Teaching Portfolio
School of Anatomy & Human Biology

Prepared for School Review
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Summary

The School’s teaching effort is largely directed to students in the faculties of Life & Physical Sciences and Medicine, Dentistry and Health Sciences, but it also attracts students from Arts, Humanities & Social Sciences, Economics & Commerce, Law and Engineering, Computing & Mathematics. Teaching indicators such as the Student Perceptions of Teaching (SPOT), the Graduate Careers Council of Australia’s Course Experience Questionnaire (CEQ) and the University’s surveys of students for reviews of Faculty, Degree and School consistently reveal excellent, well above average outcomes for our teaching. Both staff and units have received formal local and national recognition for excellence and innovation in teaching.

The School offers a blend of highly integrated multidisciplinary units that are ideal for general studies, such as the level one Human Biology units, and a series of specialist units in functional anatomy, cell structure and histology, reproductive biology, neuroscience, evolutionary biology and biological anthropology in the later years. It takes part in teaching for other courses within the University, and for other universities.

The School has well established traditions of management of teaching at budgetary and committee levels, and a flat teaching management structure which, through regular Teaching Meetings and Planning Retreats, involve the whole School, including postgraduate students, in teaching planning and management. It also has a well established tradition of research into teaching and the fostering of next generation teachers through participation in the University’s Teaching Internship Scheme.

Since our previous review in 2000, a brief period of relief from an historically difficult position in terms of funding and staffing was afforded by the appointment of new staff and refurbishment of our major teaching facilities. Subsequently, however, the introduction of new medical, dental and podiatric curricula, the growth of overall student numbers and the splitting of units previously taught as one to two or three cohorts taught simultaneously has ended this period of respite. Indeed, current teaching loads are higher than ever and the pressure on space and resources inexorable. Many of our staff are nearing retirement age. Continuity of the quality of our teaching requires the appointment of new, young staff members in sufficient time to achieve generational overlap and cultural continuity.

One issue for later year student retention which has been identified for action is the perception of career choices available to Human Biology Graduates. Others, which affect the quality of our teaching, are related to language and diversity and to the impact of paid employment on student engagement. Our chief challenge for the future, however, is to maximize the efficiency of our teaching without compromising quality. While continuing to respond to the challenge of change and the evolution of new areas of scholarship, and to attracting and retaining more students, especially at third year level and beyond, we need to reduce our teaching loads.
Section 1: Introduction

1.1 Our Primary Teaching Objectives

Our teaching can be seen to fall conceptually into two major realms – Structural Biology and Human Biology. There are, very obviously, overlaps and links between these two realms, but our statistics tell us that this division is reflected in the pattern of our third year Science enrolments.

Structural Biology examines the structure and function of human cells, tissues, organs and systems. Areas of study include Cell Death, Immunology, Eye Pathology, Muscle Diseases, Muscle Transplantation, Regeneration and Cancer, Biomechanics and Comparative Anatomy. Our primary objective in this realm is that the student gains an integrated vision of the principles of cellular and molecular processes and the evolutionary forces which have shaped the composition and form of the human body. A second objective is that they develop the ability to apply this vision to particular, new fields of study. The units offered in the discipline areas of Medical, Dental and Podiatric Histology, Functional Morphology, Developmental Biology and Neuroscience are extended exercises in the recognition and application of the principles of organisation of cells into tissues, tissues into organs and organs into systems.

Human Biology provides an holistic understanding of the biology of humans and their interaction with natural and cultural environments. Study areas include Biological Anthropology, Ecology and Genetics, and Evolution. Our primary objective in this realm is for students to develop an understanding of humans within the context of the social vertebrates, and of the general principles of evolutionary theory which govern function and behaviour. Again, the application of these principles to new and particular areas is sought in more detailed consideration of the biology and behaviours of Human Genetics, Human Evolutionary History, Human Reproduction and Human Social Structures.

Our overarching objective is for students to find their own, individual way to an appreciation of the links and commonalities between the different discipline areas they encounter in their studies with us.

It is also our objective to help our students to “grow up” in their academic and worldly skills – to become confident, autonomous and self-sustaining learners and communicators. We place a particular emphasis upon the development of the skill of the effective communication of science to lay, as well as scientific audiences.
1.2 Overview of Teaching

The School of Anatomy & Human Biology was formally established in 1956 with the appointment of the Foundation Professor of Anatomy, David Sinclair. Its primary purpose was the teaching of anatomy and histology to medical students, and this was subsequently extended to include dental students. The original plan for the School included the appointment of a physical anthropologist. Although David Allbrook, Sinclair’s successor appointed in 1965, also had a strong interest in this discipline, it was not until the arrival of Len Freedman in 1970 that a formally trained academic appointment in this area was made. Physical anthropology quickly evolved into Human Biology and the success of this discipline is exemplified by the change in name of the School (then Department) from “Anatomy” to “Anatomy & Human Biology” during the 1970’s. Anatomy in its broadest sense and Human Biology are two highly complementary, synergistic and integrated disciplines and are the focus of the School’s activities and welfare, providing the foundation for our nexus between teaching and research.

