and content of the course with reference to:
     - Maintaining and exceeding national and international academic standards.
     - Preparing graduates to be responsible and effective global citizens and critical and creative scholars as outlined in the Monash Graduate Attributes Policy.
     - Alignment with the Curriculum Design Policy, which includes AQF, Bologna and Research Skills Development Framework and the Course Structure Policy where applicable.
   - Consider the ability and preparedness of students entering the course and their progression through to completion of the course.
   - Consider the effectiveness of the teaching approaches employed across the curriculum.
   - Consider the effectiveness of the assessment approaches employed across the curriculum.
   - Consider the destinations and graduate outcomes for those who complete the course.
   - Review the perceptions about the quality of the course held by stakeholder groups including current students and recent graduates, prospective employers and professional bodies.

4) **Course Management**
   a. Review the academic and support services available to students including orientation and transition, course advice, fee information, career advice, information and learning support services, counselling and health services.
   b. Review the issues associated with the management of the course
      - Governance
      - Compliance

The External Review Panel meeting convened on 11 October 2013 to discuss the courses under review. The panel report and the recommendations contained therein are based on the self-review documentation together with interviews with staff involved with the course delivery. The self-review team is encouraged to receive this report in the spirit of continuous improvement of the course.
Program overview

The Bachelor of Biomedical Science is a flagship course for the Faculty of Medicine, Nursing and Health Sciences and School of Biomedical Science (SoBS). Based on the students’ selection of electives the course provides a generalist or specialist degree in the area of biomedical science. The degree also articulates into honours and PhD program. The double degree programs also offer flexible career pathways.

The courses outcomes are aligned with AQF level 7, Bologna Cycle 1 and Monash Graduate Attributes. Detailed handbook entry to the course is listed here (http://www.monash.edu.au/pubs/2014handbooks/courses/index-byfaculty-med.html) refer to course code 2230, 3975, 3976, 4417, 3356 and 3528

1: Alignment to the Strategic Direction

The panel found that the course demonstrates alignment with the strategic directions of the university and faculty. The BBiomedSci and its related degrees offer students flexibility to pursue a generalist or specialist degree in the area of BMS. The course also generates large numbers of Honours and HDR students for the Faculty. The panel acknowledge the passion and dedication of teaching staff towards biomedical sciences.

In addition to the BBiomedSc single degree, the double degree offerings provide students with flexibility in career choices. Growing enrolment numbers in these offerings demonstrate that the double degree options are meeting the needs of the students in a competitive market. Submissions from partner faculties also provided positive feedback regarding the BBiomedSci double degree programs on offer.

VTAC ‘clearly in’ ATAR demonstrate that the course is successful in attracting students from the top 10% of Victorian school leavers. The panel supports the vision for the future mapped out in the position papers. The upgrade of learning facilities is essential, not only to cater for increased enrolments, but also to maintain market position and ensure a high quality course. Plans to offer BBiomedSci as an articulated pathway to graduate-entry medicine is a strategic decision designed to capture market share in this area but the School should ensure that a focus on research and industry is not diminished by the graduate-entry Medicine program pathway.

External panel members have expressed an interest in exploring collaborative opportunities to establish benchmarks and discipline-based standards.
2: Business Case

The BBiomEdSc is profitable and generates high income to SoBS. Demand for the course is high as demonstrated by increasing enrolment figures. The proposal to offer an articulated pathway for graduate-entry medicine is likely to create further demand for the course. However, discussions with staff indicate that although the course can accommodate more students, it will prove more challenging to resource further growth without a significant boost in infrastructure and upgrading of equipment. With this in mind, the panel welcomes the commitment of $25M from the University to renovate, refurbish or build teaching spaces which will be essential for future growth. Details of the renovation or rebuilding are still at a planning stage and it is, therefore, timely to explore possibilities of innovation in teaching and interactive learning. The resource upgrade requires a planned approach and access to new facilities will take time to develop, at present, the course load appears to be at capacity and resources are stretched to the limit.

