MEMBERS OF THE CURRICULUM COMMITTEE

Dean of Coursework Studies as Chair (Professor Grady Venville)
Deputy Chair of Academic Board (Professor Mark Israel)
Dean of Graduate Research School (Professor Kate Wright)
Academic Secretary (Dr Kabilan Krishnasamy)
Director, Future Students (Recruitment) (Ms Trish Rechichi)
Associate Director, Admissions (Ms Zoe Morrison)
Associate Director, Student Administration (Ms Di Regan-Roots)
Academic Coordinator, Bachelor of Philosophy (Hons) (Dr Kathy Sanders)
Nominee of the President of the Guild of Undergraduates (Ms Emma Boogaerdt)
Nominee of the President of the Postgraduate Students’ Association (Mr Nevin Jayawardena)
Chair of each Faculty and School of Indigenous Studies Teaching and Learning/Education Committee, or nominee of the Dean:
  - Faculty of Architecture, Landscape and Visual Arts (Ms Sophie Giles) (Deputy Chair)
  - Faculty of Arts (Associate Professor Hélène Jaccomard)
  - Faculty of Business (Dr Nick Letch) (Associate Chair)
  - Faculty of Education (Professor Peter Merrotsy)
  - Faculty of Engineering, Computing and Mathematics (Professor Michael Johns)
  - Faculty of Law (Ms Meredith Blake)
  - Faculty of Medicine, Dentistry and Health Sciences (Professor Sandra Carr)
  - Faculty of Science (Professor Brendan Waddell)
  - School of Indigenous Studies (Mr Grant Revell)

IN ATTENDANCE
Ms Kath Williams, Academic Policy Services (Deputy Executive Officer)
Mr Maxwell Keeble, Academic Policy Services (Deputy Executive Officer)

INVITEE
Ms Sue Smurthwaite, Director, Academic Policy Services

OBSERVER
Ms Feba Mathew, Academic Policy Services

CURRICULUM COMMITTEE MEETING - TUESDAY 22ND MARCH 2016

This is to confirm that the next meeting of the Curriculum Committee will be held from 2.00pm to 4.00pm on Tuesday 22nd March in the Senate Room.

Members are advised that this agenda has been formatted to be ‘electronic device friendly’ by including bookmarks to provide easier navigation throughout the document. Click here for details.

Part 1 of the agenda consists of items for communication. Part 2 of the agenda relates to items for decision to be dealt with en bloc by motion by the Chair. Part 3 is for discussion. A member may request the transfer of an item from Part 1 and/or Part 2 to Part 3.

Relevant background information has been provided for each item on the agenda, but if members require further details they are welcome to contact the Executive Officer (via eo-aps@uwa.edu.au).

Ms Jan Cardy
Executive Officer, Academic Policy Services
WELCOME

The Chair will welcome members to the meeting of the Curriculum Committee, and in particular will welcome the new Dean of the Graduate Research School, Professor Kate Wright.

APOLOGIES

The Chair will record any apologies. Members are reminded that apologies should be forwarded to the Executive Officer (via eo-aps@uwa.edu.au) prior to the meeting.

DECLARATIONS OF POTENTIAL FOR CONFLICT OR PERCEIVED CONFLICTS OF INTEREST

The Chair will invite members to declare potential for conflict or perceived conflicts of interest, if applicable, with regard to items on the agenda.

1. MINUTES – REF F68752

Confirmation of the:

- minutes of a meeting of the Curriculum Committee held on 10th February 2016;
- noting of decisions taken on 23rd February 2016; and
- noting of decisions taken on 29th February 2016.

Minutes are available from the Committee’s web page.

PART 1 – ITEM FOR COMMUNICATION TO BE DEALT WITH EN BLOC

2. EDUCATION COMMITTEE STRUCTURE – REF: F44038

Members will recall that in 2014 the Academic Council resolved by R140/14 to approve a proposal to rationalise the Education Committee structure, which resulted in the reduction of committees from 13 to 3 within the Education portfolio. Consequently, on the recommendation of the Academic Council, the Academic Board resolved by R139/14 to establish the following education committee structure:

- Education Committee as a standing committee of the Academic Council, and the following as standing committees of the Education Committee:
  - Curriculum Committee; and
  - Education Futures Strategy Group

To this end, members are advised that the Education Committee, at its meeting scheduled on Wednesday 23rd March 2016, will be considering further changes to the education committee structure, including its disestablishment and related consequential amendments (see Attachment A).

For noting

3. REVIEW OF COURSES – REF: F71207

The 2015 Review of Courses’ Review Panel submitted its Final Report to the UWA Executive on 11th February 2016 and both the Audit Team’s Submission to the Review Panel and the Review Panel’s Final Report were a subject of discussion at the last Academic Board meeting on 2nd March 2016 (Academic Board agendas and minutes can be accessed here). The Academic Board endorsed the wide dissemination of both reports across the University, accounting for the fact that, given the complex nature of the new courses framework under review, the suite of recommendations is complex and actions will be required from various stakeholders across the University during their implementation over coming months.

In its Final Report, the Review Panel emphasised the need to consider all of the recommendations collectively and holistically to account for their interdependencies and ensure that their implementation
further enhances the University's curriculum offerings, the teaching quality and overall student experience and UWA's reputation as an institution of excellence. On request from the Deputy Vice-Chancellor (Education), Prof Alec Cameron, Academic Policy Services is currently developing an implementation plan for dissemination in due course.

Both reports are available on the Review of Courses’ website, together with information about the next stage of the comprehensive Review of Courses. Given the close linkages between the degrees already reviewed and the degrees subject to review in the second stage, it has been decided to conduct the latter in close proximity to the 2015 Review of Courses. The anticipated time frame is March to June 2016, and as part of the review process, the following two Working Groups have been established:

1. Working Group on Graduate Entry Diplomas and Advanced Diploma (including the Diploma in Modern Languages); and

2. Working Group on Bachelor of Philosophy (Honours) and end-on Honours.

Additionally, a number of faculties will be invited to review their teach-out arrangements for pre-2012 curriculum from an administrative efficiency and effectiveness perspective.

For noting

PART 2 – ITEMS FOR DECISION TO BE DEALT WITH EN BLOC

4. FACULTY OF SCIENCE POSTGRADUATE COURSES – COMPLIANCE WITH VOLUME OF LEARNING POLICY – REF: F59350, F58908, F58909, F58905, F35183, F35144, F58907, F58906

In 2015, eight postgraduate courses from the Faculty of Science were identified as not compliant with clause 5.7 of the then Volume of Learning Policy in relation to the uniqueness of units (now Appendix A of the University Policy on: Courses – Postgraduate Coursework). By R104/15, Academic Council approved non-compliant changes to those courses, subject to the Faculty bringing the courses into compliance with policy for 2017.

On the basis of a likely review of the policy during 2017, the Faculty of Science has requested an extension of a year, to bring the courses in line with the policy by 2018. The original Academic Council approval, the Faculty’s request for an extension, and a list of the affected courses, are provided in Attachment B.

The Chair recommends that the Committee approve the extension of a year for the Faculty of Science to ensure the courses outlined in the attachment comply with the uniqueness requirements set out in policy from 2018.

PART 3 – ITEMS FOR DISCUSSION AND DECISION

5. MATHEMATICS BONUS PROPOSAL – REF: F78791

By way of background, Western Australian Certificate of Education (WACE) ATAR (Australian Tertiary Admissions Rank) courses will be publicly examined and used to construct the ATAR for the first time in 2016. There are three mathematics subjects available to students; Mathematics Applications, Mathematics Methods and Mathematics Specialist, in increasing order of difficulty. The current rules governing the construction of the ATAR, set by the four WA public universities, do not take course difficulty into consideration. This means that under the current system, students with a reasonable level of ability in mathematics may choose the easier Mathematics Applications course instead of Mathematics Methods to achieve an ATAR advantage.

UWA has been communicating with the WA Tertiary Institutions Services Centre (TISC) and the other WA universities with regard to a marks adjustment process for ATAR mathematics courses to address this ‘ATAR advantage’ issue. The attached paper (Attachment C) provides detailed background to this discussion and proposes that, from the 2017 tertiary admissions exercise forward (i.e. university entry in 2018), UWA will implement a TEA bonus approach to incentivise school students to take the highest level of mathematics commensurate with their mathematics aptitude and future aspirations.
The proposed TEA bonus approach for mathematics will include:

- A 10% TEA bonus on the scaled score for students taking Mathematics Methods
- A 10% TEA bonus on the scaled score for students taking Mathematics Specialist
- Changing the rules for unacceptable subject combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Mathematics Specialist

For discussion, endorsement and referral to the Academic Council.

6. PROFESSIONAL PATHWAYS – REF: F71207

The review of the undergraduate component of UWA’s courses conducted during 2015 and reported to the Academic Board in March 2016 indicated that, notwithstanding the clear markers of success for the UWA course structure, there is a perceived failure of the University to communicate broadly the rationale and life and career benefits of the new courses design, especially to school leavers. Based on the feedback received from school principals and students, the Review panel made two related recommendations:

**Recommendation 2:** It is recommended that the potential and opportunities of the University’s courses are promoted and realised through development of exemplar pathways to successful careers, including postgraduate studies, to provide guidance while also encouraging creative choice.

**Recommendation 4:** It is recommended that the University creates a suite of targeted course options with a range of ATAR cut-offs for Year 12 students through TISC, for example additional Assured Entry Pathways and other popular course combinations.

The proposal, Attachment D, outlines popular ‘Professional Pathways’ from undergraduate to postgraduate studies and recommends that these pathways be offered as TISC codes with assured entry at a range of ATAR points. School leavers would then be able to select these ‘Professional Pathways’, in addition to UWA’s regular ‘Flexible Pathways’, when entering their TISC preferences, increasing the visibility of popular combined courses at UWA.

For discussion, endorsement and referral to the Academic Council.

7. NEW POSTGRADUATE CURRICULUM PROPOSALS FROM 2017

7.1. Faculty of Science

Members are asked to consider the Phase 1 (concept plan) proposals for the offering of two new courses from the Faculty of Science from 2017. Members are encouraged to consider the proposals in light of the Phase 1 curriculum development criteria and the University Policy on: Courses – Postgraduate Coursework.

<table>
<thead>
<tr>
<th>Item</th>
<th>TRIM file</th>
<th>Curriculum item</th>
<th>Attachment</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1.1.</td>
<td>F78469</td>
<td>73540 Master of Petroleum Geoscience (coursework or coursework and dissertation) – Phase 1</td>
<td>E1-4</td>
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<td>7.1.2.</td>
<td>F78468</td>
<td>73550 Master of Business Psychology (coursework) – Phase 1</td>
<td>E5-8</td>
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For discussion, endorsement and referral to the Academic Council.

8. NEXT MEETING

The next meeting of the Curriculum Committee will be held on **Wednesday 20th April** at 2pm in the Senate Room. The cut-off date for submission of items for the committee’s agenda is Wednesday 6th April. Please refer any issues for discussion to the Executive Officer, Ms Jan Cardy (eo-aps@uwa.edu.au).
Proposal to Disestablish the Education Committee

TRIM FILE REFERENCE: F44038

DOCUMENT STATUS

Draft  Ready for Review  Final

DOCUMENT MODIFICATION HISTORY

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<tr>
<th>Version Number</th>
<th>Primary Author(s) (name and position)</th>
<th>Description of Version</th>
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<td>Dr Kabilan Krishnasamy Academic Secretary Academic Policy Services</td>
<td>Draft report for consultation and feedback</td>
<td>23.02.2016</td>
<td>Ms Sue Smurthwaite (Director, Academic Policy Services) Ms Jan Cardy (Manager, Curriculum Management)</td>
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<td>0.2</td>
<td></td>
<td>Amended report for consideration</td>
<td>24.02.2016</td>
<td>Professor Alec Cameron Deputy Vice-Chancellor (Education) &amp; Chair of Education Committee Professor Grady Venville Dean of Coursework Studies (Deputy Chair of Education Committee)</td>
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<td>0.3</td>
<td></td>
<td></td>
<td>29.02.2016</td>
<td>Professor Grady Venville, Dean of Coursework Studies and Chair of Curriculum Committee Ms Jan Cardy, Executive Officer (Curriculum Committee) Professor Gilly Salmon, Pro Vice Chancellor (Education Innovation) and Chair of Education Futures Strategy Group (EFSG) Ms Sally Jackson, Executive Officer (EFSG)</td>
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<td>23.03.2016</td>
<td>Education Committee</td>
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<td>6.04.2016</td>
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DOCUMENT APPROVAL

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<th>Date</th>
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</table>
The University’s Education Committee was established in December 2014 by the Academic Board Resolution R139/14. It is a standing committee of the Academic Council and has a role defined by its constitution to:

“(a) advise and make recommendations to the Academic Council and/or other University bodies or officers, as appropriate, on policy and strategic matter relating to (i) the University’s education strategy and vision, including aspects of the student learning experience; (ii) the quality of teaching and learning in the institution; (iii) undergraduate and postgraduate (coursework) admissions; and (iv) the academic structure and framework of undergraduate and postgraduate coursework; and allocated its annual budget to support and promote the University’s education priorities”.

The Education Committee has been in operation for only a year and has met only four times in 2015, but its relevance and significance may need to be reconsidered particularly in the context of new developments in the University. This paper aims to present arguments for the disestablishment of the Education Committee and makes a recommendation for a new committee structure within the Education portfolio.

A. Arguments for the disestablishment of the Education Committee

The following arguments are presented for the disestablishment of the Education Committee:

1. Doubling up of membership with the Academic Council
   The Education Committee comprises a total of 19 members including ex-officio positions. Of the 19 members 17 members are also on the Academic Council. It is noted that the Vice Chancellor has been keen on reducing the amount of time spent by University staff members in committees. The doubling up of membership and discussing and rediscussing same issues on both the Education Committee and the Academic Council may not be seen to be a useful way of utilising precious time for these members, comprising largely University Deans and members of the University Executive.

2. Committee Survey and Feedback
   In 2015, a survey of the committee was conducted and the feedback from members indicated that the role of the Education Committee was unclear.

3. Curriculum Committee
   The University’s Curriculum Committee, though currently is a standing committee of the Education Committee, plays a key role in providing advice direct to the Academic Council on matters relating to courses and curriculum (undergraduate and postgraduate). Recently, the Academic Council had delegated more responsibilities to the Curriculum Committee to approve all changes to existing curriculum. Proposals to offer new courses (including Phase 1 – concept plan which requires an articulation of the market and business plan and Phase 2 – detailed course proposal) are referred by the Curriculum Committee to the Academic Council direct.

4. Establishment of the Student Consultation Group
   This group established by the DVC (E) comprises student representatives and the DVC (E)’s direct reports within the education portfolio. It meets once a month and engages in discussions on key issues relating to the student experience as well as related education policy and strategic issues.

5. Need for streamlining approval pathways
   The need for streamlining approval pathways is justified by two key points. First, the mapping exercise in Appendix A suggests that the items may be considered in other committees within the Education portfolio. Indeed, there is a growing need to streamline the approval pathways with a view to reducing the different layers of approval required for certain types of agenda items. Let us take items relating to admissions, for example. There are different types of issues associated with Admissions and the design of curriculum, which may be listed as follows:
   a) Admission requirements shaping the volume of learning of a cycle 2 course
   b) English Language Competence and test scores
   c) Accreditation requirements for professional courses and admissions related issues
   d) Assured Entry Pathways into professional Cycle 2 courses – impact on course rules

   It is clear from the mapping exercise in Appendix A that Admission matters do not only deal with the operational aspects relating to the actual recruitment but also comprise an academic component. Given that the above issues are also closely linked to the design of courses, it is suggested that the Curriculum
Committee should have an oversight of Admissions related matters including, relevant policies with a view to making recommendations to the Academic Council.

A second justification points to the fact that the Curriculum Committee has the appropriate membership and expertise to consider associated matters relating to admissions.

B. Proposed changes to the Committee Structure within the Education Portfolio

Existing Structure

![Existing Structure Diagram]

Proposed New Committee Structure

For consideration of strategic, policy and related matters

Informal Groups

| Student Consultation Group comprising DVC (E)’s direct reports and student representatives (Existing) – meets once a month (Chair: Deputy Vice-Chancellor (Education)) | Education Executive comprising DVC (E)’s direct reports (Existing) – meets once a month (Chair: Deputy Vice-Chancellor (Education)) |
C. Education Budget
As provided for in its Constitution, one of the roles of the Education Committee is “to allocate its annual budget to support and promote the University’s education priorities.