Human Biology allowed the School to respond to the challenge of a worldwide decline in anatomical research and teaching. While a traditional anatomy focus remains central to our mission, the emergence of Human Biology complemented this and brought with it significant strengths in evolutionary biology, biological anthropology and reproductive endocrinology. In combination with expansions of neurosciences and cell, developmental and molecular biology, a breadth of research and teaching expertise facilitated the School’s substantial growth to become a leader among all schools teaching anatomy in Australia. This inherent diversity is the real strength of the School. Within the Australian context, we are the only university department with a substantial and comprehensive Human Biology programme of research and teaching.

Ironically, the School’s strength in anatomy has been enhanced by an ‘anatomical renaissance’, partly through its central role in the establishment in 2000 of the Clinical Training and Education Centre (CTEC) as this development provided an opportunity to become involved in postgraduate surgical education. Another innovation from within the School, SymbioticA, has attracted enormous international publicity for its exploration of the interface between Art and Science.

The School’s intellectual interests can, for heuristic purposes, be grouped into three broad components:

- cell and molecular biology
- gross structure and function
- population and evolutionary biology.

Within these broad groups, the major areas of teaching and research are:

- Neurobiology
- Ocular Biology
- Functional Anatomy
- Tissue Regeneration and Transplantation
- Cell Biology and Immunology
- Evolutionary Biology
- Biological Anthropology
- Reproductive Biology and Endocrinology
- Sleep Science
- The Art – Science Interface

These areas reflect our strength across the disciplines of Anatomy and Human Biology, which together encompass a holistic view of the biology of humans from the levels of species, populations, individuals, organs, tissues, cells and molecules. This holistic view also defines our strong teaching programs that are serviced primarily by staff involved in both teaching and research.
The School is central to all anatomy teaching in Western Australia. It is the sole administrator and manager of the State’s bequest program and the provider of cadaveric material to all other universities, hospitals and research institutes in the state. Some of the teaching and research activity occurs at the other institutions, but there is an increase in requests to undertake the teaching and research in our buildings, with the University of Notre Dame Australia being a good example. These external developments, the increase in enrolments and units taught in the School, and CTEC activities have contributed to a considerable expansion in anatomically-related activity over the past seven years.

In 2006 total student load was 404 EFTSL undergraduates and 48 EFTSL postgraduates, mainly HDR students. Units for Preclinical students in Medicine, Dentistry and Podiatry constituted 27% of the School’s undergraduate EFTSL (Figure 1). The rest was mainly Anatomy and Human Biology units taken by students enrolled in the Bachelor of Science (62% of School undergraduate EFTSL) and Bachelor of Health Science (8.7%) degrees. Many units are taught jointly with other schools or disciplines, ranging from Anthropology through Physiology to Dentistry (see Appendix 1 for a list and brief description of units taught through the School).

![Undergraduate Student Load](image)

**Figure 1.** [Data from “Full-Year Load and Weighted Load” EIS]

While the School’s teaching effort is largely directed to students in Science and Preclinical units it also attracts students from Arts, Humanities & Social Sciences; Economics & Commerce; Law; and Engineering, Computing & Mathematics. Our first and second year Science units are often specified in programs for students undertaking other majors in the BSc, in Law/Science and in Science/Engineering and are popular as supporting units for Arts and Exercise and Health Science students (Figure 2, Table 1).
Table 1. Diversity of Courses Represented by Enrolments in First Year Human Biology (percentages of total unit enrolment for year).

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</table>

[* = courses in which it is possible to major in ANHB under some conditions]
The diversity of students within the School is exemplified by the composition of the first year Science units. Twenty two percent of the group speak one or more of 42 languages other than English at home, two thirds exclusively so. While 98% of the class is enrolled on a full-time basis, more than 65% are also in paid employment, working an average of 12.5 hours per week. The diversity of origin and intentions of our first year intake is not reflected in the age composition of the group, however. Approximately 75% of students who enter our first year unit are 18 years old or less (Figure 3).

Science teaching in our School is a judicious mix of holistic interdisciplinary first year units followed by specialized units at second and third year and a research-focussed fourth year Honours programme. While most teaching is done on the Crawley campus, notable exceptions include the first year Human Biology units that have been taught at the Albany campus since 2000 and the PSB Academy in Singapore since 2005. Currently, on these campuses, lectures are delivered via Lectopia, the University’s web-based lecture delivery system, while on-site tutors provide face-to-face laboratory/tutorials sessions as on the Crawley campus. Approximately 53% of our Science teaching activity is at first year level, 37% at second year and 10% at third year (2006 enrolments). Fourth year studies, primarily Honours, but also the Graduate Diploma in Science and Masters by coursework are also conducted.