The Course is delivered by SoBS, the Faculty of Science and some clinical areas of the Faculty of MNHS. Within SoBS, teaching is integrated across all departments with the exception of Medical Imaging and Radiation Sciences. There is a high level of complexity in teaching a course with input from multiple departments particularly in the areas of governance and budget. According to the self-review report SoBS manage 55% of the core units. Core units within SOBS are ‘owned’ by Departments. Funds within the Departments are not necessarily apportioned to teaching and research but allocated on a needs basis. The panel discussed core unit ownership and if the current model was necessary or optimal in the context of the course. The unanimous view of the panel was that for teaching innovation to occur, the curriculum should be integrated across SoBS. This was less likely to occur when units and budgets were controlled at the Department level. Curriculum change should be driven by pedagogy, not budget, and a radical solution would be to consider moving department based education-focused staff into a School based teaching unit, with staff remaining ‘research connected’ to their home Departments. This would also help facilitate educational research.

*Discipline ownership of the core units is hampering change. The panel strongly recommends that the ownership of core units reside at the school level.*

As discussed above, ongoing course development is heavily constrained by a lack of budget and the current unit governance. There appears to be a lack of a program-wide approach to curriculum innovation, and management. Currently the School Director of Education and BMS course coordinator do not have an allocated budget to facilitate curriculum change with teaching revenue being distributed to departments based on teaching load. Currently, any change in unit content or curriculum is driven at the department level and relies on a department budget. For innovation to occur there needs to be a break down of silos and a radical change in budget distribution.

*The panel strongly recommends allocating budget at the course level to support curriculum development, innovation and maintenance.*
3: Curriculum

The BMS curriculum was developed around SoBS research strengths and the core curriculum still largely reflects the original blueprint. Previous review recommendations have centred on curriculum restructure in Year 3 and since then there has been no concerted effort to review the course curriculum. In order to cater for the rapidly changing biomedicine field, the curriculum must include additional content from pharmacology, immunology and developmental biology. This will be even more of an imperative with the introduction of the articulated pathway to graduate-entry medicine.

Within SoBS, the departments are largely engaged in service teaching into the MBBS, BSc and BMS, as well as a few other courses (e.g. physiotherapy, radiography). BMS units are ‘owned’ by Departments and while the unit coordinators ‘report’ to the course convenor on curriculum matters the budget is controlled by the department and teaching staff are supervised within the department. As indicated in the self-review report, the course management committee is ‘process oriented’ in the absence of central ownership of units. Therefore, in addition to allocating budget to support curriculum development, the panel recommends that the School implements a management structure which centralises ‘power’ to enable curriculum decisions to be made based on pedagogy rather than budget. For instance, the panel discussed the UQ model where course and unit governance lies with the School, and Departments are allocated funds to teach into the program.

The panel noted that the School and Faculty were reluctant to introduce additional units, which supports the University’s position of ‘unit rationalisation’. However, the panel believes that innovation can occur within the current units and at reform should focus on integrated teaching and internal changes to the existing core units. The revision of core content, as well as a review of graduate attributes and learning outcomes requires lateral thinking. The School education committee may be best placed to direct the curriculum review with the involvement of academics who are experts in the field of education. A dedicated project manager with an education background would be beneficial in coordinating the revision.

**Lack of a central point of control of the curriculum at the School level.**

At the Departmental level, the units appear to be well managed but at the course level there appears to be a level of dysfunction. There is limited mechanism for curriculum change. The panel is of the opinion that if the core units were controlled centrally, graduate attributes may be able to be developed earlier in the course and a more coordinated approach to assessment developed. A program wide approach will allow unit objectives to better reflect course learning outcomes and avoid duplication. Core skills underpinning the course such as communication, biostatistics and laboratory skills could be developed and embedded in a scaffolded manner within the units resulting in a more student-centred structure. This will also allow for assessments to be mapped to course learning outcomes and to demonstrate that students obtain these attributes at the end of the program.