Further, “the Committee delegates to the Deputy Vice-Chancellor (Education) responsibility for the annual budget to support education priorities across the education portfolio in line with the University’s strategic plan. The Deputy Vice-Chancellor (Education) will provide an annual report to the Education Committee on expenditure and commitments.”

It is suggested that management of these funds (approximately $600,000) be incorporated as part of the Education portfolio’s Integrated Planning Exercise and continue to be allocated based on the following guidelines:

- Support the education portfolio priorities;
- Be outcomes focussed and support short term commitments;
- Fund or contribute to projects, innovations and/or pilots;
- Provide seeding funds and/or grants;
- Provide matching funds;
- Reward and acknowledge excellence in teaching, learning and supervision; or
- Implement review report recommendations.

An annual report on the expenditure and commitments of this education-specific fund will be disseminated to education-related committees (currently Curriculum Committee and Education Futures Strategy Group) and the DVC(E)’s education executive team.

D. How to proceed?

<table>
<thead>
<tr>
<th>Steps</th>
<th>Activity</th>
<th>When</th>
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<tbody>
<tr>
<td>1</td>
<td>Proposal to be considered by DVC (E)</td>
<td>24 February</td>
</tr>
<tr>
<td>2</td>
<td>DVC(E) and Executive Officer (Education Committee) to consult with the Chairs and Executive Officers of the Curriculum Committee and the Education Futures Strategy Group</td>
<td>March</td>
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</table>
| 3     | The following should be presented to the Education Committee for recommendation to the Academic Council:  
   i. Proposal to disestablish the Education Committee  
   ii. Amended Constitution of the Curriculum Committee  
   iii. Amended Constitution of the Education Futures Strategy Group | 21 March |
<p>| 4     | Proposal to be considered by the Academic Council | 4 May |
| 5     | Resolution of the Academic Council and the amended constitutions to be circulated to the relevant committee for noting. | May |</p>
<table>
<thead>
<tr>
<th>Resolution No</th>
<th>Subject</th>
<th>Category</th>
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<tr>
<td>n/a</td>
<td>UWA Academic Calendar</td>
<td>Education - Strategy</td>
<td>Curriculum Committee / Academic Council (via DVC (Education))</td>
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<td>12/15</td>
<td>Reducing the Law Assured Entry (AEP) Pathway ATAR</td>
<td>Admission</td>
<td>Curriculum Committee / Academic Council (via DVC (Education))</td>
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<tr>
<td>18/15</td>
<td>Changes to University policy on English Language Competence to Degree Study (up11/30)</td>
<td>Admission</td>
<td>Curriculum Committee / Academic Council (via DVC (Education))</td>
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<tr>
<td>1/15</td>
<td>Bachelor of Philosophy (Hons) Selection Group and Consequential Amendments to the Curriculum Committee Constitution</td>
<td>Curriculum - Committee Constitution</td>
<td>Curriculum Committee</td>
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<td>2/15</td>
<td>Education Futures Strategy Group - Consequential Amendment</td>
<td>Committee Constitution</td>
<td>Education Futures Strategy Group</td>
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<td>3/15</td>
<td>New Course Proposal: Master of Studies and Graduate Certificate in Studies</td>
<td>Curriculum</td>
<td>Curriculum Committee / Academic Council</td>
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<td>8/15</td>
<td>Undergraduate diplomas - Ongoing Offering and Retention of the Diploma in Modern Languages as part of New Courses</td>
<td>Curriculum</td>
<td>Curriculum Committee / Academic Council (via DVC (Education))</td>
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<td>9/15</td>
<td>Report from the Bachelor of Philosophy (Hons) Working Group</td>
<td>Admission</td>
<td>Curriculum Committee</td>
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<td>10/15</td>
<td>Report on Domestic Admissions for Semester 1, 2015</td>
<td>Admission</td>
<td>Academic Council (via DVC (Education))</td>
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<td>19/15</td>
<td>English language competence requirements for admission to accredited psychology postgraduate courses: 53580 Master of Industrial and Organisational Psychology; 53370 Graduate Diploma in Clinical Psychology; 53390 Graduate Diploma in Clinical Neuropsychology; 01870/54570 Doctor of Philosophy and Master of Clinical Psychology; 01880/54580 Doctor of Philosophy and Master of Industrial and Organisational Psychology; 01890/54590 Doctor of Philosophy and Master of Clinical Neuropsychology</td>
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<td>International Student Barometer</td>
<td>Education - Strategy</td>
<td>DVC (Education) / Academic Council</td>
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<td>7/15</td>
<td>Amendment to University Policy on English Language Competence (ELC) for Admission to degree Study (UP11/30) - Proposal to recognise the Australia Education Management Group (AEMG) English language program as meeting UWA’s minimum ELC requirement – REF F35818, F37823</td>
<td>Admission</td>
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<td>16/15</td>
<td>Good Practice Guide for Management, support and Development of Sessional Staff</td>
<td>Education Futures Strategy Group</td>
<td>Education Futures Strategy Group / DVC (Education)</td>
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<td>17/15</td>
<td>Review of Assessment Working group Report and University Policy on Assessment</td>
<td>Education</td>
<td>Academic Council (via DVC (Education))</td>
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<td>6/15</td>
<td>Amendment to university policy on English Language Competence (ELC) for Admission to Degree Study (UP11/30) - English Language Competence for Admission to Postgraduate Courses</td>
<td>Admission</td>
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<td>14/15</td>
<td>Amended to University Policy on Honours Award</td>
<td>Curriculum</td>
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<td>20/15</td>
<td>Changes to University policy on deferral for Commencing Postgraduate Coursework Students (UP13/14): Psychology courses: 53580 Master of Industrial and Organisational Psychology; 53370 Graduate Diploma in Clinical Psychology; 53390 Graduate Diploma in Clinical Neuropsychology; 01870/54570 Doctor of Philosophy and Master of Clinical Psychology; 01880/54580 Doctor of Philosophy and Master of Industrial and Organisational Psychology; 01890/54590 Doctor of Philosophy and Master of Clinical Neuropsychology</td>
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<td>21/15</td>
<td>Changes to University Policy on Deferral for commencing Postgraduate Coursework Students (UP13/14): Juris Doctor</td>
<td>Admission</td>
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<td>23/15</td>
<td>University Policies: Establishment of new University Policies on Courses and Rescission of 8 related University Policies</td>
<td>Curriculum</td>
<td>Curriculum Committee / Academic Council (via DVC (Education))</td>
</tr>
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</table>
3. CURRICULUM COMMITTEE CONSTITUTION - REF: F68753

Members noted that the Curriculum Committee constitution had been amended to accommodate the following changes:

- consequential amendments to reflect recently approved changes to the final approving body for curriculum items;
- removal of the committee’s role to consider articulation agreements which by R126/08 and R15/14 Academic Council provided for student exchange agreements, articulation and associated advanced standing arrangements involving international students, and in-country study programs to be approved under delegated authority by the Chair of Academic Board;
- inclusion of the committee’s role to approve the establishment of new prizes and amendments to and rescission of existing undergraduate prizes for pass and honours degree courses; and
- minor updates to reflect recent role changes as a consequence of structural and organizational change at UWA.

A copy of the amended constitution was attached to the agenda for members’ consideration.

RESOLVED – 2/16
to endorse the changes to the Curriculum Committee constitution, as outlined in the attachment (Attachment A), and refer to the Education Committee for approval.

<table>
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<td>Copy of the extract and the attachment (amended constitution) emailed to the Executive Officer, Education Committee</td>
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Curriculum Committee (constitution)
(Academic Board Resolution 139/14)

This committee operates in accordance with the Principles and Rules for the Operation of Committees. Members must act in accordance with the University Committee Members’ Code of Conduct.

Position of the Committee within the University of Western Australia
1. The Curriculum Committee is a standing committee of the Education Committee.

Role
2. The role of the Committee is to—
   (a) consider and make recommendations to the Academic Council on proposals submitted through the appropriate process for the introduction of new curriculum offerings; including articulation agreements and major changes to curriculum;
   (b) approve changes to curriculum
   (b)(c) advise and make recommendations to the Education Committee on policy and strategic matters relating to the academic structure and framework of coursework courses;
   (c)(d) provide coursework curriculum development advice to faculties, other University bodies or officers as appropriate;
   (d)(e) review, as directed by the Chair of the Education Committee, any aspect of undergraduate and postgraduate coursework.
   (f) formulate and review appropriate schemes, funded from (but not limited to) the Education Committee’s annual budget, to support the University’s education portfolio.
   (g) Approve the establishment of new prizes and amendments to and rescission of existing undergraduate prizes for pass and honours degree courses.

Membership
3.(1) The Committee comprises:
   (a) the Dean of Coursework Studies (as Chair);
   (b) the Deputy or Associate Chair of the Academic Board;
   (c) the Dean of Graduate Research and Postdoctoral Training;
   (d) the chair of each faculty and School of Indigenous Studies teaching and learning/education committee, or nominee of the Dean;
   (e) the Academic Secretary;
   (f) the Director, Future Students (Recruitment)
   (g) the Associate Director, Admissions Centre
   (h) the Associate Director, Student Administration
   (g) the Associate Director (International Admissions), International Centre
   (h) the Academic Coordinator for the Bachelor of Philosophy (Honours);
   (i) the President of the Guild of Undergraduates or nominee;
   (j) a postgraduate coursework student nominated by the President of the Postgraduate Students’ Association
   (k) up to two co-opted members, if required for balance or specific expertise.

(2) The Chair may appoint a Deputy Chair and an Associate Chair from among the members to perform essential duties under delegated authority.

(3) The Chair may invite one or more persons to attend meetings to provide advice on specific areas or agenda items.

(4) Co-opted members are appointed for two years and may be reappointed for a second term only.

Members’ Absence and Nominees
4.(1) In the event that a member is unable to attend a meeting, that member may nominate a person to attend that meeting in their stead.

(2) Nominations must be in writing and received by the Executive Officer prior to the relevant meeting.

Skills and/or qualifications of members and nominees
5. It is desirable that members and nominees have a leadership role within the education portfolio, or other leadership role related to teaching and learning, and this important role is to be taken into account when nominees are appointed.

**Quorum**

6. The quorum for the Committee is half the current membership plus one.

**Decisions**

7. (1) Each member has a vote.
   (2) The Chair has an ordinary vote and a casting vote.
   (3) Decisions are made by a majority of the members present and voting.

**Frequency of Meetings**

8. The Committee normally meets up to six to ten times each year in the months of February to November but may meet more frequently if required.

**Delegations**

9. (1) Where new curriculum proposals and major changes to existing curriculum comply with approved policy, the Chair, Deputy Chair or Associate Chair have delegated authority to steer such proposals direct to the Academic Council for consideration.
   (2) The Committee delegates to the Chair or to the Executive Officer, as appropriate, the responsibility to consider and approve minor curriculum changes or administrative changes as part of the annual curriculum change process or the fast-track change process.
   (3) The Committee delegates to the Chair the responsibility to consider and determine academic results that are not routine in nature, eg the award of joint-honours classifications
   (4) The Committee delegates to the Bachelor of Philosophy (Honours) Selection Group oversight of selection for admission to the Bachelor of Philosophy (Honours) degree course and to make and action decisions that are within the parameters of established Terms of Reference.

**Decision-making and communication maps**

Local decision-making map
Local communications map
Further consequential changes arising from the proposed disestablishment of the Education Committee

Curriculum Committee (constitution)

(Academic Board Resolution 139/14)

This committee operates in accordance with the Principles and Rules for the Operation of Committees. Members must act in accordance with the University Committee Members’ Code of Conduct.

Position of the Committee within the University of Western Australia

1. The Curriculum Committee is a standing committee of the Education Committee Academic Council.

Role

2. The role of the Committee is to—

(a) consider and make recommendations to the Academic Council on proposals submitted through the appropriate process for the introduction of new curriculum offerings;

(b) approve changes to curriculum;

(c) advise and make recommendations to the Deputy Vice-Chancellor (Education) Education Committee on policy and strategic matters relating to the academic structure and framework of coursework courses;

(d) provide coursework curriculum development advice to faculties, other University bodies or officers as appropriate;

(e) review, as directed by the Chair of the Education Committee, any aspect of undergraduate and postgraduate coursework including admissions;

(f) formulate and review appropriate schemes, funded from (but not limited to) the Education Committee’s annual budget, to support the University’s education portfolio.

Members

3. (1) The Committee comprises:

   (a) the Dean of Coursework Studies (as Chair);
   (b) the Deputy or Associate Chair of the Academic Board or nominee;
   (c) the Dean of Graduate Research and Postdoctoral Training;
   (d) the Pro Vice-Chancellor (Education Innovation);
   (e) the chair of each faculty and School of Indigenous Studies teaching and learning/education committee (or equivalent), or nominee of the Dean;
   (f) the Academic Secretary;
   (g) the Director, Future Students (Recruitment)
   (h) the Associate Director, Admissions Centre
   (i) the Associate Director, Student Administration
   (j) the Academic Coordinator for the Bachelor of Philosophy (Honours);
   (k) the President of the Guild of Undergraduates or nominee;
   (l) a postgraduate coursework student nominated by the President of the Postgraduate Students’ Association
   (m) up to two co-opted members, if required for balance or specific expertise.

   (2) The Chair may appoint a Deputy Chair and an Associate Chair from among the members to perform essential duties under delegated authority.
   (3) The Chair may invite one or more persons to attend meetings to provide advice on specific areas or agenda items.
   (4) Co-opted members are appointed for two years and may be reappointed for a second term only.

Members’ Absence and Nominees

4. (1) In the event that a member is unable to attend a meeting, that member may nominate a person to attend that meeting in their stead.
(2) Nominations must be in writing and received by the Executive Officer prior to the relevant meeting.

Skills and/or qualifications of members and nominees
5. (1) It is desirable that members and nominees have a leadership role within the education portfolio, or other leadership role related to teaching and learning, and this important role is to be taken into account when nominees are appointed.

(2) Nominees must undertake appropriate consultations both prior to and after the meetings with relevant colleagues within their constituency.

Quorum
6. The quorum for the Committee is half the current membership plus one.

Decisions
7.(1) Each member has a vote.

(2) The Chair has an ordinary vote and a casting vote.

(3) Decisions are made by a majority of the members present and voting.

Frequency of Meetings
8. The Committee normally meets up to ten times each year in the months of February to November but may meet more frequently if required.

Delegations
9. (1) Where new curriculum proposals comply with approved policy, the Chair, Deputy Chair or Associate Chair have delegated authority to steer such proposals direct to the Academic Council for consideration.

(2) The Committee delegates to the Chair or to the Executive Officer, as appropriate, the responsibility to consider and approve minor curriculum changes or administrative changes as part of the annual curriculum change process or the fast-track change process.

(3) The Committee delegates to the Chair the responsibility to consider and determine academic results that are not routine in nature, e.g. the award of joint-honours classifications.

(4) The Committee delegates to the Bachelor of Philosophy (Honours) Selection Group oversight of selection for admission to the Bachelor of Philosophy (Honours) degree course and to make and action decisions that are within the parameters of established Terms of Reference.