Historically, most students proceeding to a major within the School have been enrolled in the traditional BSc, but those from the BSc specialist programs, such as the BSc(Neurosci), BSc (BiomedSc), BHealthSc, and our own BSc (AnatSci) have formed an increasing proportion of enrolments in recent years. In 2007 nearly 80% of first year and 65% of second year students were enrolled in such programs, with their specified courses of study.

Approximately 20% of our first year Science students are in courses or BSc programs which do not allow progression to a major in Anatomy and Human Biology. Nearly half are in BSc programs which offer only one stream amongst several which can possibly include a Human Biology major. On the basis of the proportion of ‘continuing’ to ‘non-continuing’ streams in such programs, a further 26% of the class could be expected from the outset not to continue with ANHB. In the second year core unit there are still 3% of students in courses or programs which do not allow for a Human Biology major. Approximately 4% of students in our core second year unit have patterns of enrolment which indicate that the unit is serving solely to satisfy a prerequisite for a major in a course from outside the School.
In 2006, about 47% of Preclinical teaching was to first year students, the remainder to second and higher years. Since the implementation of the new Medical curriculum in 2002 all first and second year teaching is presented cooperatively with a range of other preclinical departments. While the hours in the School for each student have decreased, increases in the intakes into Medicine and Dentistry and the development of the Podiatry course have increased the total load to the School from this source by 42% (Table 2). Dental and Podiatry students undertake shared units with the Medical students in their first year as well as additional specialist units within the school. The School has also participated in undergraduate teaching of two units to 80 Physiotherapy students from Notre Dame University.

In 2006, the School’s total student load (452 EFTSL) was 3.1% of the University’s total load and 18% of the load of the Faculty of Life and Physical Sciences. The total undergraduate load increased 19% over the period 2002-2006 from 339 to 404 EFTSL (Figure 4). It is worth noting that while during this period the proportion of the School’s total load contributed by undergraduate (Bachelor’s Pass) during this period declined from 89% to 85%, the actual load contributed by this sector increased by 18%.

![Figure 4](image-url)
The proportion of International student load over the same period increased from 9% to 17% of the total student load. Offshore students (Singapore PSB) have accounted for 17.8% of the student load.

### Table 2. Undergraduate EFTSL

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<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>YR1cell</td>
<td></td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Podiatry EFTSLs</td>
<td>Total</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
</tr>
<tr>
<td>All Preclinical EFTSLs</td>
<td>Total</td>
<td>81.5</td>
<td>81.3</td>
<td>86.7</td>
<td>98.6</td>
<td>115.8</td>
</tr>
</tbody>
</table>

1. yr1 unit 12 pt whole year; yr 2 units worth 4 points, yr3 units worth 12 points
2. New coding system. Yr 2 units change from 0.083 to 0.125 EFTSLs each
3. Another new coding system. Yr3 Repro (0.250 EFTSL) split to Repro (0.125 EFTSL) & Evol (0.125 EFTSL)

The proportion of International student load over the same period increased from 9% to 17% of the total student load, an increase of 83%. This increase is in part due to involvement in offshore teaching of a one semester first year unit beginning in 2005. Offshore students (Singapore PSB) have accounted for approximately one third of the international student load since the initiation of the program (Table 3).
Table 3. International Loads 2002-2006

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>UG Onshore</td>
<td>21.6</td>
<td>25.6</td>
<td>26.0</td>
<td>40.7</td>
<td>48.8</td>
</tr>
<tr>
<td>UG PSB</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6.5</td>
<td>6.9</td>
</tr>
<tr>
<td>PG Coursework</td>
<td>2.4</td>
<td>2.5</td>
<td>2.8</td>
<td>-</td>
<td>2.0</td>
</tr>
<tr>
<td>PG Research</td>
<td>2.0</td>
<td>3.0</td>
<td>4.7</td>
<td>4.1</td>
<td>6.4</td>
</tr>
<tr>
<td>Total</td>
<td>26.0</td>
<td>31.1</td>
<td>33.5</td>
<td>51.3</td>
<td>63.9</td>
</tr>
</tbody>
</table>

The rise in student load has occurred against a background of a marked increase in the use of technology in teaching that has had high start-up costs, and in totality decreased efficiencies, but should stand the School in good stead for the future. While several staff appointments, initially as Teaching and Learning Fellows, eased the extremely difficult position the School was in at the time of the last review, the growth in student load has overtaken the initial improvements in the student-staff ratio, so that it is now higher than ever and higher than any other in the Faculty of Life & Physical Sciences (Figure 5). Offering a holistic discipline like Anatomy & Human Biology inevitably means our teaching units encompass a broad spectrum of sub-disciplines, which presents considerable challenges to efficiency.