The panel recommends offering a streamed approach to 3990 units, laboratory or ‘medicine focused’ electives, for articulation into the medical program, so students can focus on their intended career pathways. Based on this approach students would be offered a choice of
untakings. In reviewing the curriculum, the panel also recommends that SoBS maintains the synergistic working relationship with partner faculties by engaging them in mapping the curriculum and defining graduate outcomes.

As indicated earlier, the external panel members are keen to engage in collaborative networking including setting benchmarks and standards for biomedical courses. This should be explored fully.

**Program wide approach to building of student knowledge and graduate attributes.**

The panel noted considerable duplication in curriculum and assessment tasks within units and were unclear whether assessments were adequately addressing course learning outcomes. There does not appear to be a clear building of skills across the program, and core units appear to be over assessed. An urgent priority should be to integrating assessments throughout the course by undertaking collective assessment blueprinting and rubric development using university and faculty assessment guidelines. Consideration should be given to the “better learning and teaching” strategy and use of technology in assessments.

Discussions amongst panel members revealed that, in terms of financial management of units, a significant proportion of funding is allocated to assessment marking. However, unit coordinators appear to have little knowledge of the financial cost of running units and would benefit from a better understanding of the financial aspects involved in assessment; there are innovative ways of assessing learning outcomes and the curriculum review is timely to rationalise assessments across the course.

**Rationalisation of assessment in terms of consistency and progression across units (vertical and horizontal)**

Curriculum innovation is occurring on a fractured basis mostly due to governance and budgetary constraints. Academic oversight of the course resides with the course management committee and the course convenor. The course convenor has limited power to undertake curriculum development and innovation. The required curriculum review will benefit from a dedicated project manager. The project manager can assist in engaging staff at different levels within SoBS and exploring innovative practices in content delivery, teaching approaches and assessment. Consideration should be given to incorporating more blended learning.

**Innovation of curriculum practices**

The 6 point capstone unit - “research in action” 3990 unit involves a discipline specific mini research project, which is offered to year 3 students, providing them with research experience. Enrolments in 3990 units are gradually increasing, which may be primarily due to the introduction of the ‘Scholar’ and ‘Advanced with Honours’ programs.

Discussion with teaching staff revealed that many 3990 students are continuing into honours programs within departments. However, there seems to be a lack of awareness within certain areas of departments about the availability of these units. The panel believes that 3990 units should be more widely promoted within departments, to both students and academics, as they provide an excellent pathway into honours and HDR programs. SoBS should also investigate extending the
offering of 3990 units to incorporate industry placements and other vocations based on graduate destinations for BMS students.

**Increasing the student and researcher awareness to the 3990 units**

As enrolment numbers increase, the panel are concerned that career / information sessions are being discontinued and the opportunity to spend dedicated time in research laboratories (or other placements) is being reduced. The panel believe that it is important that students are given the opportunity to learn about, and explore, different career paths. SoBS should explore a variety of methods to imbed this important experience within the course.

**Ensure that all students have the opportunity to consider a variety of career paths.**

### 4: Course Management and governance

There is currently no centralised coordination of units. Unit coordinators noted that there is considerable administrative load on academic staff. Administrative support for unit convenors is inconsistent across Departments. The self-review report recommended standardised administrative support for academic staff. In addition, technical staff are often isolated and may benefit from central coordination. The panel believes that central ownership of units would facilitate more streamlined coordination of both teaching and administration.

**Lack of sufficient administrative support to unit coordinators.**

Apart from a meeting in 2011, the Course Advisory Board (CAB) has not been active. Involvement of the CAB, with appropriate representation, will be important in the review and further development of the curriculum. The CAB would also assist in engaging with stakeholders and providing important links with industry. Regular CAB meetings should be scheduled to comply with the Faculty Course Management policy and to ensure that the curriculum is meeting market needs.

In addition, the relationship with partner faculties involved in the delivery of the double degrees could be strengthened. There is currently no representation on the CMC from other faculties. This has led to confusion in the market regarding the value of some double degrees (e.g. BMS/Engineering) and a lack of a ‘clear message’ on Open Day and during other recruitment activities. The Associate Dean, Education, from the Faculty of Engineering expressed the desire to collaborate with SOBS to investigate cross disciplinary capstone units.