Decision-making and communication maps
Local decision-making map
Local communications map
Curriculum Committee: Local Decision Making Map

- **D = Decision**
- **Academic Council**
- **Deputy Vice-Chancellor (Education)**
- **Dean of Coursework Studies**
- **Curriculum Committee**
- **Faculty Boards**
- **Selection Group: Bachelor of Philosophy (Hons)**
- **Admissions**
Curriculum Committee: Local Communication Map

Academic Council

Curriculum Committee

- Education Futures Strategy Group
- Faculty Boards
- Admissions
- Student Administration
- Academic Policy Services
- Central Administration
- Digital and Creative Services
EXTRACT FROM THE NOTING OF DECISIONS TAKEN ON MONDAY 2 NOVEMBER 2015 ON ITEMS CONSIDERED BY THE ACADEMIC COUNCIL BY WAY OF A CIRCULAR

3. ITEMS FROM THE CURRICULUM COMMITTEE (CC)

3.5. Curriculum Management: Annual change process to postgraduate courses (Cycle 2) for 2016 only – Refs: F59350, F58908, F58909, F58905, F75909, F35183, F35144, F58907, F58906

Members noted that the Curriculum Committee had recommended changes to the following Cycle 2 postgraduate courses:

<table>
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<th>TRIM</th>
<th>Item</th>
<th>Nature of change</th>
<th>CC resolution</th>
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<tr>
<td>F59350</td>
<td>72510 Master of Agricultural Science (coursework or coursework and dissertation)</td>
<td>Change to course rules, admission rules and course structure</td>
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<tr>
<td>F58908</td>
<td>71520 Master of Biomedical Science (coursework or coursework and dissertation)</td>
<td>Change to course rules, admission rules and course structure</td>
<td>R157/15</td>
</tr>
<tr>
<td>F58909</td>
<td>71540 Master of Health Science (coursework)</td>
<td>Change to course rules</td>
<td></td>
</tr>
<tr>
<td>F58905</td>
<td>71580 Master of Biotechnology (coursework or coursework and dissertation)</td>
<td>Change to course rules, admission rules, course structure</td>
<td></td>
</tr>
<tr>
<td>F75909</td>
<td>52510 Master of Exercise Science (coursework)</td>
<td>Change to course rules, admission rules, course structure, course type, course structure and volume of learning</td>
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<td>F35144</td>
<td>72530 Master of Environmental Science (coursework or coursework and dissertation)</td>
<td>Change to course rules, course structure and admission rules</td>
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<tr>
<td>F58906</td>
<td>71550 Master of International Development (coursework or coursework and dissertation)</td>
<td>Change to course rules, course structure and admission rules</td>
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</tbody>
</table>

RESOLVED - 104

to approve the proposed changes, as set out in the attachments to the circular, to the postgraduate courses listed above and the introduction of associated new units, where relevant:

- as transitional arrangements for 2016 only; and
- that further work be undertaken by the Faculty to ensure compliance from 2017.
Dear Grady,

For 2016 the Faculty of Science was permitted to continue sharing units across Master’s degrees, even though these units were deemed to be non-compliant with University policy on unique units. Although this exemption was provided on the basis that changes were to be made in time for 2017, we have since been advised that the policy is soon to be reviewed. Therefore, the Faculty seeks an extension of a year so that any changes can take account of policy revisions. In practical terms, changes will be proposed via the Annual Change process in 2017 to take effect from 2018.

Regards

Brendan J. Waddell
Professor and Deputy Dean
Faculty of Science  M082,  The University of Western Australia, Perth WA 6009 Australia
T  +61 8 6488 3159   E  brendan.waddell@uwa.edu.au
<table>
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<th>Course</th>
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<th>Other courses unit core in</th>
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<td><strong>52510 Master of Exercise Science</strong></td>
<td>SSEH5677</td>
<td>71540 Master of Health Science</td>
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<td>SSEH5678</td>
<td>73510 Master of Ecotourism</td>
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<td>ECON4410</td>
<td>72530 Master of Environmental Science</td>
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<td>ECON5511</td>
<td>73530 Master of Agricultural Economics (coursework)</td>
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<td>AGRI4407</td>
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<td>Core in 2 specialisations in this course (Agri syst &amp; Soil Science)</td>
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<td>SCIE4002</td>
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<td></td>
<td>APHB4003</td>
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<tr>
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<td>53510 Master of Anatomical Sciences (coursework and dissertation)</td>
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<tr>
<td><strong>71540 Master of Health Science</strong></td>
<td>SSEH5678</td>
<td>See above (52510 &amp; 73510)</td>
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<td>PLNG4411</td>
<td>72560 Master of Urban and Regional Planning</td>
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<td>71570 Master of Geographic Information Science</td>
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<tr>
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<td>SCIE5505</td>
<td>72520 Master of Biological Science</td>
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<td><strong>71550 Master of International Development</strong></td>
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B3
TEA BONUS FOR ATAR MATHEMATICS COURSES

TRIM FILE REFERENCE: F78791

FILE PATH ON SERVER: S:\COMMITTEES\CURRICULUM COMMITTEE\MEETINGS\2016\2016-03-22 MARCH

DOCUMENT STATUS

☑ Draft  ☑ Ready for Review  ☐ Final

DOCUMENT MODIFICATION HISTORY

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<td>23rd November 2015</td>
<td>Faculty Deans, A Cameron DVC(E) B Waddell, W Erber, P Hammond, D Andrich, C Praeger J Stubbs, L Noakes, R Ackerman, Z Morrison, A Preston, V Dawson, P Merrotsy, H Jaccomard</td>
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<td>A Cameron DVC(E)</td>
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1 TEA Bonus for ATAR Mathematics Courses

Introduction
Western Australian Certificate of Education (WACE) ATAR (Australian Tertiary Admissions Rank) courses will be publicly examined and used to construct the ATAR for the first time in 2016. There are three mathematics subjects available to students; Mathematics Applications, Mathematics Methods and Mathematics Specialist, in increasing order of difficulty. The current rules governing the construction of the ATAR, set by the four WA public universities, do not take course difficulty into consideration. This means that under the current system, students with a reasonable level of ability in mathematics may choose the easier Mathematics Applications course instead of Mathematics Methods to achieve an ATAR advantage.

UWA has been communicating with the WA Tertiary Institutions Services Centre (TISC) and the other WA universities with regard to a marks adjustment process for ATAR mathematics courses to address this ‘ATAR advantage’ issue. This paper and the attachments provide detailed background to this discussion. The outcome of the discussion is a proposal that, from the 2017 tertiary admissions exercise forward (i.e. university entry in 2018), UWA will implement a TEA bonus approach to incentivise school students to take the highest level of mathematics commensurate with their mathematics aptitude and future aspirations.

The bonus approach will include:
- A 10% TEA bonus on the scaled score for students taking Mathematics Methods
- A 10% TEA bonus on the scaled score for students taking Mathematics Specialist
- Changing the rules for unacceptable subject combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Mathematics Specialist

The following paragraphs provide chronological background information about the discussions with TISC and the other WA universities as well as the rationale for the proposed approach that has been agreed with Curtin University. We expect that if UWA and Curtin both adopt this approach, ECU and Murdoch will follow, thus enabling TISC to manage the marks adjustments uniformly for all universities.

October 2015: Letter from TISC on Marks Adjustment for ATAR Mathematics Courses
UWA, Curtin University, ECU and Murdoch University received a letter from the Tertiary Institutions Services Centre (TISC) Executive Officer, Mr Wayne Betts requesting a formal response to determine an agreed approach to the marks adjustment process for Mathematics ATAR courses from 2016 (Attachment A). TISC also provided a document detailing the various issues related to Mathematics ATAR subjects (Attachment B).

November 2015: UWA Response to TISC Letter
UWA consulted members of the University including the Faculties of Science, Engineering, Computing and Mathematics, Business and the Faculty of Education and prepared a response to TISC (Attachment C).

In summary:
- UWA supported the provision of incentives to actively encourage high school students to undertake the highest level of mathematics commensurate with their mathematics aptitude and future aspirations
- UWA did not support the proposed ‘separation of means’ approach to incentivise high-level mathematics subject choice because: a) it would dis-incentivise some students from taking mathematics subjects and may result in lower mathematics competency for the majority of university-bound students, especially those with lower aptitude or interest in mathematics; and b) the ‘separation of means’ approach is complex and lacks a clear incentive message for students.
UWA supported changing rules for unacceptable subject combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Mathematics Specialist.

UWA proposed to TISC that a TEA (Tertiary Entrance Aggregate) bonus approach, similar to that currently used for languages other than English (LOTE), would be a preferable option to incentivise students to take higher mathematics.

January 2015: WA Universities do NOT Agree on an Approach
TISC provided a document that consolidated the four universities responses (Attachment D). In summary:

- All universities supported incentives to actively encourage high school students to undertake the higher levels of mathematics
- The separation of means approach was supported by Curtin but not by ECU, Murdoch or UWA
- ECU and UWA supported the unacceptable combinations approach so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Specialist
- UWA was the only institution to propose using a TEA bonus approach.

January/February 2015: Discussions and Compromise with Curtin University
The Dean, Coursework Studies, Professor Grady Venville communicated with Curtin University on the issue of marks adjustment for ATAR mathematics subjects. The Curtin Deputy Vice-Chancellor (Education), Professor Jill Downie and the Dean of Science, Professor Jo Ward, were willing to discuss the issue and came to a compromise position to support a TEA (Tertiary Entrance Aggregate) bonus approach similar to that currently used for languages other than English (LOTE) to incentivise students to take higher mathematics. This approach would be implemented for the 2017 tertiary admissions process (i.e. the 2018 university intake, current Year 11 students) and would include a 10% TEA bonus on the scaled score for both Mathematics Methods and Mathematics Specialist and changing the rules for unacceptable subject combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Specialist. Professor Ward and Professor Venville agreed to take this proposal to their respective university admissions approval bodies.

Proposal
UWA is firmly of the view that mathematics subject choice should be based on sound educational principles and be determined by people who best know each student including the student themselves, their school teachers, parents and school advisors. UWA also recognises the importance of high-level mathematics competence for future studies and employment options and the importance of high levels of mathematics literacy for all people. Moreover, the University recognises that, in the current system, there may be tension for some students between an aspiration to achieve the highest possible ATAR and selecting higher-level mathematics subjects. The University shares concern with the education community in WA that students may be tempted to take easier options in mathematics, for example, taking Mathematics Applications when they should be taking Mathematics Methods, in order to strategically gain an ATAR benefit. As such there is a need to put in place clear and reasonable incentives for students to select the highest level of mathematics commensurate with their mathematics aptitude and future aspirations.

UWA currently recognises a TEA bonus of 10% of the scaled score for studies in Languages other than English (LOTE). This proposal is to implement a similar approach to incentivise high school students to take high-level mathematics subjects, that is, a TEA bonus approach for studies in mathematics. The TEA bonus approach for mathematics will include:

- A 10% TEA bonus on the scaled score for students taking Mathematics Methods
- A 10% TEA bonus on the scaled score for students taking Mathematics Specialist
- Changing the rules for unacceptable subject combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Mathematics Specialist

Advantages of the TEA Bonus Approach for Mathematics

A

C3
• Incentivises high school students to take the highest mathematics commensurate with their mathematics aptitude and future aspiration
• No mathematics subjects are scaled down
• Students who are not enrolled in any mathematics subject are not disadvantaged
• Will incentivise Year 12 students to continue with the higher mathematics subjects and not be tempted to drop down to a lower mathematics subject
• Consistent with the current approach to incentivise the uptake of languages other than English (LOTE)
• A clear incentive message that is easy to communicate to students, parents and schools
• Strong indication UWA values mathematics literacy – good for our reputation
• Possibly greater enrolments in engineering, computing and physical science subjects due to students receiving a bonus
23 October 2015

Members of the TISC Management Committee

Dear colleagues

MARKS ADJUSTMENT PROCESS FOR MATHEMATICS ATAR COURSES

Following discussion at the TISC/SCSA Scaling Policy Committee and the TISC Management Committee, I am writing to request a formal response from your institution to determine an agreed approach to the marks adjustment process for Mathematics ATAR courses from 2016.

TISC has previously flagged the possibility of utilising additional mechanisms in the scaling of Mathematics subjects from the 2016 WACE examinations, to ensure that “students are not unfairly advantaged or disadvantaged due to their choice of Mathematics courses.”

The document accompanying this letter outlines the various aspects of this issue, and suggests options for your consideration.

The questions for which responses are being sought are:

a) Does your institution support the provision of incentives to actively encourage students to undertake higher-level mathematics courses?

b) Is the ‘separation of means’ approach (Section 4 of the paper) an acceptable mechanism to achieve this for Mathematics Applications and Mathematics Methods?

c) If the ‘separation of means’ approach is acceptable, do you favour a separation of 1.5 or 1.3 times the common standard deviation?

d) If the ‘separation of means’ approach is not acceptable, what alternative mechanism (Sections 5-7) does your institution endorse?

e) Do you support the proposal (Section 8) to ensure that the mean of Mathematics Specialist is at least equal to the mean of Mathematics Methods?

To enable communication to schools before the end of the academic year, institutional responses would be appreciated before 30 November. If you feel it would be helpful for me and/or Ken Harrison to attend any meetings to introduce the paper, we would be happy to do so.

If you need any further information to help your institution’s consideration of this issue, or if you need the request to be sent to someone else within your institution, please let me know.

Thank you in anticipation.

Yours sincerely

Wayne Betts
Executive Officer

1 Marks Adjustment Process for University Admission 2017.
Mathematics ATAR courses from 2016

1. Introduction
This paper discusses how to encourage senior secondary mathematics students to take the most appropriate, highest-level option available to them. Two issues in relation to this are discussed. The first relates to Mathematics Applications and Mathematics Methods: namely, how to encourage capable students to undertake Methods, the more challenging subject, when they may be tempted to take the easier option in order to gain an ATAR benefit. The second issue is how to ensure students who take the most advanced option, Mathematics Specialist, are not disadvantaged compared to those taking the other mathematics courses.

It suggests possible approaches and asks universities to confirm which approach they support.

2. Background
The current WACE Mathematics course in all its stages has been replaced by two courses: Mathematics Applications and Mathematics Methods. In terms of the material in the courses and the associated intellectual challenge, Applications sits somewhere between Mathematics 2CD and 3AB, and Methods can be compared with Mathematics 3CD and the more difficult parts of Mathematics 3AB, with two topics added from the current Mathematics Specialist course. WACE ATAR courses will be publicly examined and used to construct an Australian Tertiary Admission Rank for the first time in 2016.

Mathematics courses are generally agreed to have a closer structural relationship in terms of content and continuity than other WACE courses. There is also an established hierarchy of difficulty within the Mathematics course offerings.

Rules governing the construction of the ATAR, which are set by the four WA public universities, include the specification of acceptable and unacceptable combinations of subjects. The universities have determined that, from 2016, a maximum of two scaled scores from Mathematics courses can be used in the ATAR calculation. The rules deem current WACE Mathematics unit pairs and the WACE ATAR courses that will be replacing them to be unacceptable combinations.

Issue: Mathematics Applications and Mathematics Methods

3. Mathematics Applications and Mathematics Methods
Concern has been expressed from within the mathematics community that students with a reasonable level of ability in mathematics may choose the easier Mathematics Applications instead of Mathematics Methods to achieve an ATAR advantage. While most course selection is made on sound education principles, some students will always be tempted to make ‘strategic’ subject selection to enhance their ATAR. Such behaviour is at odds with one of the underlying principles of the 2015 WACE changes:

Students should engage with courses that are personally challenging, that enhance their development and maximise their future study and career options

The standard Average Marks Scaling process does not take differences in course difficulty into account. It relies on the tendency of more able students to take more difficult courses. If bright students drift out of difficult courses into easier ones, the high scaled scores will follow them.

Based on historical evidence of strategic enrolments in Discrete Mathematics, it is expected that attempts by high-achieving students to ‘play’ the scaling process by enrolling in Mathematics Applications will increase as the transition to new WACE ATAR courses is completed. In recognition of this prospect, the TISC website has, for some time, indicated that some form of intervention in the marks adjustment process is a possibility:

To ensure that capable mathematics students are not advantaged by sitting the less demanding Mathematics: Applications examination, if considered necessary by the Scaling Implementation Committee, additional adjustments may be made to ensure students are not unfairly advantaged or disadvantaged due to their choice of Mathematics courses.

---

1 The WACE 2015 – Responding and Adapting. www.wace1516.scsa.wa.edu.au/further-resources/background-information
The following discussion looks at ways this might be handled.

4. Separation of means for Applications and Methods

One possibility was considered recently by the TISC/SCSA Scaling Policy Committee meeting (an edited version of a document outlining the proposal forms Appendix A). It outlines a process of statistical adjustment of scores across Mathematics Applications and Mathematics Methods so that, while the combined mean across both subjects remains at 60, consistent with that of other courses, there is a separation of the individual subject means equal to 1.5 times the common standard deviation of scaled scores within courses.

It should be noted that the proposed adjustment process is not simply a change of scaled scores by a fixed amount – or ‘increment’ – as has been the case for the past few years. Unlike the current process, it will not prevent an able student undertaking Applications from achieving a high scaled score; in fact, modelling of the proposed method shows that the maximum scaled score would be higher than has been the case for Mathematics 2CD or 3AB in recent years (see Table 2, below). However, the difference in distributions between the two subjects would provide an incentive for students to undertake Methods instead of Applications. Consistent with historical outcomes for Mathematics 2CD and 3AB, fewer students in Applications than in Methods will receive scaled scores at the upper end of the range.

The ‘separation of means’ approach would provide a clear incentive for students to take the highest-level mathematics course appropriate to them.

The concept is understood and accepted by the discipline area as well as representatives from within the school and university sector, with a number of letters of support already received, explicitly endorsing the approach (Appendix B).