**Lack of strategic and systematic stakeholder engagement including partner faculties.**

### Outcome of Review

The Bachelor of Biomedical Science and associated double degrees was found to meet all the Terms of Reference contained in the Monash Coursework course accreditation Procedure and the panel recommends that the course is reaccredited— with the following two conditions

**Condition 1** - That the School Executive instigates a review of core curriculum.
**Condition 2** – That the School Executive modifies the governance structure of the course to enable curriculum development and maintenance.

In addition there is an urgent requirement to upgrade learning spaces and equipment

**Appendices**

**Appendix A - Panel Membership**

Professor Wayne Hodgson  
Monash University

Professor Philip Poronnik  
University of Sydney

Associate Professor Peter Thorn  
University of Queensland

Associate Professor David Paganin  
Monash University

Mr Aaron Mentha  
Counselcorp Pty Ltd

Ms Tara Navya Jois  
Student representative
### Appendix B - Panel Meeting Schedule

<table>
<thead>
<tr>
<th>Meeting Date</th>
<th>Thursday 15 – Friday 16 August 2013</th>
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<tbody>
<tr>
<td><strong>Time</strong></td>
<td>9:00am – 4:00pm</td>
</tr>
<tr>
<td><strong>Venue</strong></td>
<td>Meeting Room G12 Building 15, Clayton Campus</td>
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**Thursday 15 August**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00 am - 9:15 am</td>
<td>Coffee and meet panel members</td>
</tr>
<tr>
<td>9:15 am - 10:00 am</td>
<td>• Introduce the course review process - Chair</td>
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<tr>
<td></td>
<td>• Introduce the courses under review - Chair</td>
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<tr>
<td></td>
<td>• Discuss the general impressions of the self-review report - All Members</td>
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<tr>
<td></td>
<td>• Discuss key issues - All Members</td>
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<tr>
<td>10:00 am - 11:00 am</td>
<td>Meet with Head of School and course coordinator</td>
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<tr>
<td>11:00 am - 11:15 am</td>
<td><strong>Morning tea</strong></td>
</tr>
<tr>
<td>11:15 – 12:15</td>
<td>Meet with 1st, 2nd, 3rd year committee</td>
</tr>
<tr>
<td>12:15 pm – 1:00 pm</td>
<td>Meeting with course management committee</td>
</tr>
<tr>
<td>1:00 pm - 2:00 pm</td>
<td><strong>lunch</strong></td>
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<tr>
<td>2:00 pm – 3:00 pm</td>
<td>Tour of facilities</td>
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<tr>
<td>3:15 pm – 4:15 pm</td>
<td>Meet with teaching and lab staff</td>
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<tr>
<td>4:15 – 5:00 pm</td>
<td>Review documents and progress</td>
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**Friday 16 August**

<table>
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<tr>
<th>Time</th>
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<tr>
<td>9:00 am – 9:15 am</td>
<td>Coffee and Discuss previous day findings</td>
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<tr>
<td>9:15 am - 10:00 am</td>
<td>Meet with Heads of Departments</td>
</tr>
<tr>
<td>10:00 am - 10:30 am</td>
<td>Meet with group of students</td>
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<td></td>
<td><strong>Morning Tea</strong></td>
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<tr>
<td>10:30 – 11:00 am</td>
<td>Interviews requested by staff</td>
</tr>
<tr>
<td>11:30 am - 12:00 pm</td>
<td>- Department of Anatomy and Developmental Biology</td>
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<tr>
<td>11:00 am – 12:00 pm</td>
<td>Meet with partner faculties</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Review documents and progress</td>
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<tr>
<td>1:00 pm - 2:00 pm</td>
<td><strong>Working lunch</strong></td>
</tr>
<tr>
<td>Time</td>
<td>Activity</td>
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<tr>
<td>2.30 pm - 3.00 pm</td>
<td>Preparation of preliminary findings and recommendations.</td>
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<td><em>Afternoon tea</em></td>
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<tr>
<td>3:30 pm - 4:00 pm</td>
<td>Presenting preliminary findings to Head of School and Course coordinator</td>
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<tr>
<td>4.00 pm</td>
<td>Close of review</td>
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Appendix C: Submissions

30 July 2013

Professor Wayne Hodgson,
Deputy Dean [Education],
Faculty of Medicine, Nursing and Health Sciences.

Dear Wayne,

Re: Submission from the Department of Anatomy and Developmental Biology to the “Review of the Biomedical Science Courses – Self Review Report”

My staff and I have had the opportunity to read the “Review of the Biomedical Science Courses – Self Review Report”. The report contains a great deal of useful information and makes some very sensible recommendations to further improve what is already a very impressive biomedical science programme.

However, the Department of Anatomy and Developmental Biology is concerned with the almost complete absence of developmental biology in the current Bachelor of Biomedical Science courses. We understand the historical background for this, namely that when the curriculum was first put together, developmental biology teaching and research was almost entirely absent from the School. However, that is certainly not the case now. Indeed the Department of Anatomy and Developmental Biology by many measures is the second largest department in the School, and has a strong teaching programme in developmental biology in the BSc. As you may know, we introduced Australia’s first BSc major in developmental biology in 2007, and this year more than 550 students are enrolled in these units in Year 2 and more than 180 students are enrolled in Year 3 units. We are also a very strong research department, with 21 research groups and more than 50 research fellows, almost certainly the strongest developmental biology research department in Australia.

The Self Review Report states in the Executive Summary (page 1, para 3) that “The current core curriculum has been in place for some time and there is a need for a process of continuous curriculum review and implementation, divorced from budgetary concerns, to ensure the curriculum keeps up to date with new and emerging areas in BMS”. Paragraph 5 of the Executive Summary states that “The Biomedical curriculum provides a degree of flexibility for students while ensuring that all graduates develop a basic core of scientific knowledge that spans the breadth of the disciplines represented in the SOBS”. Page 4 of the Report states that “…we have the expectation that all research staff will contribute to the educational activities of SOBS as required, thereby ensuring that the BMS curriculum is cutting edge…”. 

Department of Anatomy and Developmental Biology
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Telephone +61 3 9902 9100 Facsimile +61 3 9902 9223
Email: john.hodgson@monash.edu
www.med.monash.edu.au/anatomy/
CRICOS provider number 00008C ABN 12 377 614 012
Dear BMS Review Panel,

I submit comments in response to the BMS course review document, although I have to declare my conflicts of interest in advance: I am Head of Pharmacology and I am on the BMS Course Management Committee in my role as Chair of the BMS Honours course. My comments relate to the recent developments that BMS will most likely be viewed by many students as a pre-med route for the postgraduate medical course offered by Monash. On this point, it is recognised that pharmacology is under-represented in the current BMS course (particularly if benchmarked against other university biomedicine course since it is not a core). Thus, it is an important consideration that future BMS students, destined for Monash Postgraduate Medicine, be conversant with core pharmacology content. At present, this would be best served by the ‘annointed’ BMS students being mandated to take pharmacology in 3rd year, which can be taken as electives in the current BMS course structure, i.e. at the very least, those chosen for postgrad med should complete PHA3011 (Principles of drug action) and PHA3021 (Drugs in health and disease) in 3rd year (first semester).

Thank you for consideration of this matter.

Yours sincerely
Rob Widdop

---
Professor Robert Widdop
Head
Department of Pharmacology
Faculty of Medicine, Nursing & Health Sciences
Monash University
Clayton Victoria 3168
Australia
Via email:

On behalf of Professor Rob Brooks, Deputy Dean Education, I am pleased to forward the following comments from the Faculty of Business and Economics in relation to the course review of the Bachelor of Biomedical Science.