There is also an element of continuity between it and the approach taken with mathematics unit pairs over the past few years. Though the existing approach is more complex, it has been generally well-received and has largely achieved the desired results as the examination candidature data in Appendix C shows.

The proposal, however, did not meet with unanimous support within the Scaling Policy Committee. Some members argued that, without the complication of multiple unit pairs, the new WACE ATAR courses no longer require ‘artificial’ intervention of this nature and called for the issue to be addressed via the use of unacceptable subject combination rules and/or university course prerequisites to guide enrolment choices. A letter from the Chair and CEO of the School Curriculum and Standards Authority, outlining the Authority’s concerns, is attached as Appendix D. Some alternative approaches are considered later in this paper.

The other main objection to the proposed approach concerns the potential impact of the solution on ‘legitimate’ Applications students. Most Applications students will be taking the course as a valid choice for their level of ability and/or their desired post-secondary destination. While there is agreement that the kind of strategic enrolment behaviour described previously should be discouraged, there is some hesitation about the impact on students who are not engaging in such behaviour.

Analysis of current Year 11 enrolment figures shows a rise in the overall proportion of Mathematics students undertaking Methods, compared to previous enrolment patterns for Mathematics 3CD. However, the Mathematics 3AB cohort was the largest in the previous suite of offerings, so the ‘split’ of new WACE ATAR course enrolment choices from that group will affect any comparison. It should also be borne in mind that it has not recently been possible for individuals to sit examinations for Mathematics courses at different levels of difficulty (eg: 2CD and 3CD) in the same year, but this scenario will be possible in 2016 for students taking Applications and Methods.

Based on this year’s enrolments in Year 11 Applications and Methods, the movement of ‘3AB’ students into Methods is estimated to range from 15% to 30% (with the assumption that these students are at the upper end of achievement in the former ‘3AB’ cohort).

The following tables compare the historical scaling data for WACE Mathematics courses with estimates for the marks distribution in Methods and Applications in 2016. These estimates are based on the expected enrolments in these courses. However, they are quite robust; relatively large changes in enrolment numbers would produce relatively small changes in the distribution points.
The graphs in Appendix E illustrate the data pictorially. They show the close match between the distribution for Maths 3CD and Methods (Charts 3-6), and how the distribution for Applications (Charts 7-10) sits comfortably between the distributions for Maths 2CD and 3AB, except at the extremes. The major ‘adverse impact’ is on the lower half of the 3AB distribution, but the distribution points at the top end compare very favourably with the historical data.

While the separation above has been made between the projected outcomes of the proposed system and the results of former cohorts, individual students are not being disadvantaged by having marks they would have achieved somehow taken away from them. The 3AB ‘cohort’ is now an historical artefact. In 2016 practically all students will take Applications or Methods (and a number will take both) and there will not be a comparable 3AB group under the WACE ATAR marks adjustment process. If the proposed process is adopted, it will just be the normal way in which mathematics is handled in 2016.

The logic for an adjustment is consistent to that which has been accepted for the treatment of WACE Mathematics. It is also logically consistent that the outcomes from the marks adjustment process for Applications should place its distribution roughly mid-way between the distributions for Mathematics 2CD and 3AB.

If the proposed level of separation of means is considered too large (1.5 times the standard deviation), it is possible to adjust the degree of separation (eg: 1.3 times the standard deviation) to reduce the gap and thus reduce the effect on the Applications cohort. However, reducing the separation also reduces the strength of the incentive for students to pursue the higher-level course.

Practically, expressing the separation in terms of the standard deviation may not be a particularly accessible way to explain the adjustment to the community. As the common standard deviation across courses is 15, the approach could be explained by using a difference of either 22 (approximately 1.5 times the common standard deviation) or 20 (approximately 1.3 times), though this could result in it being deemed an ‘increment’ in popular parlance. This could be clarified in TISC’s explanation of the overall marks adjustment process.

The separation of means proposal builds on current understanding and acceptance of the adjustment of distributions and provides a worthwhile incentive for strong students to undertake higher-level mathematics options, influencing but not restricting subject choice.

If, however, this proposal is not deemed satisfactory, some alternative approaches may be considered.

### Table 1: Distribution of marks: Mathematics 3CD and Mathematics Methods

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>St Dev</th>
<th>Max</th>
<th>P90</th>
<th>P75</th>
<th>Median</th>
<th>P25</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Maths 3CD</td>
<td>71.4</td>
<td>11.00</td>
<td>100.0</td>
<td>85.4</td>
<td>78.6</td>
<td>71.50</td>
<td>64.6</td>
<td>26.10</td>
</tr>
<tr>
<td>2014 Maths 3CD</td>
<td>70.5</td>
<td>11.50</td>
<td>100.0</td>
<td>84.9</td>
<td>78.1</td>
<td>70.60</td>
<td>63.3</td>
<td>28.30</td>
</tr>
</tbody>
</table>

### Table 2: Distribution of marks: Mathematics 2CD, 3AB and Mathematics Applications

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>St Dev</th>
<th>Max</th>
<th>P90</th>
<th>P75</th>
<th>Median</th>
<th>P25</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Maths 3AB</td>
<td>59.3</td>
<td>9.00</td>
<td>84.00</td>
<td>70.7</td>
<td>65.2</td>
<td>59.40</td>
<td>53.7</td>
<td>26.70</td>
</tr>
<tr>
<td>2014 Maths 3AB</td>
<td>58.4</td>
<td>9.30</td>
<td>83.20</td>
<td>70.3</td>
<td>64.5</td>
<td>58.50</td>
<td>52.6</td>
<td>26.00</td>
</tr>
<tr>
<td>2013 Maths 2CD</td>
<td>47.4</td>
<td>9.20</td>
<td>72.80</td>
<td>58.9</td>
<td>53.4</td>
<td>47.70</td>
<td>41.6</td>
<td>10.50</td>
</tr>
<tr>
<td>2014 Maths 2CD</td>
<td>46.8</td>
<td>9.20</td>
<td>71.00</td>
<td>58.8</td>
<td>52.9</td>
<td>47.20</td>
<td>41.0</td>
<td>10.70</td>
</tr>
</tbody>
</table>

3 The standard deviation describes the spread of numbers from the mean (average). The higher the standard deviation, the more spread out the distribution is.
4 P90, P75, P25 reflect the percentile position of the score in the overall distribution. For example, the score of 85.40 in the P90 column of the top line is equal to or greater than 90% of the other scores achieved.
5. Change unacceptable subject combinations rules

The current rule for 2016 is that any two mathematics scores can contribute to the Tertiary Entrance Aggregate (TEA) (from which the ATAR is derived); however, this could be changed so that Applications became an unacceptable combination with either Methods or Specialist. Unacceptable combinations prevent both scores being counted in the TEA. This would mean that, for students who did both Applications and Methods, only one score (the highest, obviously) could count. For many such students, this would most likely be the Applications mark.

The obvious attraction of this approach is that it is simple, clear and unambiguous. It also avoids any adjustment of individual subject marks beyond the standard AMS process.

A change in the unacceptable combination rules, though, does not prevent students from taking the easier subject, and benefiting from the potentially higher score. So it may not necessarily reduce the ‘gaming’ problem. It is possible that students who might otherwise have enrolled in either Methods or both courses may choose to study Applications only, opting for the subject that is likely to yield the highest score.

There may also be perceptions of inequity if scores from both Methods and Specialist can be counted, but only one of Applications and Methods.

6. Apply university-specific incentives

This could take the form of prerequisites for certain courses or the application of ATAR bonus points for achievement in higher-level mathematics subjects.

A greater emphasis on access and equity within institutions in recent years has led to what appears to be movement away from ‘hard’ prerequisites for most courses. Instead, there is a greater emphasis on recommended background study and the provision of a variety of bridging courses for incoming students. As a result, the desire for prerequisites to once again serve as a driver for senior secondary course selection (as they might have in the past) may not be feasible.

A number of institutions in other states apply ATAR bonus points to recognise achievement in particular Year 12 subjects. In Western Australia a bonus to the Tertiary Entrance Aggregate already applies for studies in languages other than English.

An approach such as this provides a clear incentive for students to undertake particular courses. By separating the bonus from the scaling process, it also avoids the adjustment of individual course marks. This approach also allows institutions to define particular points of emphasis by offering different levels of bonus for different courses.

The addition of ATAR bonus points, however, is a fairly blunt instrument and its impact varies at different points of the ATAR distribution. For example, a bonus of two ATAR points towards the upper end of the distribution — say, from 94.00 to 96.00 — represents a 12.9 mark change in the underlying Tertiary Entrance Aggregate whereas a two ATAR point bonus elsewhere in the distribution — from 71.00 to 73.00 — represents only a 4.6 change in the TEA. In this example, the student at the upper end gains a more significant advantage than the other student.

The addition of bonus points — whether to the TEA or ATAR — advantages certain courses relative to courses in other disciplines. In contrast, the separation of means proposal is designed to encourage higher-level study within the mathematics subject area. It has no effect on other courses, as the average scaled mark across all mathematics courses remains unchanged.

It is likely that the introduction of bonus points for Mathematics subjects would soon lead to similar initiatives for various subject areas. The more bonus schemes on offer, the less effective each one would become. That possibility, coupled with the likelihood that different institutions could implement quite different bonus regimes, could lead to a high degree of confusion for Year 12 students and their families.

7. Do nothing

Of course, even while endorsing the principle of encouraging the take-up of higher level mathematics courses, universities may decide to allow the current AMS process to run its course, without intervention of the kind proposed. This would preserve the ‘purity’ of the process and alleviate the concerns of stakeholders who feel that mathematics courses should not be subject to special arrangements that are not applied to other subject areas.

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5 Information on how the ATAR is constructed is available on the TISC website (http://www.tisc.edu.au)
This alternative, however, may result in a perception of universities allowing – even encouraging – the ‘dumbing down’ of studies fundamental to performance in STEM disciplines. It could lead to Applications scaling more positively than Methods – an observation that has recently been made in relation to the scaling process in New South Wales.\(^6\)

It could also inadvertently affect Applications students for whom that course is the appropriate choice and who worked solidly to engage with the content, who could find their position in the ranking adversely affected by an influx of high-achieving students taking the subject, with ease, for strategic ends.

**Issue: Mathematics Specialist and Mathematics Methods**

8. **Mathematics Specialist**

Mathematics Specialist is the only WACE ATAR course that is designed to be studied in combination with another course, Mathematics Methods. As a result, the Mathematics Specialist enrolment cohort is a complete subset of that for Mathematics Methods. It would be expected that, overall, the average mark for the cohort of students undertaking both courses should be similar.

In order to ensure that students undertaking the most demanding mathematics course are not disadvantaged in the scaling process compared to other mathematics options, it is suggested that the scaling process be monitored and, if required, adjusted to ensure that the mean of Mathematics Specialist is always at least equal to that of Mathematics Methods.

This suggestion is similar to scaling processes for mathematics courses in other states and has met with general support from a number of stakeholders. It also corresponds to a recommendation made in 2011 by Professor George Cooney, in his review of WA scaling processes\(^7\).

9. **Conclusion and request**

In light of the options presented above, the questions for which the TISC Management Committee is seeking responses are:

a) Does your institution support the provision of incentives to actively encourage students to undertake higher-level mathematics courses?

b) Is the ‘separation of means’ approach (Section 4) an acceptable mechanism to achieve this for Mathematics Applications and Mathematics Methods?

c) If the ‘separation of means’ approach is acceptable, do you favour a separation of 1.5 or 1.3 times the common standard deviation?

d) If the ‘separation of means’ approach is not acceptable, what alternative mechanism (Sections 5-7) does your institution endorse?

e) Do you support the proposal (Section 8) to ensure that the mean of Mathematics Specialist is at least equal to the mean of Mathematics Methods?

Wayne Betts  
Executive Officer  
Tertiary Institutions Service Centre  
October 2015

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Incentives for advanced mathematics in upper secondary school

1. New mathematics courses for Years 11 and 12

A new suite of upper secondary level mathematics courses based on the Australian Curriculum are being introduced into Western Australian High Schools. The Year 11 components of these courses are being taught for the first time in 2015 and the Year 12 components will commence in 2016. Three of the new courses can contribute to a student’s ATAR: Mathematics Methods, Mathematics Specialist and Mathematics Applications. The following summaries of the courses can be found on the website of the School Curriculum and Standards Authority [1].

Mathematics Methods ATAR
This course focuses on the use of calculus and statistical analysis. The study of calculus provides a basis for understanding rates of change in the physical world, and includes the use of functions, their derivatives and integrals, in modelling physical processes. The study of statistics develops students’ ability to describe and analyse phenomena that involve uncertainty and variation.

Mathematics Methods provides a foundation for further studies in disciplines in which mathematics and statistics have important roles. It is also advantageous for further studies in the health and social sciences. In summary, this course is designed for students whose future pathways may involve mathematics and statistics and their applications in a range of disciplines at the tertiary level.

Mathematics Specialist ATAR
This course provides opportunities, beyond those presented in the Mathematics Methods ATAR course, to develop rigorous mathematical arguments and proofs, and to use mathematical models more extensively. Mathematics Specialist contains topics in functions and calculus that build on and deepen the ideas presented in the Mathematics Methods course, as well as demonstrate their application in many areas.

The Mathematics Specialist course also extends understanding and knowledge of statistics and introduces the topics of vectors, complex numbers and matrices. Mathematics Specialist is the only ATAR mathematics course that should not be taken as a stand-alone course and it is recommended to be studied in conjunction with the Mathematics Methods ATAR course as preparation for entry to specialised university courses such as engineering, physical sciences and mathematics.

Mathematics Applications ATAR
This course focuses on the use of mathematics to solve problems in contexts that involve financial modelling, geometric and trigonometric analysis, graphical and network analysis, and growth and decay in sequences. It also provides opportunities for students to develop systematic strategies based on the statistical investigation process for answering statistical questions that involve analysing univariate and bivariate data, including time series data. The Mathematics Applications course is designed for students who want to extend their mathematical skills beyond Year 10 level, but whose future studies or employment pathways do not require knowledge of calculus. The course is designed for students who have a wide range of educational and employment aspirations, including continuing their studies at university or TAFE.

Although it is not obvious from these summaries, the new courses represent a significant change to the structure of upper secondary mathematics courses in this state. In terms of preparation for tertiary studies in STEM-related disciplines, the new mathematics courses, Applications, Methods and Specialist, can be bluntly described as ‘Single Mathematics weak’, ‘Single Mathematics strong’, and ‘Double Mathematics strong’, respectively. There is no longer an intermediate option such as MAT3AB, in which students are given a simple introduction to calculus. Students will now study calculus at high school for two years or not at all.

Calculus is taken to a higher level in Methods than it is in MAT3CD, the current ‘Single Mathematics strong’ course. For example, unlike MAT3CD, Methods includes the calculus of trigonometric functions. Methods focusses on calculus and statistical inference, both of which are essential tools for practically all STEM-related courses. So students who have studied these at school will have a huge advantage over those who don’t. Furthermore, it is unreasonable to expect students who haven’t passed Methods to make up the difference in a single semester-long unit at university. At least two such units would be needed.
It should be clear from the above remarks that Mathematics Methods is crucial for the preparation of students intending to study STEM-related courses at university, and so the interests of universities are best served if as many students as possible take this course at school.

2. The scaling issue

Students take a keen interest in the scaling system, and on the whole they are not inclined, nor are they encouraged, to take the more challenging courses unless there is an adequate incentive.

TISC currently uses a process known as Average Marks Scaling (AMS) to scale, or compare, scores in one course with scores in others. AMS adjusts scores in a course up or down, depending on the performance of the students taking the course in all of their other courses. It makes no allowance for any inherent differences in the intellectual level of courses. Where such differences are known to exist external adjustments must be made to the AMS process. For example, between 2010 and 2015 WACE courses have been taught and examined externally at two distinct levels, known as Stage 2 and Stage 3. To compensate for the difference in difficulty or intellectual level between the stages, the scaling process has included an increment in the form of ‘bonus’ marks which has been added to all Stage 3 scores. From 2017 the stages will no longer exist, but there will still be a ‘built-in’ difference in the intellectual levels of the mathematics courses. So from 2016 on the mathematics courses will still need special treatment in the scaling process. TISC recognized this in a recent publication [2], which states:

‘To ensure that capable mathematics students are not advantaged by sitting the less demanding Mathematics: Applications examination, if considered necessary by the Scaling Implementation Committee, additional adjustments may be made to ensure students are not unfairly advantaged or disadvantaged due to their choice of Mathematics courses.’

TISC will ensure that adjustments to scaled scores in mathematics courses will not alter the parity between mathematics as a whole and courses in other disciplines. If scaled scores in one mathematics course are adjusted upwards, then scaled scores in other mathematics courses will be lowered, so that the mean of scaled scores over all mathematics courses is unchanged.

The first recommendation concerns the relationship between scaled scores in Methods and Applications. It maintains the balance between within-course variation and across-course variation of scaled scores that exists between the nearest equivalents in the current structure, i.e. MAT3CD and the combination of MAT2CD and MAT3AB. In the past few years the difference in means between the scaled scores for these cohorts has been close to 1.5 times the standard deviation of the scaled scores within these cohorts. Maintaining this relativity will provide a strong incentive for capable students to take Methods instead of Applications, but still allow for the very best scores in Applications to make worthwhile contributions to students’ ATARs.

Recommendation 1

The mean scaled score for Mathematics Methods should exceed the mean scaled score for Mathematics Applications by at least 1.5 times the common standard deviation of scaled scores within courses.

The following graphs and table show estimated distributions of scaled scores in Methods and Applications, assuming that this recommendation is adopted. The numbers in the table are quite robust. In particular, a moderate change to the population sizes will result in a small change to the table. So the table can be regarded as a reliable estimate of the distributions of scaled scores in the two courses in 2016. It shows, in particular, that high scaled scores will be earned by the most capable students taking Applications. The graphs also match quite closely the corresponding graphs of the distributions of scaled scores in MAT3CD and MAT2CD/3AB combined, in 2013 and 2014.
The second recommendation concerns the relationship between scaled scores in Methods and Specialist. It is consistent with, but not entirely identical to, the way that double mathematics is scaled in other states. Specialist is intrinsically harder than Methods, and the recommendation will ensure that students who take both courses score, on the whole, at least as well in Specialist as they do in Methods.

**Recommendation 2**

*For students who take both Mathematics Specialist and Mathematics Methods, the mean scaled score for Specialist should be no less than the mean scaled score in Methods.*

TISC could implement these recommendations by scaling the mathematics courses separately, and then making adjustments only if the specified requirements are not already met.

Ken Harrison,
Emeritus Associate Professor, Murdoch University,
Email: k.harrison@murdoch.edu.au

September 29\(^{th}\), 2015

[1]  *WACE 2015 -16 Summary of courses*,
http://www.scsa.wa.edu.au/internet/Senior_Secondary/Courses

https://www.tisc.edu.au/static/home.tisc
Wayne Betts  
Executive Officer  
Tertiary Institutions Service Centre  
Level 1, 100 Royal St  
East Perth 6004  
Western Australia  
15/09/2015

Dear Wayne,

**RE: 2016 MARKS ADJUSTMENT PROCESS FOR UNIVERSITY ADMISSION IN 2017**

Members of the Mathematical Association of Western Australia (MAWA) in particular, and the mathematics education community generally, have grave concerns about the impact that the average marks scaling process is likely to have on the fairness of the scaled marks relativity between the three ATAR mathematics courses available to students from 2016 onwards.

Within the document, *Marks Adjustment Process for University Admission 2017 onwards,* available on the TISC website, it states that:

*To ensure that capable mathematics students are not advantaged by sitting the less demanding Mathematics: Applications examination, if considered necessary by the Scaling Implementation Committee, additional adjustments may be made to ensure students are not unfairly advantaged or disadvantaged due to their choice of Mathematics courses* (point 7 of the marks adjustment process steps).

In the interests of fairness and transparency, MAWA makes the following requests.

1. That the ‘additional adjustments’ that may be made, as alluded to in the above statement, be decided upon as a matter of urgency and that whatever these adjustments are to be, they are communicated to schools and the broader education community generally, before the end of the 2015 school year.

2. Further, the Association recommends that the ‘additional adjustments’ to be made taking into account the following points:

   2.1 Currently the increment between 2CDMAT and 3CDMAT is 20 marks. Mathematics Applications is at about the same level of difficulty as 2CDMAT while Mathematics Methods is more difficult than 3CD MAT. So the ‘gap’ in demand between the two courses has widened.

   The average difference (2010 – 2014) between the mean scaled score for 2CD MAT and 3CD MAT has been 24.2 or approximately 1.9 standard deviations [calculated using the summary statistics data available on the TISC website].

   Thus the association recommends that an adjustment be made to the final scaled score distribution for the Methods and Applications cohorts (after AMS has been applied) of at least 1.5 standard deviations between the means, thus maintaining the relative separation that currently exists between the two cohorts.

By way of additional support for this recommendation, the Association points to the current call for an increased uptake of STEM related courses at secondary and tertiary levels by both government and industry. This provides a case to actually apply a greater increment so as to encourage such an uptake and reverse the declining trend that has existed for at least 20...
An increased uptake of the higher mathematics courses would be hugely beneficial to students undertaking further studies in the scientific, technological or engineering disciplines.

2.2 For Mathematics Specialist, the association recommends that the mean and standard deviation of the set of scaled scores of all students undertaking the Specialist course be compared to the mean and standard deviation of the scaled scores of these students on the Methods course, and that the higher of the two means be used for the final scaling of the Specialist cohort. This will in effect means that even though the demands of the Specialist course is higher than that of the Methods course, the specialist cohort as a group, will not have a lower scaled score for Specialist than for Methods and thus provide some assurance to students that they will not be relatively ‘disadvantaged’ by studying this harder course.

This suggestion is consistent with the Cooney recommendation made in 2011 in relation to the treatment of the current Specialist course. The recommendation in effect states that the scales score marks for the Specialist course be scaled using a common person equating method based on the performance of the students undertaking the Methods course.


The Association would like to draw attention to the increasing degree of community awareness and concern over the continued decline in the participation rates of students in the higher level mathematics courses. The chart on the next page, illustrates the declining proportion of students undertaking the higher level mathematics courses, across Australia over the last 20 years.

Some acknowledgement of the differing demands between the three mathematics ATAR courses is required in the calculation of the scaled score. The average marks process will not do this without some sort of adjustment as was well highlighted in the years before the introduction of the current increment system when the ‘Discrete effect’ was evident.

To lend further support to these proposals, letters of support from the senior consultants of mathematics, representing each of the three secondary school system sectors will be forwarded to you shortly. It is our understanding that letters of support will also be provided directly to you by the relevant deans of the universities in WA.

The association looks forward to your considered response, in the best interest of the current and future students in WA.

Regards,

Rom Cirillo
President of the Mathematical Association of WA
Mr Romolo Cirillo
President
Mathematical Association of Western Australia
rcirillo@bigpond.net.au

Dear Mr Cirillo

I refer to your correspondence dated 16 September 2015 regarding the Tertiary Institutions Service Centre (TISC) 2016 marks adjustment process for university admission in 2017.

Thank you for providing information on the two recommendations proposed by the Mathematical Association of Western Australia regarding the review of scaling processes in Mathematics courses. The Department is supportive of a scaling process that acknowledges the differing demands of the three Australian Tertiary Admission Rank (ATAR) mathematics courses in each of the respective scaled courses.

Recommendation 1
The Department supports your request that the ‘additional adjustments’, referred to in TISC’s Marks Adjustment Process information, be clarified and communicated to schools. The clarification would facilitate the counselling of students early in the 2016 school year.

Recommendation 2.1
The Department is supportive of recommendation 2.1.

Recommendation 2.2
The Department is partially supportive of recommendation 2.2.

It is agreed that the mean and standard deviation of the set of scaled scores of all students undertaking the Specialist course be compared to the mean and standard deviation of the scaled scores of these students on the Methods course, and that the higher of the two means be used for the final scaling of the Specialist cohort.

In addition, the use of the associated standard deviation, as well as the higher mean, could provide the desired outcome.

I invite you to contact Michelle Ostberg, A/Director, Teaching and Learning Services by telephone on (08) 9402 6128 or via email at Michelle.Ostberg@education.wa.edu.au if you would like to discuss the scaling of mathematics courses further.

Thank you for bringing this matter to my attention.

Yours sincerely,

SHARYN O’NEILL
DIRECTOR GENERAL

151 Royal Street, East Perth Western Australia 6004
Dear Rom,

I have surveyed the Heads of Mathematics in the Catholic sector and have had an almost immediate and virtually unanimous response endorsing your letter entitled “TISC letter on scaling mathematics courses 2016”. Thank you for taking the initiative in this matter. Therefore, we as a sector would like to endorse this letter and I am happy to help with anything that you need in the future with regard to this process.

Kind Regards

Lea Wilson

Secondary Mathematics Consultant
Teaching and Learning

50 Ruislip St, Leederville WA 6007  |  PO Box 198, Leederville WA 6903
T  (08) 6380 5200  M  0474 720 656
W  www.ceo.wa.edu.au  E  wilson.leanne@cathednet.wa.edu.au
2016 Marks adjustment process for Mathematics

The purpose of this letter is to indicate our support for a proposal from the Mathematical Association of Western Australia (MAWA) to TISC regarding adjustments to the proposed process for determining scaled scores from the ATAR courses.

In brief that

1. That additional adjustments be made to those already stated by TISC and that these adjustments be communicated to schools before the end of the 2015 school year.

2.1 That Mathematics Methods and Mathematics Applications be put on the same scale using Average Marks Scaling and then an increment be added to the Methods scores to separate the means of the two distributions by at least 1.5 standard deviations.

2.2 That the Mathematics Specialist scores be adjusted so that the mean and standard deviation of the distribution is equated with the mean and standard deviation of the scores of this cohort on the Methods course.

I have consulted with the Heads of Mathematics of Independent Schools and they strongly support these proposals. AISWA supports this initiative and I am personally very happy to work with MAWA, DOE, CEWA and the universities to negotiate a more equitable outcome for students of the higher Mathematics courses.

Yours sincerely

Mark Newhouse
Manager of Curriculum
AISWA
Dear Wayne,

I trust you are keeping well. I am writing in support of the following two recommendations for the promotion of higher level ATAR mathematics courses in high schools:

**Recommendation 1**
The mean scaled score for Mathematics Methods should exceed the mean scaled score for Mathematics Applications by at least 1.5 times the common standard deviation of scaled scores within courses.

**Recommendation 2**
For students who take both Mathematics Specialist and Mathematics Methods, the mean scaled score for Specialist should be no less than the mean scaled score in Methods.

I have lived in WA for 22 years as an engineering academic, and I have noticed the substantial drop in the proportion of students who undertake higher level mathematics courses in year 12 (placing us towards the bottom of all OECD countries on this measure). This has had a significant knock on effect in many areas of higher education and professional workforce, including engineering. An intelligent country that wishes to have sustainable prosperity needs to build up its science and engineering capabilities, and these heavily rely on a strong mathematics foundation. We need to provide good incentives to high school students to enrol in the higher level mathematics units which are more challenging but also more useful for broadening their learning horizon throughout their lives, including their university education and professional careers.

I request your kind support towards this important cause.

Best regards,
Daryoush

Professor Daryoush Habibi  
PhD, BE(Hons), FIE Aust, FIMarEst, SMIEEE  
Immediate Past President, The Australian Council of Engineering Deans  
Professor and Dean of Engineering  
School of Engineering  
Edith Cowan University  
Joondalup WA 6027 Australia  
Phone: +61 8 6904 5787

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8 October 2015

Emeritus Associate Professor Ken Harrison
Murdoch University
Chair of TISC’s Joint Scaling Policy Committee
Via Email: k.harrison@murdoch.edu.au

Dear Ken,

Re: Changes to the Mathematics Curriculum

I am writing in support of your letter referring to changes to the mathematics curriculum at the upper secondary level, and to extend our support for measures designed to ensure that the scaling system used by the Tertiary Institutions Service Centre (TISC) encourages students to take advanced mathematics by adequately rewarding students who perform well in the more advanced mathematics courses.

The Faculty’s understanding is that a new suite of upper secondary level mathematics courses based on the Australian Curriculum is being introduced into Western Australian High Schools. The Year 11 components of these courses are already being taught for the first time in 2015 and the Year 12 components will commence in 2016. Three of the new courses can contribute to a student’s ATAR:

- Mathematics Methods
- Mathematics Specialist and
- Mathematics Applications.

We have been advised that the new courses represent a significant change to the structure of upper secondary mathematics courses in this state.

We endorse the sentiment that Mathematics Methods is crucial for the preparation of students intending to study STEM-related courses at university, and strongly advocate that the interests of universities are best served if as many students as possible take this course at school.

With particular reference to the TISC process of Average Marks Scaling (AMS), we feel it necessary to inform TISC that they recognize the need for special treatment of mathematics in the scaling process, and that they support the level of separation between the mean scaled scores in the various mathematics courses.
We support the recommendation that the mean scaled score for Mathematics Methods should exceed the mean scaled score for Mathematics Applications by at least 1.5 times the common standard deviation of scaled scores within courses. We also support the recommendation that for students who take both Mathematics Specialist and Mathematics Methods, the mean scaled score for Specialist should be no less than the mean scaled score in Methods. We assume that TISC could implement these recommendations by scaling the mathematics courses separately, and then making adjustments only if the specified requirements are not already met.

Yours sincerely

[Signature]

Professor Andris Stelbovics
Pro Vice Chancellor, Science and Engineering

Sources: TISC Scaling reports, 2013-2014; SCSA examination enrolments, September 2015; SCSA Year 11 enrolments, October 2015.
Mr Wayne Betts
Executive Officer
Tertiary Institutions Service Centre Inc (TISC)
Level 1, 100 Royal Street
EAST PERTH WA 6004

Dear Mr Betts

As you know the School Curriculum and Standards Authority (the Authority) is implementing significant reforms associated with the Western Australian Certificate of Education (WACE). These reforms take effect for Year 11 students this year and for Year 12 students in 2016. We believe that progress is being well led by the Authority and generally well managed by schools. The result of these reforms should be that more students will have engaged with courses that are more challenging and rigorous than previous courses and students achieving a WACE will have demonstrated a minimum level of literacy and numeracy (consistent with Australian Core Standards Framework level 3).

We are writing to you now regarding an issue that is of considerable concern: the possibility that the Tertiary Institutions Service Centre (TISC) may provide increments or bonuses in some Year 12 Mathematics courses as a form of incentive or encouragement for students to enrol in these courses.

Staff within Western Australian universities will have received a letter from the Chair of the TISC Scaling Committee seeking support for a proposal to ‘encourage students to take advanced mathematics by adequately rewarding students who perform well in the more advanced mathematics courses’. While this letter is from the Chair of the Scaling Committee it does not represent a decision taken by the Scaling Committee (which discussed the matter at a recent meeting but did not reach an agreed position).

On behalf of the Authority’s Board we felt it important to document our concerns with this proposal as we understand that the TISC Management Committee will be discussing this issue in the near future.

The Authority is opposed to any form of increments being introduced in the calculation of a student’s ATAR when the new WACE courses are examined for the first time in 2016.

Proposal to apply increments to selected Mathematics courses

The use of increments was introduced by TISC as part of the current (finishing in 2015) two-tier Stage 2/Stage 3 structure of courses which have separate Stage 2 and Stage 3 examinations. This process applied in all subjects and provided an ‘increment’ to students in all Stage 3 courses in order to encourage students to enrol in these courses rather than the easier Stage 2 courses. As you know, the ‘Course Stages’ construct has been removed from the WACE and is being replaced by ATAR Courses (externally examinable and contributing to an ATAR) and General Courses (not externally examinable and not contributing to an ATAR) in 2015-16.
In the 2016 WACE there are three examinable mathematics courses. These courses are:

**Mathematics Applications ATAR**
This course focuses on the use of mathematics to solve problems in contexts that involve financial modelling, geometric and trigonometric analysis, graphical and network analysis, and growth and decay in sequences. It also provides opportunities for students to develop systematic strategies based on the statistical investigation process for answering statistical questions that involve analysing univariate and bivariate data, including time series data. The Mathematics Applications course is designed for students who want to extend their mathematical skills beyond Year 10 level, but whose future studies or employment pathways do not require knowledge of calculus. The course is designed for students who have a wide range of educational and employment aspirations, including continuing their studies at university or TAFE.

**Mathematics Methods ATAR**
This course focuses on the use of calculus and statistical analysis. The study of calculus provides a basis for understanding rates of change in the physical world, and includes the use of functions, their derivatives and integrals, in modelling physical processes. The study of statistics develops students’ ability to describe and analyse phenomena that involve uncertainty and variation.