The Bachelor of Biomedical Science double degree combination between FBE and FMNHS changed in 2011 from the Bachelor of Economics to the Bachelor of Commerce. This has resulted in a pleasing increase in the intake, as shown in the table below:

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013 (draft)</th>
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<td><strong>BBiomedSc/BSc</strong></td>
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<tr>
<td><strong>BBiomedSc/BCom</strong></td>
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Over the period 2008-2012, the BBiomedSci/BSc combination has had 36 course completions (with numbers by major as follows: Econometrics 5; Econometrics and Economics 1; and Economics 3).

While there have not yet been any course completions in the BBiomedSci/BCom, the strong increase in intake shows that this is a more appealing double degree, which is meeting a market need. We anticipate that it will continue to attract a strong cohort of highly able students in future.

Kind regards,

Helen

Helen Matich | Manager, Academic Governance Unit
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Faculty of Science submission responding to the Review of the Bachelor of Biomedical Science and associated double degree courses

This document gives input to the review of the Bachelor of Biomedical Science and its associated double degrees which will be undertaken on August 15-16, 2013. It is a consolidated response from the Faculty of Science, to a call for submissions dated August 2, 2013, which was received from Professor Wayne Hodgson (Deputy Dean Education, Faculty of Medicine, Nursing and Health Sciences).

We at the Monash Faculty of Science deeply value the multi-faceted collaborative relationship we have with the School of Biomedical Sciences, in both the Teaching and Research spaces. We work in allied disciplines and have much in common, both from the perspective of our respective discipline areas and from the perspective of teaching and research culture. We teach into units together, we develop curricula together, we learn from each other’s strengths in a variety of areas such as educational process and policy, we have collaborative research projects together, we supervise research students together, and we share a great deal of mutual respect. We hope that this close alliance will deepen with time as we enter a period of bracing change and mutual opportunity for the tertiary sector.

The opportunity for sustained curriculum renewal excite us, bolstered by the surging Monash-wide momentum of positive educational change which the Better Learning and Teaching agenda will catalyse in both our faculties. We are delighted to see the $25M committed for refurbishing the teaching laboratory spaces in your faculty. We both share a desire to nurture and value and challenge our education focused staff on multiple levels, from better support for their professional development and practice, through to building the esteem in which they are held and the level of excellence to which they perform on the international pedagogical arena.

Both of our faculties are committed to growing enrolments while not compromising quality – indeed, we both strive to significantly improve the quality of the educational experience our students receive, in times of increasing financial pressure. We share a dedication to excellence in both teaching and research, and have a shared understanding of the importance of the nexus between the two, not just via the fact that graduates are federa into our research programs, but also via the fact that research and teaching mutually challenge and enrich one another. We laud the fact that all SOBS research staff are expected to contribute to educational activities as required, and in line with the comments earlier in this paragraph firmly believe this approach to be of mutual benefit to both the researchers and the students of our respective faculties.

Below we offer some specific comments related to the curriculum, the delivery of particular units, and the strategic cases for the course which we trust will be of use to the Panel.

CURRICULUM

Several Schools from the Faculty of Science teach into the Bachelor of Biomedical Science and its associated double degrees. These include the School of Biological Sciences, the School of Chemistry, the School of Mathematical Sciences and the School of Physics. All of us value the opportunity to work with you in teaching into the BBiomedSci and related courses.

(Double click on the document for the full report)
A submission to the External Review Panel for the Bachelor of Biomedical Science

Professor Tony Luff, Adjunct Professor, Faculty of Medicine, Nursing and Health Sciences, Monash University.

9 August, 2013

The degree commenced in 1998 and I took over as course director in April of that year. At that stage it was a "Faculty degree". In 2002 or 2003 responsibility for the degree was transferred to the School of Biomedical Sciences. I ceased to have responsibility at that stage as it conflicted with my responsibilities as Associate Dean (Teaching) and subsequently Deputy Dean (Education).

The degree as offered now is very similar to what was put in place in 1999. Some changes have been made to year 3 and the suite of double degrees and options for high achieving students have been added over the years. I believe these additions have been a great success. It is fair to say that the degree has been more successful than we imagined when it was being developed in the late 90's. The Self-Review has not considered the Honours year – which seems strange.