Mathematics Methods provides a foundation for further studies in disciplines in which mathematics and statistics have important roles. It is also advantageous for further studies in the health and social sciences. **In summary, this course is designed for students whose future pathways may involve mathematics and statistics and their applications in a range of disciplines at the tertiary level.**

**Mathematics Specialist ATAR**
This course provides opportunities, beyond those presented in the Mathematics Methods ATAR course, to develop rigorous mathematical arguments and proofs, and to use mathematical models more extensively. Mathematics Specialist contains topics in functions and calculus that build on and deepen the ideas presented in the Mathematics Methods course, as well as demonstrate their application in many areas.

The Mathematics Specialist course also extends understanding and knowledge of statistics and introduces the topics of vectors, complex numbers and matrices. **Mathematics Specialist is the only ATAR mathematics course that should not be taken as a stand-alone course and it is recommended to be studied in conjunction with the Mathematics Methods ATAR course as preparation for entry to specialised university courses such as engineering, physical sciences and mathematics.**

All these courses are relevant to students with university education aspirations – Mathematics Applications for those whose future studies or employment pathways do not require knowledge of calculus; Mathematical Methods course for students whose future pathways may involve mathematics and statistics and their applications; and Specialist Mathematics (with Mathematical Methods) for students who are seeking entry into specialised university courses such as engineering, physical sciences and mathematics.
The Mathematics Association of Western Australia has written to the Joint SCSA/TISC Scaling Policy Committee arguing for the introduction of increments to encourage students to undertake the two more 'difficult' courses. They have argued for an adjustment to be made to the final scaled score distributions so that (1) the mean scaled score for Mathematics Methods exceeds the mean scaled score for Mathematics Applications by at least 1.5 times the common standard deviation of scaled scores within courses; and (2) that for students who take both Mathematics Specialist and Mathematics Methods, the mean scaled score for Specialist should be no less than the mean scaled score in Mathematics Methods.

The Authority argues that the use of increments is an arbitrary and unnecessary interference in the process of calculation of course scaled scores and a student’s ATAR and cannot be justified. The interference confuses students and parents and has not been permitted for any other courses.

The concern appears to centre around the issue of students undertaking Mathematics Applications and Mathematical Methods as a pair of courses and these students doing very well in Mathematical Applications (because they know more Mathematics) and achieving some sort of advantage in the calculation of their ATAR. In response to this concern, we suggest that:

1. An adequate scaling or equating process that compensates for course difficulty by comparing the achievement levels of students across subjects should be able to accommodate this problem (in the past, TISC has used AMS to address this matter); and
2. If this is a legitimate concern that cannot be addressed through an appropriate scaling/equating process, an alternative approach would be for TISC to allow (for ATAR calculation purposes) only the Mathematics Specialist and Mathematics Methods combination i.e. not allow the Mathematics Applications and Mathematics Methods combination or the Mathematics Applications and Mathematics Specialist combination in the calculation of a student’s ATAR.

Another concern regarding the application of the proposed procedure is that students undertaking Mathematical Applications (rather than Mathematics Specialist or Mathematics Methods) would inevitably be disadvantaged by the process. It is fundamentally unfair and discriminatory to disadvantage students for whom Mathematics Applications is a totally appropriate ATAR course where these students may be aiming for a university pathway that does not require the background provided by Mathematics Methods or Mathematics Specialist.

It is worth pointing out that a similar argument could be raised to provide an increment for the study of Literature, which is often regarded as a more difficult course than English - this would disadvantage students who may be on a physical science/engineering/mathematics university pathway but for whom English is a preferred preparation for university study. Similarly, one could provide an increment for Physics in comparison to Biology (as Physics is often considered a more difficult course). It is fundamentally unfair and an arbitrary approach to attempt to ‘force’ students to take Mathematical Methods or Specialist Mathematics when they have no need for or interest in the course.
A further, possibly unforeseen, serious consequence of this proposal is that students who are not on a science/engineering/mathematics university pathway may avoid ATAR Mathematics courses altogether (why do it if you are going to be highly disadvantaged by the application of the proposed process). This scenario is entirely plausible as the current 'stages' approach, in which Stage 2 course results were usually quite low, resulted in a bifurcation in the system, with more students opting to study Stage 1 courses (at a very low level). The proposed approach is likely to lead to a significant reduction in enrolments in Mathematics Applications and mathematics generally as the effect of this proposal on students' scaled scores in this course becomes apparent.

In summary, the Authority is strongly opposed to the introduction of the proposed process to increase the scaled scores for students enrolled in Specialist Mathematics and Mathematical Methods at the expense of students enrolled in Mathematical Applications because it is:

- conflating two unrelated issues – a process attempting to rank students fairly for the purposes of university selection and a desire to increase student enrolments in more difficult mathematics courses;
- treating mathematics quite differently from other learning areas – similar arguments could me made with respect to the different difficulties of courses in English, Science, the Humanities and Social Sciences and so on;
- an arbitrary process that is fundamentally unfair to students who have no need for or interest in studying the more difficult Mathematics courses but do want to increase their mathematical knowledge in Years 11 and 12;
- very likely to lead, in the medium term, to a reduction in student enrolments in Mathematical Applications and ATAR mathematics courses generally; and
- confusing to students, parents and teachers. Students should be able to plan for their higher education without being unnecessarily confused and/or disadvantaged because they select a Mathematics courses that is appropriate to their aspirations.

We therefore urge you to reject the proposal. If the concerns are legitimate then a much simpler and fairer approach would be to not allow the Mathematics Applications and Mathematics Methods combination or the Mathematics Applications and Mathematics Specialist combination in the calculation of a student's ATAR.

Yours sincerely

PATRICK GARNETT
CHAIR

6 October 2015

ALLAN BLAGAICH
CHIEF EXECUTIVE OFFICER
2013 Maths 3CD, Methods (1.5*SD)

Chart 3

2013 Maths 3CD, Methods (1.3*SD)

Chart 4

2014 Maths 3CD, Methods (1.5*SD)

Chart 5

2014 Maths 3CD, Methods (1.3*SD)

Chart 6
30 November 2015

Mr Wayne Betts
Executive Officer
Tertiary Institutions Centre
Level 1, 100 Royal Street
East Perth, WA 6004

Dear Mr Betts,

Thank you for your letter dated 23rd October 2015 requesting a formal response from UWA to determine an agreed approach to the marks adjustment process for Mathematics ATAR courses from 2016. Please find below responses to the questions outlined in your letter.

a) Does your institution support the provision of incentives to actively encourage students to undertake the higher-level mathematics courses?

Yes. The University of Western Australia supports the provision of incentives to actively encourage high school students to undertake the highest level of mathematics commensurate with their mathematics aptitude and future aspirations.

UWA is firmly of the view that mathematics subject choice should be based on sound educational principles and be determined by people who best know each student including the student themselves, their school teachers, parents and school advisors. UWA also recognises the importance of high-level mathematics competence for future studies and employment options and the importance of high levels of mathematics literacy for all people.

We recognise that, in the current system, there may be tension for some students between an aspiration to achieve the highest possible ATAR and selecting higher-level mathematics subjects. We are very concerned that students may be tempted to take easier options in mathematics, for example, taking Mathematics Applications when they should be taking Mathematics Methods, in order to strategically gain an ATAR benefit. As such there is a need for the education community to put in place clear and reasonable incentives for students to select the highest level of mathematics commensurate with their mathematics aptitude and future aspirations.
b) Is the ‘separation of means’ approach (Section 4 of the paper) an acceptable mechanism to achieve this for Mathematics Applications and Mathematics Methods?

No. The ‘separation of means’ approach is not our first preference as an approach to incentivise high-level mathematics subject choice. We see some advantages in the ‘separation of means approach’ including:

• The difference in distributions between the two subjects provides an incentive for students to undertake Mathematics Methods over Mathematics Applications.
• This approach may advantage students with higher aptitude at mathematics including those intending to study STEM related subjects at university.
• There is some continuity with the approach taken with mathematics unit pairs over the past few years.

The disadvantages include:

• Fewer students in Mathematics Applications than in Mathematics Methods will receive a scaled score at the upper end of the range. This may result in some students opting not to take any ATAR mathematics subjects at all and a likely reduction in enrolments in Mathematics Applications and ATAR mathematics courses overall.
• That it may result in lower mathematics competency for the majority of university-bound students, especially those with lower aptitude or interest in mathematics.
• The ‘separation of means’ process is complex and would be difficult to explain to parents and students. Therefore, it lacks a clear incentive message.

UWA is concerned that the ‘separation of means’ approach is likely to incentivise students with high levels of mathematics aptitude and interest to choose higher-level mathematics subjects, but dis-incentivise other students from taking any mathematics at all. This is likely to result in a widening in inequities in mathematics literacy among high schools students and is unacceptable.

c) If the ‘separation of means’ approach is acceptable, do you favour a separation of 1.5 or 1.3 times the common standard deviation?

UWA does not support the separation of means approach – see above. However, if the separation of means approach was adopted UWA would favour 1.3 times the common standard deviation to reduce the gap and minimise the impact on the students doing Mathematics Applications.
d) If the ‘separation of means’ approach is not acceptable, what alternative mechanism (Sections 5-7) does your institution endorse?

UWA supports changing rules for unacceptable subject combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Mathematics Specialist. This will prevent both scores being counted in the Tertiary Entrance Aggregate (TEA). However, it does not prevent students from taking the easier subject, and benefitting from the potentially higher score; therefore, UWA supports this approach in combination with a TEA bonus system.

UWA currently recognises a TEA bonus of 10% of the scaled score for studies in Languages other than English (LOTE) and is supportive of a similar bonus approach for studies in mathematics. We are considering a bonus point system to incentivise all ATAR mathematics subjects including Applications, Methods and Specialist over other ATAR subjects and which incentivises higher level mathematics. For example, UWA is considering a TEA bonus of 5% for Mathematics Applications and 10% for Mathematics Methods. As all Mathematics Specialist students also study Methods, these students would receive the bonus from Methods. We are also considering an additional 5% for Mathematics Specialist as an incentive for students to study Specialist.

UWA already has appropriate mathematics pre-requisites on all Bachelor of Science and Bachelor of Commerce majors and we feel that these prerequisites in combination with the unacceptable subject combinations and TEA bonus point methods would have the advantage of:

- Incentivising all ATAR mathematics subjects over other subject choices.
- Incentivising higher-level ATAR mathematics choices for students with commensurate aptitude and future aspirations.
- These approaches are already in the system and hence are easy to explain to parents and students and will result in a very clear incentive message.

e) Do you support the proposal (Section 8) to ensure that the mean of Mathematics Specialist is at least equal to the mean of Mathematics Methods?

Yes.

Yours sincerely,

Alec Cameron
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<tr>
<th>Question</th>
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<th>CURTIN</th>
<th>MURDOCH</th>
<th>UWA</th>
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<tr>
<td>Does your institution support the provision of incentives to actively encourage students to undertake higher-level mathematics courses?</td>
<td>While ECU supports incentivising the study of Mathematics and other STEM disciplines in the WACE courses of study, we do not support the introduction of a scaling mechanism as described. ECU supports the SCSA rationale for this position and believes that the overall outcome of the proposed scaling mechanism could lead to a nett reduction in students studying ATAR Mathematics.</td>
<td>Yes (via email)</td>
<td>Assumed yes.</td>
<td>Yes. The University of Western Australia supports the provision of incentives to actively encourage high school students to undertake the highest level of mathematics commensurate with their mathematics aptitude and future aspirations.</td>
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<td>Is the ‘separation of means’ approach (Section 4 of the paper) an acceptable mechanism to achieve this for Mathematics Applications and Mathematics Methods?</td>
<td>No. The low mean for Mathematics Applications could result in fewer students choosing to study ATAR mathematics.</td>
<td>Yes</td>
<td>No</td>
<td>No. The separation of means is not our first preference as an approach to incentivise high-level mathematics subject choice.</td>
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<td>If the ‘separation of means’ approach is acceptable, do you favour a separation of 1.5 or 1.3 times the common standard deviation?</td>
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<td>1.5</td>
<td>n/a</td>
<td>n/a</td>
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<td>If the ‘separation of means’ approach is not acceptable, what alternative mechanism (Sections 5-7) does your institution endorse?</td>
<td>ECU does not support a scaling-based mechanism. ECU does, however, support mechanism 5, a change in the unacceptable combination rules to rule out the combination Mathematics Application/Mathematics Methods.</td>
<td>n/a</td>
<td>Not discussed in detail yet.</td>
<td>UWA supports changing rules for unacceptable combinations so that Mathematics Applications is an unacceptable combination with Mathematics Methods or Mathematics Specialist.</td>
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We are considering a bonus point system to incentivise all ATAR mathematics subjects including Applications, methods and Specialist over other ATAR subjects and which incentivises higher level mathematics.

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<th>MURDOCH</th>
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<tr>
<td>Do you support the proposal (Section 8) to ensure that the mean of Mathematics Specialist is at least equal to the mean of Mathematics Methods?</td>
<td>No. The curriculum adjustments that have been made in these units should make this an unnecessary complication.</td>
<td>Yes</td>
<td>Unknown</td>
<td>Yes</td>
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</table>

Notes:

1. Current areas of agreement indicated in **Red**.
2. For some options (separation of means or unacceptable combinations) a consensus decision *must* be reached. It is not possible for mathematics to be scaled differently for one institution; neither is it feasible for unacceptable combinations to be applied to individual institutions. Bonus points can be applied independently for each institution; however, if they are implemented, only one mechanism will be introduced (either TEA or ATAR bonus).
3. As consensus has not been reached in time to notify schools before the end of the school year, no changes can be applied now for 2016 WACE. Universities commit to providing information in time for students to make considered Year 11 subject choices during Year 10, so the earliest point now at which bonuses or unacceptable combination rules can be applied will be 2018 WACE. A decision will need to be finalised by April 2016 for this to happen.
### DOCUMENT MODIFICATION HISTORY

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<td>15&lt;sup&gt;th&lt;/sup&gt; June 2015</td>
<td>K Krishnasamy</td>
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<td>M Johns, J Dell H Wildy, G Oakley, V Dawson, P Dolan, P Hancock, E Techera, N Skead, W Erber, S Carr, B Waddell, P Hammond, T O’Donnell</td>
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DOCUMENT APPROVAL

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D2
Assured Entry Professional Pathways (AEPP)

Proposal

This paper proposes the re-conceptualisation of the current Assured Entry Pathway (AEP) scheme (Table 1) to include a greatly expanded list of attractive undergraduate and postgraduate professional degree combinations to be offered as TISC codes at a range of ATAR points. The new scheme, to be titled ‘Assured Entry Professional Pathways’ (AEPP), includes clearly defined course pathways to engineering, law, teaching, health, architecture and psychology professional qualifications as outlined in Table 2. The AEPPs will be offered in addition to UWA’s regular ‘flexible pathways’ where students start their tertiary education with an undergraduate degree of their choice and then decide on postgraduate coursework, professional and research options at a later date. The new scheme will replace the current AEPs and, as with the current scheme, all AEPPs will be available through the Bachelor of Philosophy (Honours). Proposed minimum ATAR points for each AEPP are outlined in Table 2 and, where relevant, current course pre-requisites and other entry requirements will remain the same.

Rationale: 2015 Review of UWA’s Undergraduate Courses

The review of the undergraduate component of UWA’s courses conducted during 2015 and reported to the Academic Board in March 2016 indicated that, notwithstanding the clear markers of success for the UWA course structure, there is a perceived failure of the University to communicate broadly the rationale and life and career benefits of the new courses design. Despite positive overall evaluation of the course structure and its educational excellence, substantial proportions of students reported difficulty in understanding UWA’s course structures (32%); difficulty in planning personal course structures (34%); a preference for more obvious professional pathways (70%); and the desirability of quicker professional pathways (61%) (Audit Team Report, 2015).

School principals explained to the Panel that students with clear vocational intentions were increasingly tending to favour the shorter, more direct pathways offered by other Western Australian universities. They also observed that high achieving students included other international and national universities in their options, and that even some of those contemplating a broad undergraduate education followed by a professional entry program at graduate level, were inclined to see the more established pathways at the University of Melbourne as preferable to UWA’s courses. Five themes underpinned their concerns:

- There is a perceived failure of UWA to communicate broadly the rationale and benefits of the courses design, particularly given the longer study that it entails;
- There is apparent difficulty for students to chart a pathway through the new courses to a successful career;
- The minimum ATAR of 80 limits opportunities for students to realise some immediate tangible educational benefit and status from a high ATAR;
- The longer time and greater cost required to achieve specific professional outcomes, including in law, engineering and the health professions; and,
- A sense of not belonging, particularly in the early years, to a clearly identified intellectual community.