Probably the most significant issue to come out of the Self-Review is that of governance of the degree. Figures 19 and 20 show the complex and overlapping nature of the present governance structure. As indicated in the Self-Review, the Course Management Committee is effectively emasculated (although they do not use that word) and reduced to the day to day and week to week management of the course. Innovation, proper course development and change are very difficult. Not because changes have (of course) to be approved by the Faculty Education Committee (FEC) and Faculty Board but because change can be effectively vetoed by a Head of Department. The governance of the course clearly inhibits change and innovation. There is a damning self admission (on page 23) that "The course committee is process oriented. ......." This surely needs to be addressed.

The Self-Review very strongly makes the point that the present budget model makes no provision for course development and innovation. Ongoing course development, education innovation and quality improvement is essential for any course. I would strongly support the concept that these activities should be funded appropriately.

Aspects of the business case in the Self-Review are difficult to understand. In particular several million dollars are not accounted for. This approximates to the 10 units of electives that students are able to take. In reality, and as mentioned in the Self-Review document most students take units offered by the SOBS departments to BSc students. So in reality the degree returns substantially more money to the SOBS than is indicated in the business case.

The Self-Review is very confusing about numbers of commencing students. In the main body of the report it is argued that with the present physical facilities and staffing there can be no increase in student numbers, then at the very end of the report it is mentioned that the number of commencing students was increased by 89 in 2013! This makes it difficult to comment on the availability or otherwise of teaching resources and what is an appropriate size for the program.

There is little comment in the Self-Review about international students in the course other than the number of students dropped significantly in 2004 when the fees were increased sharply. Is there any strategy for increasing international student enrolment either by direct marketing or via articulation programs with overseas institutions? In addition there is no

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SUBMISSION FROM SCHOOL OF PUBLIC HEALTH & PREVENTIVE MEDICINE (SPHPM)

Review of BMS

August 2013

1. SPHPM values its participation in the BMS degree and is making substantial efforts to improve the quality and relevance of our teaching within the degree. We have great respect for the dedication and competence of the course coordinators & the unit coordinators and for the high academic standards that we have observed throughout the course.

2. We are also a significant employer of BMS graduates who make an outstanding contribution to our research activities.

3. We acknowledge the importance of a strong grounding in biomedical science and believe that this is a fundamental requirement for any person working in medical research, even in applied clinical and public health research. With this in mind we are keen to increase the opportunities for BHS undergraduates to have more access to BMS units especially in areas such as anatomy, physiology, biochemistry, genetics, microbiology and immunology. It is probably not a wise long term investment for this School to be responsible for cut-down versions of these subjects given that this expertise is not within our core skill mix. Discussions are needed to see how this matter can be rationalised.

4. We also note that a very high proportion of BMS entrants are looking for clinical careers rather than laboratory based employment. Judging from the numbers of BMS applicants applying for positions within our School we assume that a proportion of the remainder must be seeking employment in more applied areas of science such as in university departments of applied science, health departments, NGOs, pharmaceutical and device manufacturers etc.

5. We have also the changing nature of laboratory based employment as automated machines take over previously highly skilled activities. At a recent tour of the Red Cross labs in West Melbourne virtually all of the routine lab functions were being undertaken by TAFE-educated staff, a major change from 10 years ago. On the other hand we find that BMS graduates know little about the sciences underpinning clinical and public health research and must complete at least the basic units in epidemiology & biostatistics before becoming equipped to work in this environment.

6. Given these observations we would encourage the course coordinators and reviewers to think about the skill mix most likely to be needed by their graduates. We would contend that even a small increase in emphasis on applied sciences including epidemiology, biostatistics, demography, data-management, clinical trial & clinical research methodology, environmental health & human health risk assessment, modelling, health economics etc might well advantage future BMS graduates, especially given the leadership role played by Monash in several of these areas. Consideration of a broader applied stream may be particularly attractive to prospective students focussing on clinical careers.

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