The Review Panel made two related recommendations:

Recommendation 2:
It is recommended that the potential and opportunities of the University’s courses are promoted and realised through development of exemplar pathways to successful careers, including postgraduate studies, to provide guidance while also encouraging creative choice.

Recommendation 4
It is recommended that the University creates a suite of targeted course options with a range of ATAR cut-offs for Year 12 students through TISC, for example additional Assured Entry Pathways and other popular course combinations.
Current Challenges

- UWA has recently been losing undergraduate, school entry market share.
- Popular combinations of majors and degrees (e.g. Commerce & Engineering) at UWA are currently invisible to many school students.
- Some students want clear direction on how to get a professional qualification.
- ATAR entry into UWA's courses set at 80 for all degrees and in the very high 90s for most assured entry pathways means there is no attractive middle option for high performing students to aim for during high school.
- UWA's TISC offerings seem minimal compared with other universities.

Concept: ‘Assured Entry Professional Pathway’ (AEPP)

To address the issues outlined above, the Assured Entry Professional Pathways will:

- Identify the undergraduate bachelor degree (and sometimes a major) and a postgraduate professional degree that comprise the pathway;
- Be offered as TISC codes with assured entry into both the undergraduate degree and the postgraduate professional degree;
- Be offered in addition to UWA's regular flexible pathways;
- Retain the flexibility for students to change degrees;
- Enable students to take advantage of a cognate undergraduate major to a shorter professional masters course (i.e. utilise minimum volume of learning and admission credit) where possible; and,
- Include a minimum ATAR to provide attractive, meaningful 'middle entry' points.
- Retain current course pre-requisites and other entry requirements where relevant.
- Be available through the Bachelor of Philosophy (Honours) course.

Benefits for Students

- Clearer/shorter pathways to professional qualifications at UWA.
- More direction with regard to their course choices.
- Mid-level ATAR entry points to aim for during high school.
- Flexibility to change their professional/discipline interest retained.
- Optimal preparation for postgraduate professional courses.

Benefits for UWA

- Improved visibility and marketability of professional pathways.
- Improved visibility and marketability of popular combined courses.
- Shorter professional pathways are likely to be more competitive.
- High academic achieving students should be attracted to more visible and increased number of ATAR cut off points.
- Increased offerings through TISC.
- No new courses need to be developed. This is just a change to packaging current course offerings.

List of Proposed Assured Entry Professional Pathways (AEPPs)

The list of current Assured Entry Pathways (AEPs) is presented in Table 1. The list of proposed Assured Entry Professional Pathways (AEPPs) is presented in Table 2. Once the list of AEPPs is approved, faculties will be responsible for developing and providing exemplar pathways including recommended units within each AEPP to provide strong guidance while also enabling creative choice where appropriate.
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<th>Postgraduate</th>
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</tr>
<tr>
<td>Landscape Architecture</td>
<td>80.00</td>
<td>Ø BDes majors in Integrated Design &amp; Landscape Architecture</td>
<td>Ø Master of Landscape Architecture</td>
<td>5 years</td>
<td>BDes MLArch</td>
</tr>
</tbody>
</table>
**TABLE 2: Proposed Assured Entry Professional Pathways (AEPP) for 2017 Intake**

### Engineering Pathways

<table>
<thead>
<tr>
<th>Assured Pathway</th>
<th>Minimum ATAR*</th>
<th>Undergraduate</th>
<th>Postgraduate</th>
<th>Indicative Duration</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commerce + Engineering</td>
<td>92.00</td>
<td>➢ BCom any major</td>
<td>➢ Master of Professional Engineering (MPE)</td>
<td>5 years</td>
<td>BCom MPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ BSc Engineering Science major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science + Engineering</td>
<td>92.00</td>
<td>➢ BSc Engineering Science major</td>
<td>➢ Master of Professional Engineering (MPE)</td>
<td>5 years</td>
<td>BSc MPE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ BSc select any other major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts + Engineering</td>
<td>92.00</td>
<td>➢ BA select any major</td>
<td>➢ Master of Professional Engineering (MPE)</td>
<td>5 years</td>
<td>BA MPE</td>
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<td></td>
<td>➢ BSc Engineering Science major</td>
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</table>

### Law Pathways

<table>
<thead>
<tr>
<th>Assured Pathway</th>
<th>Minimum ATAR*</th>
<th>Undergraduate</th>
<th>Postgraduate</th>
<th>Indicative Duration</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commerce + Law</td>
<td>97.00</td>
<td>➢ BCom select any major</td>
<td>➢ Juris Doctor (JD)</td>
<td>6 years</td>
<td>BCom JD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ Select any other UWA major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts + Law</td>
<td>97.00</td>
<td>➢ BA select any major</td>
<td>➢ Juris Doctor (JD)</td>
<td>6 years</td>
<td>BA JD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ Select any other UWA major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science + Law</td>
<td>97.00</td>
<td>➢ BSc select any major</td>
<td>➢ Juris Doctor (JD)</td>
<td>6 years</td>
<td>BSc JD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>➢ Select any other UWA major</td>
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## Teaching Pathways

<table>
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<tr>
<th>Assured Pathway</th>
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<th>Undergraduate</th>
<th>Postgraduate</th>
<th>Indicative Duration</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts + Teaching (Early Childhood/Primary)</td>
<td>92.00</td>
<td>BA select one major as advised by the Faculty of Education</td>
<td>Master of Teaching (Early childhood/Primary)</td>
<td>5 years</td>
<td>BA MTeach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select any other UWA major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Science + Teaching (Early Childhood/Primary)</td>
<td>92.00</td>
<td>BSc select one major</td>
<td>Master of Teaching (Early childhood/Primary)</td>
<td>5 years</td>
<td>BSc MTeach</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select one major as advised by the Faculty of Education</td>
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<td></td>
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<tr>
<td>Commerce + Teaching (Early Childhood/Primary)</td>
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<td>BCom select one major</td>
<td>Master of Teaching (Secondary)</td>
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<td>BCom MTeach</td>
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<td></td>
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</tr>
<tr>
<td>Arts + Teaching (Secondary)</td>
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<td>BA select one major as advised by the Faculty of Education</td>
<td>Master of Teaching (Secondary)</td>
<td>5 years</td>
<td>BA MTeach</td>
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<tr>
<td>Science + Teaching (Secondary)</td>
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<td>Master of Teaching (Secondary)</td>
<td>5 years</td>
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<td>BCom select one major as advised by the Faculty of Education</td>
<td>Master of Teaching (Secondary)</td>
<td>5 years</td>
<td>BCom MTeach</td>
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<td>Health Pathways</td>
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<td>Postgraduate</td>
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<td>Qualification</td>
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</tr>
<tr>
<td>Science + Medicine</td>
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<td>6 years</td>
<td>BSc MD</td>
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<td>(Rural)</td>
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<tr>
<td>(Broadway)</td>
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</tr>
<tr>
<td>Commerce + Medicine</td>
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<td>B Com select any major</td>
<td>Doctor of Medicine</td>
<td>6 years</td>
<td>BCom MD</td>
</tr>
<tr>
<td>(Rural)</td>
<td>96.00</td>
<td>BSc Medical Science major</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Broadway)</td>
<td>96.00</td>
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</tr>
<tr>
<td>Arts + Dentistry</td>
<td>99.00</td>
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<td>Doctor of Dental Medicine</td>
<td>6 years</td>
<td>BSc DMD</td>
</tr>
<tr>
<td>(Rural)</td>
<td>96.00</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Broadway)</td>
<td>96.00</td>
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<tr>
<td>Science + Podiatry</td>
<td>98.00</td>
<td>BSc Medical Science major</td>
<td>Doctor of Podiatric Medicine</td>
<td>5 years</td>
<td>BSc DPM</td>
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<tr>
<td></td>
<td>96.00</td>
<td>Select any other UWA major</td>
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<td></td>
<td>96.00</td>
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<tr>
<td>Commerce + Podiatry</td>
<td>98.00</td>
<td>BA select any major</td>
<td>Doctor of Podiatric Medicine</td>
<td>5 years</td>
<td>BA DPM</td>
</tr>
<tr>
<td></td>
<td>96.00</td>
<td>BSc Medical Science major</td>
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<tr>
<td></td>
<td>96.00</td>
<td></td>
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</tr>
<tr>
<td>Science + Pharmacy</td>
<td>94.00</td>
<td>BSc Medical Science major</td>
<td>Master of Pharmacy</td>
<td>5 years</td>
<td>BSc MPharm</td>
</tr>
<tr>
<td></td>
<td>96.00</td>
<td>Select any other UWA major</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>96.00</td>
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<tr>
<td>Commerce + Pharmacy</td>
<td>94.00</td>
<td>BCom select any major</td>
<td>Master of Pharmacy</td>
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<td>BCom MPharm</td>
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<tr>
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<td>96.00</td>
<td>BSc Medical Science major</td>
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<tr>
<td></td>
<td>96.00</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Arts + Social Work</td>
<td>92.00</td>
<td>BSc Select any major</td>
<td>Master of Social Work</td>
<td>5 years</td>
<td>BA MSW</td>
</tr>
<tr>
<td>Science + Social Work</td>
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<td></td>
</tr>
<tr>
<td>Pathway</td>
<td>Minimum ATAR*</td>
<td>Undergraduate</td>
<td>Postgraduate</td>
<td>Indicative Duration</td>
<td>Qualification</td>
</tr>
<tr>
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<td>---------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Arts + Social Work</td>
<td>92.00</td>
<td>BA select any major, Select any other UWA major</td>
<td>Master of Social Work</td>
<td>5 years</td>
<td>BA MSW</td>
</tr>
<tr>
<td>Commerce + Social Work</td>
<td>92.00</td>
<td>B Com select any major, Select any other UWA major</td>
<td>Master of Social Work</td>
<td>5 years</td>
<td>BCom MSW</td>
</tr>
</tbody>
</table>

### Psychology Pathways

<table>
<thead>
<tr>
<th>Assured Pathway</th>
<th>Minimum ATAR*</th>
<th>Undergraduate</th>
<th>Postgraduate</th>
<th>Indicative Duration</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts + Psychology</td>
<td>95.00</td>
<td>BA Psychology double major, Psychology Honours</td>
<td>-</td>
<td>4 years</td>
<td>BA (Hons)</td>
</tr>
<tr>
<td>Science + Psychology</td>
<td>95.00</td>
<td>BSc Psychology double major, Psychology Honours</td>
<td>-</td>
<td>4 years</td>
<td>BSc (Hons)</td>
</tr>
</tbody>
</table>

### Architecture Pathways

<table>
<thead>
<tr>
<th>Assured Pathway</th>
<th>Minimum ATAR*</th>
<th>Undergraduate</th>
<th>Postgraduate</th>
<th>Indicative Duration</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design + Architecture</td>
<td>80.00</td>
<td>BDes majors in Integrated Design &amp; Architecture</td>
<td>Master of Architecture</td>
<td>5 years</td>
<td>BDes MArch</td>
</tr>
<tr>
<td>Design + Landscape Architecture</td>
<td>80.00</td>
<td>BDes majors in Integrated Design &amp; Landscape Architecture</td>
<td>Master of Landscape Architecture</td>
<td>5 years</td>
<td>BDes MLarch</td>
</tr>
</tbody>
</table>

* Other current pre-requisites and entry requirements (in addition to the minimum ATAR) will remain the same for all courses
The concept plan for this postgraduate coursework course is not yet approved.

### Administrative details

- **Faculty**: Science
- **Responsible Organisational Entity**: Earth and Environment
- **Course coordinator**: Dr Julien Bourget

### Details

- **Course code**: 73540
- **Title**: Master of Petroleum Geoscience
- **Abbreviation of award**: MPetGeosci
- **Type of degree course**: Master's by Coursework or Coursework and Dissertation
- **AQF course type and level**: Master's (Coursework) — Level 9
- **Structure type**: Named

### About this course

The Master of Petroleum Geoscience is a 2-year coursework or coursework and dissertation degree course. This course aims to develop graduates with advanced skills in geological and geophysical data analysis and integration of datasets related to sedimentary basin analysis and petroleum geoscience. The course places considerable emphasis on the development of practical skills underpinned by conceptual knowledge, and the application of both to solving problems related to petroleum exploration. Students have the opportunity to use latest digital technology to help develop advanced skills and understanding.

- **Proposed**: 25/02/2016
- **First year of offer**: 2017

### Volume of learning

- **Volume of learning**: 96 points
- **Does minimum volume of learning correspond to standard admission requirements?**: Yes

### Admission requirements

- **Admission requirements**: Bachelor’s pass degree (cognate)

### Articulation

- **Articulated?**: Graduate Certificate; Graduate Diploma;
Why offer the proposed course

Rationale for offering course

Perth is the major centre for petroleum exploration and production in Australia and is very close to major centres in SE Asia (same time zone). SEE has a number of teaching-research staff who are actively engaged in petroleum geoscience research and HDR supervision supported by international companies exploring and operating in Western Australia and SE Asia. International petroleum companies consider a 5-year course the standard entry for graduate employment and since these are the major employers in Australia, we can provide higher level T&L in line with employer needs. We have been steadily building relevant coursework units at levels 4 and 5 each year since the inception of New Courses and which are currently offered in Honours in Geology and the Master of Geoscience. We currently also offer Masters courses in Ore Deposit Geology and Hydrogeology which pre-dated New Courses. Our intention with New Courses was to offer this course but we did not have enough unique units to do so earlier. With the appointment of Dr Daniel Peyrot as palynologist (who focuses on spore-pollen microfossils) to the teaching-research staff, we now have enough staff to offer units in a coursework Masters with very good content across a number of geoscience sub-disciplines (sedimentology, biostratigraphy, sequence stratigraphy, structural geology and geophysics) including fieldwork. The coursework units focus on development of key skills and integration of knowledge and skills to solve problems related to petroleum exploration using the latest digital technology as relevant. It is also important for us to enter the market (of petroleum geoscience Masters) as soon as we are ready.

Strategic and Operational Priorities

This course aligns strongly with the University and Faculty of Science strategic priority in mineral and energy resources and specifically related to petroleum exploration. Our location close to the North West Shelf (which is Australia's premier petroleum province) and the more recent exploration focus on WA's onshore basins for unconventional resources, further highlights the importance of energy resources as a strategic priority.

Proposal is outcome of review?

This proposal has resulted from development of sufficient postgraduate coursework units in petroleum geoscience to offer a named degree. It complements the Masters courses in mineral geoscience and hydrogeology already offered by the School of Earth & Environment. This course was identified early in the development of New Courses Cycle 2 courses as one to develop as a suite of geoscience masters.

Market Research and Analysis

Target market and size

Target markets for course

The target markets for this course are graduates with Bachelors degree with a major in geology or petroleum geology or graduates with geology degrees who have been working in the petroleum industry in Australia or overseas. This course also provides an opportunity for graduates to retrain in this area of application (e.g. from minerals or environmental fields). There are suitably qualified students already coming to UWA (see below) and with some targeted marketing we should be able to attract additional students rather than diminish the enrolments in the Master of Geoscience. We can also package four core units as a Graduate Certificate in Petroleum Geoscience for students who have completed the Master of Geoscience but subsequently wish to pursue a petroleum-related career. We are also in a good position to have graduates working in the petroleum industry in Perth undertaking this course or at least constituent coursework units.

Target markets: delivery of teaching

Face-to-face units taught in workshop style, each over a 6 week period which is consistent with other GEOS level 4 and 5 units.

Target markets: demonstrate viable demand

The Master of Geoscience already attracts students with petroleum geology degrees and students who aspire to a career in the petroleum industry. Currently of the 20 students who commenced the Master of Geoscience in 2015, 5 came with petroleum geoscience backgrounds (this represents 25% of the intake). Of the 14 students who enrolled in 2013 and 2014, a similar percentage had a petroleum background. This shows that Perth is an important petroleum hub of activity and is close to SE Asian cities which also host petroleum companies actively exploring and producing in the broad region. We anticipate enrolments from domestic students and international students seeking to align their Masters degree with employment in this industry. We also anticipate students undertaking this degree who are sponsored by their employer (based in Australia, SE Asia and the Middle East). Both Petronas and Saudi Aramco have sent undergraduate students to UWA in the past and SA are sponsoring a Masters student commencing later this year. We envisage that it will be important to market directly to these types of companies to raise awareness of the new degree and the coursework/project opportunities. Also, Australian and New Zealand graduates who are currently losing employment as large companies downsize may also choose to undertake a Masters.

Projected enrolment for domestic and international students

Predicted enrolments in 2017 is 10-15 and our aim is to increasing to approximately 50 students in 2021.

Graduate employment prospects

Employment prospects

Direct employment in the petroleum industry. International petroleum companies expect students to have a Masters degree (5 years of study) for entry to this industry. The Master of Petroleum Geoscience is composed of units that develop skills directly related to petroleum exploration including key geological and geophysical knowledge and skills.

Distinctive employment prospects for graduates

The UWA Master of Geoscience covers a diverse suite of important skills relevant to petroleum exploration including fieldwork. A distinctive element of our degree is the inclusion of industry specialists (living in Perth) in the teaching across a number of units and as co-supervisors of research projects. The biostratigraphic element in the degree (with two units, one at level 4 and one at level 3) will also be distinctive because this expertise has declined in Australia yet remains fundamental to petroleum exploration for dating and correlation of sedimentary rocks in the subsurface.

Course professionally accredited? (preliminary question)

There is no formal accreditation for petroleum geoscience in Australia or internationally. However, we expect that his degree will be recognised by industry as having been gained at a reputable university and the inclusion of industry specialists will raise the profile of the degree.
A 1-yr Master of Petroleum Geoscience is offered at the University of Adelaide in the Australian School of Petroleum. This is a well established course however its funding has been strongly tied to Santos and is subject to fluctuations in the industry. The ASP also offers petroleum engineering degrees which have a good reputation. The ASP Masters is similar to the Masters programs in the UK, most notably at the University of Manchester and University of Aberdeen. These Masters courses are one year and very similar to our Honours level study in terms of time devoted to coursework versus projects. The Master of Petroleum Geoscience at UWA will be a two-year degree which provides opportunity for students to develop advanced skills in their second year and undertake a research project. Curtin University offer a 1.5 yr Master of Science (Geology) with a stream in Basin Analysis & Petroleum. The degree content includes 3 out of the 8 coursework units that are taught by Engineering.

A marketing strategy has been developed.

### Course availability for students

<table>
<thead>
<tr>
<th>Course offered to student categories</th>
<th>Domestic fee-paying; International students (student visa holders);</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course enables international/cross institutional students?</td>
<td>Yes - we anticipate that both international non-award students and cross-institutional domestic students enrolled in Masters degrees (with relevant background) will be able to take units in this course. We expect that students from Curtin University and potentially the Universities of Adelaide and Melbourne may take units offered in this Masters course. We already have two students from Curtin wishing to take the level 4 biostatigraphy unit (newly proposed for this year).</td>
</tr>
<tr>
<td>Course enables UWA students for overseas credit?</td>
<td>We anticipate that students could undertake appropriate units overseas for credit in this degree. This might include direct swaps of units with the same/similar content, or include content not offered at UWA that is relevant, e.g. fieldtrips to important sedimentary basins elsewhere, or specialised techniques (as optional units in the UWA degree).</td>
</tr>
</tbody>
</table>

### Risk management

There is no anticipated financial risk in offering this course. We do not expect to simply draw students who would otherwise enrol in the Master of Geoscience.

### Consultations checklist

- Leading Australian and/or overseas universities offering courses in a similar field
- Other Western Australian universities offering courses in a similar field
- UWA research activity, centre or affiliate

### Additional Information

The success of our current coursework Masters degrees and the background of some of our current students indicates that there is highly likely a demand for this new degree. This degree will be of direct value to students with a petroleum background, or with a more mainstream geology degree, aspiring to a petroleum career. We already attract these students so we consider that this degree is viable. It is financially low risk because almost all of the units being offered in this named degree already exist and the new Masters only involves developing two new units (both in biostatigraphy; one in 2016 and one in 2017 to build progression). Facilities are already available in the school (i.e. no new teaching spaces/labs are required). Microscopes and work stations for computer-based work already exist in SEE. Relationships with industry personnel are already well established through research projects and HDR supervision with teaching-research staff contributing to this degree and we anticipate that this industry support and awareness of the degree (e.g. through the Centre for Energy Geoscience in SEE as well) will be extremely helpful. We have done a lot of work over the last three years to develop units and aligning the unit content across levels 4 and 5 to build a degree with strong progression of subject material and skills through the course.

This Masters degree is 2 years’ duration and students without a background in geology cannot be admitted to this course. Students with a geophysics or environmental geoscience background can be admitted provided they have studied sufficient mainstream geology. We offer GEOS4418 Basin Analysis Techniques and GEOS5506 Structural Geology to Masters students who have not had the opportunity at their home institution to take an equivalent unit focusing on geological and geophysical skills related to sedimentary basins. Students with non-cognate backgrounds would not be able to gain sufficient depth of knowledge and skill level using conversion units.

We anticipate that students could undertake appropriate units overseas for credit in this degree. This might include direct swaps of units with the same/similar content, or include content not offered at UWA that is relevant, e.g. fieldtrips to important sedimentary basins elsewhere, or specialised techniques (as optional units in the UWA degree).

Degree proposal approved by Geoscience Divisional meeting on 23 November 2015, and the School of Earth & Environment T&L Committee on 24 November 2015.

### History and committee endorsements/approvals

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<th>Event</th>
<th>Date</th>
<th>Outcome</th>
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<td>1</td>
<td>Academic Council</td>
<td>Not yet endorsed</td>
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</tr>
<tr>
<td>Phase</td>
<td>Event</td>
<td>Date</td>
<td>Outcome</td>
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The concept plan for this postgraduate coursework course is not yet approved.

### Administrative details

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<td>Course coordinator</td>
<td>Dr Patrick Dunlop</td>
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### Details

<table>
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<tr>
<td>Title</td>
<td>Master of Business Psychology</td>
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<td>Abbreviation of award</td>
<td>MBusPsych</td>
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<tr>
<td>Type of degree course</td>
<td>Master's by Coursework</td>
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<tr>
<td>AQF course type and level</td>
<td>Master's (Coursework) — Level 9</td>
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<td>Structure type</td>
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**About this course**

This course provides extensive specialist training in the application of psychological theories and principles to workplace settings so as to improve organisational performance whilst also enhancing employee wellbeing. This course offers training in the following areas:

- Psychological assessment for enhanced personnel selection outcomes;
- Improving work design to enhance employee effectiveness, wellbeing and safety;
- Applying the principles of human factors to optimise human-system interactions;
- Implementing organisational change initiatives effectively;
- Undertaking effective research in organisations.

The course also includes a significant practicum component, giving students the opportunity to apply the principles they have learned in organisations, under guidance.

**Proposed** 25/02/2016

**First year of offer** 2017

### Volume of learning

- **Maximum volume of learning**: 96 points
- **Minimum volume of learning**: 72 points
- **Does minimum volume of learning correspond to standard admission requirements?**: Yes

### Admission requirements

**Admission requirements**: Bachelor’s pass degree (cognate)

### Articulation

**Articulated?**: None.
Why offer the proposed course

The School of Psychology currently offers an Australian Psychology Accreditation Council (APAC) - Accredited Master of Industrial / Organisational Psychology (MIOP- code 53580) program. The viability of this program is under threat due to the increasingly stringent requirements of APAC accreditation around the supervision of placement students. Specifically, the APAC accreditation requirements specify that external placements must be supervised by supervisors with formal supervisory qualifications. In practice, however, very few professionals in the field seek out these qualifications. Over time, we expect that it will become impossible to satisfy the demand for supervisors in a manner which will see the MIOP course remain viable.

The proposed MBP will not be subject to the same accreditation standards as the extant MIOP, and thus will offer the university more flexibility with respect to the designation of core units, and the size of the student research component. In addition to increasing the degrees of freedom with respect to placement supervision, the proposed MBP program will also improve flexibility with respect to research supervision. Indeed, the accredited MIOP program requires students to undertake a 24-point research thesis which creates a ‘bottleneck’ with respect to the availability of research supervisors. The MBP will remove this bottleneck.

Additionally, by relaxing the accreditation standards, we are able to offer the MBP to three-year graduates of Psychology, whereas the accredited MIOP program can only be offered to students with Psychology Honours. The introduction of this program therefore partly relieves the Honours research supervision ‘bottleneck’ that has meant in recent times very high cut-offs for entry into the Honours program. It also provides more options to three-year graduates of Psychology training.

Finally, by relaxing the entrance requirements such that applicants do not necessarily need to have undertaken an APAC accredited undergraduate Psychology degree, we will open the program to a broader international student market.

This program is being proposed with the goal of allowing the School of Psychology to continue pursuing the delivery of training in the general application of psychological principles to workplace settings, which is a key area strength of UWA. Indeed, the ERA recently awarded the University ratings of 5 in both 1503 (Business and Management) and 1701 (Psychology), which together represent the nexus of psychology and the workplace. The extant MIOP program, along with this proposed MBP program, therefore enables the university to deliver training in one of its key areas of strength, which has been proven to be attractive to higher-degree by research students (e.g., this year saw six students apply for the combined MPsych/PhD program in IO Psychology).

Further, introducing the proposed MBP program will allow the university to continue to offer high-quality industry placements to students. The offering of industry placements has proven to be vital for building important research partnerships with industry, and these partnerships have in turn attracted significant industry research funding in the last two years alone (e.g., Scouts, Department of Fire and Emergency Services, Rio Tinto, Defense Science and Technology Group).

The target market includes the following groups:
- Graduates of three-year degrees with Psychology double-majors (or equivalent)
- Graduates of Honours degrees in Psychology
- International students with either of the above qualifications

In general terms, the degree offers training to individuals who wish to learn how to further develop and apply what they have learned in their undergraduate Psychology training to workplace and professional settings.

Teaching will span two schools; Psychology and Business. It will involve a mix of online, face-to-face, and practical delivery. It will include lectures, seminars, practical exercises, online activities, and supervised practical (industry) placements.

Demand for the two existing IOP postgraduate courses is already strong, and we expect demand for this course to be similar. We currently have 23 enrollees in the extant 2-year MIOP program with 11 places offered in 2016. We also currently have 5 enrollees in the MPsych/PhD program with a further 4 places offered in 2016.

As noted above, the key limiter on the number of training places that can be offered is the availability of supervision for the Honours, MPsych and PhD research projects in IOP and the removal of these bottlenecks with the introduction of the MBP should see capacity to grow.

With regards to the international student market, the APAC accreditation requirements can make it difficult for international students to apply for our MIOP degree as they must first have their undergraduate training certified as being equivalent to the Australian standards by the Australian Psychological Society (APS). This can be an expensive and time consuming process that will be avoided altogether with the new proposed MBP program. Stringent entry requirements will be applied so as to ensure that the high standards of undergraduate training among the study cohort are maintained.

Initial enrolment the numbers would be around 10-15 students per year, with places being limited by the number of available placement opportunities and associated supervision requirements. Enrolment numbers could be increased with an increase in personnel to provide placement supervision and a growth in placement opportunities. We would also look to moving towards a cohort placement model which would be a more efficient way of managing student placements.

Market Research and Analysis

Target markets for course

The target market includes the following groups:
- Graduates of three-year degrees with Psychology double-majors (or equivalent)
- Graduates of Honours degrees in Psychology
- International students with either of the above qualifications

Target markets: delivery of teaching

Teaching will span two schools; Psychology and Business. It will involve a mix of online, face-to-face, and practical delivery. It will include lectures, seminars, practical exercises, online activities, and supervised practical (industry) placements.

Target markets: demonstrate viable demand

Demand for the two existing IOP postgraduate courses is already strong, and we expect demand for this course to be similar. We currently have 23 enrollees in the extant 2-year MIOP program with 11 places offered in 2016. We also currently have 5 enrollees in the MPsych/PhD program with a further 4 places offered in 2016.

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Graduate employment prospects

Employment prospects

There is strong demand across the country for graduates with the skills to manage organisational change, undertake workforce planning, develop training programs, and streamline selection processes in order to increase organisational efficiency. We see evidence of this demand through our placement program, the demand for which is not satisfied by the supply of students.

Many of the organisations who currently house our MIOP placement students go on to offer them full time paid positions after they complete their studies. We envisage that this trend will continue.

Distinctive employment prospects for graduates

To our knowledge, no Australian university currently offers a non-accredited Masters-level degree that is similar to the accredited MIOP degree.

Competitor courses in Business and Management (e.g. Master of Commerce, Master of Human Resources and Employment Relations) do not provide the research and practicum experience offered in the Master of Business Psychology. There is demand for graduates with more practical training and students in the Master of Business Psychology will receive industry-relevant experience both in an applied research project unit and in placement units.

Course professionally accredited? (preliminary question)

No.

Competitor analysis and marketing strategy

Competitor analysis

To our knowledge, no Australian university currently offers non-accredited masters-level degrees that are similar to the accredited MIOP degree. Many of the Australian universities that do currently offer postgraduate training in Industrial/Organisational Psychology are seriously considering offering unaccredited training in proposals similar to this one. For example, we understand that the University of Queensland is expecting to offer a Master of Business Psychology from 2017. Through conversations with Program Directors of other I/O Psychology programs in Australia, it appears likely that the following institutions are at least considering doing the same: University of New South Wales, University of South Australia, Murdoch University, and University of Newcastle.

Marketing strategy

A marketing strategy has been developed.

Course availability for students

Course offered to student categories

Domestic fee-paying; International students (student visa holders); International students (non-student visa holders);

Course enables international/cross institutional students?

Not initially, as we would need to establish the course first and then identify what the prerequisites for international non-award and domestic cross-institutional students would be.

Course enables UWA students for overseas credit?

Once the course has been established, there may be opportunities for students to undertake units overseas.

Risk management

Risk management for course

The financial risk of running this program is minimal as there is overlap in its coursework with the extant MIOP program and the Master of Human Resources and Employee Relations. Thus, even if enrolment numbers fall below expectations, the marginal cost of offering this program above and beyond the costs of offering the MIOP and Master HR&ER is minimal.

The MBP and the MHR&ER share two core units in common (PSYC5514 Assessment and Selection; PSYC5515 Organisational Development and Work Design).

The MBP and the MIOP share six core units in common (PSYC5513 Research Methods in Applied Settings; PSYC5514 Assessment and Selection; PSYC5515 Organisational Development and Work Design; PSYC5573 Psychology of Training; PSYC5830 Occupational Health and Safety; PSYXXXX Human Factors). As an accredited course, the MIOP has strict requirements regarding research training and the delivery of placements, both of which restrict the the course intake. However, the overlap in coursework content between the MBP and MIOP is desirable, because the knowledge and skills acquired upon completion of these units is highly valued by prospective employers.

Whilst consideration was given to the development of a generic course with specialisations in each area, the focus of the MBP and MHR&ER courses is distinctly different and could not be captured under a generic course title. In order to use "Psychology" in the course title, there does need to be a clear focus on psychological principles and processes, which is distinct from the management focus in the Master of Human Resources and Employment Relations. There are also accreditation (Australian Psychology Accreditation Council, APAC) and professional recognition (Australian Human Resources Institute, AHRI) requirements that may make it difficult to fit the courses under one badge.
Quota

Quota? Yes

Quota consultations
The factor that limits the maximum number of students that we can enrol in each year is the volume of placements that are available, and the time of the personnel to supervise the placement students. The school is currently in a good position where it is unable to satisfy the current demands for placement students; that is we are turning down some good opportunities to place students! We see this degree as a means with which to grow the placement program, however, there is an upper limit.

Since the School and University’s reputations are on the line when we send our students out to placement, we will also insist on undertaking a rigorous student selection program similar to what is currently enacted in Medicine. This will necessarily result in a reduction of enrollees.

Consultations checklist

Consultations checklist
- Other faculties or schools of the University, including relevant academic staff which may have an interest in this curriculum.

Additional Information

Additional information from proposer
Domestic and International fees for this course will be the same as for the Master of Industrial and Organisational Psychology (53580).

Given the demand for graduates with the ability to carry out effective research in organisations, the purpose of the conversion units is to provide the three-year trained students with an opportunity to acquire the necessary research skills. The four-year trained students will have already acquired these skills, having successfully undertaken an independent research project in their Honours year.

History and committee endorsements/approvals

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<thead>
<tr>
<th>Phase</th>
<th>Event</th>
<th>Date</th>
<th>Outcome</th>
<th>Notes</th>
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</table>
| 1     | Faculty             | 07-03-2016 | Endorsed: Science executive R1/2016  
| 1     | Curriculum Committee| Not yet endorsed |  |
| 1     | Academic Council    | Not yet endorsed |  |
| 2     | Faculty             | Not yet endorsed |  |

Displaying data as it is on 15/03/2016. Report generated 15/03/16 01:03.