![Teaching Loads](image)

**Figure 5.** [Source: “Student:Staff ratio” table EIS]
Section 2: Core Indicators

2.1 The School’s Teaching and Learning Priorities

Goal
The School aims to improve further its reputation as a leader in teaching & learning performance. We will enhance teaching performance of academic staff by recognition and reward of teaching excellence and innovation.

Table 4 sets outs the objectives and strategies developed at our last School Planning Retreat in 2005, in addressing this goal, together with the progress which has been made to date in achieving them.

<table>
<thead>
<tr>
<th>Objectives and Strategies:</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General</strong></td>
<td></td>
</tr>
<tr>
<td>(a) Ensure equitable academic staff teaching loads, including recognition of the need for early career academics to establish a research program.</td>
<td>Good documentation of distribution of teaching loads. Open discussion of relativities in Teaching Meetings. No mechanisms in place to enforce equality or to consolidate primary teaching/research roles (eg trade-off points).</td>
</tr>
<tr>
<td>FLPs OPP: Objective 1 To achieve sustainable &amp; efficient teaching, Strategy 1 Reduction in teaching costs, including staff time</td>
<td></td>
</tr>
<tr>
<td>(b) Enhance teaching infrastructure within the School.</td>
<td></td>
</tr>
<tr>
<td>FLPs OPP: Objective 1 To achieve sustainable &amp; efficient teaching, Strategy 2 Improve teaching infrastructure</td>
<td></td>
</tr>
<tr>
<td>(c) Improve retention of students to increase the pool of A&amp;HB majors &amp; Honours students, including promotion of the new Anatomical Sciences BSc Program.</td>
<td>Reduced attrition of first year students has been achieved (Figures 8 &amp; 9) and retention (progression) of first year students into second year units is about as high as it could be expected to be (Figure 12). There has been improvement in the proportion of students taking third year units proceeding to a major (Figure 14), but still room for improvement in the retention of second year students through to third year (Figure 13). BSc (Anat.Sc) has been promoted through university internal and external publications. There were 39 enrolments in the course at its full inception in 2006 and 16 first year students enrolled in the course in 2007.</td>
</tr>
<tr>
<td>FLPs OPP: Objective 2 To improve the teaching-research nexus Strategy 1 Increase in number of students entering Honours</td>
<td></td>
</tr>
<tr>
<td>(d) Promote and nurture the development of undergraduate and postgraduate student groups (eg, A&amp;HB Student Society)</td>
<td>Current third year undergraduates have integrated well casually through shared use of kitchens and common rooms, but this does not provide for mentoring of more junior students. They do not appear to be formal joiners</td>
</tr>
<tr>
<td>FLPs OPP: Objective 3 To enhance the student</td>
<td></td>
</tr>
</tbody>
</table>
**Teaching Portfolio**

**Strategy 1** Improve interaction between students

(e) Increase numbers of full-fee postgraduate coursework students in niche courses (Surgical Anatomy, Sleep Medicine etc)

UWA OPP: Objective 3 To improve access to and participation in UWA courses. Strategy 3 Develop high demand postgraduate fee-paying courses

**Quality and Evaluation**

(f) Develop mechanisms for improved teaching evaluation including local peer-review.

UWA OPP: Objective 1 To extend good teaching approaches and improve learning outcomes Strategy 4 Increase opportunities for staff development Point 4 Develop an approach to peer review of teaching practice

(g) Capitalise on the national focus on improving teaching & learning in universities by encouraging appropriate staff to seek external funding for teaching research projects (eg, ALTC [Carrick Institute] funding).

UWA OPP: Objective 1 To extend good teaching approaches and improve learning outcomes Strategy 4 Increase opportunities for staff development Action 1 Improve UWA’s success with Carrick Institute development grants

One successful Carrick Project Grant associated with writing feedback for online formative MCQ tests (J.Meyer et al). ($140,000). Faculty Funding obtained for extension to online summative tests (J Hill et al). Application for a second Carrick Grant to develop a short online instrument of Reflective Practice submitted (J Meyer et al). University of WA Teaching Fellowship ($20,000) to G Meyer for further development of his online Histology System (Appendix 2)

(h) Support staff in their promotion of innovative teaching developments.

(i) Encourage the use of teaching internships to develop new teaching strategies; make at least one application per year and ensure outcomes are published.

At least one successful application per year from the inception of the scheme to 2007. Refereed publications generated by just under one half, conference abstract by most others. Need some time-release support for project supervisor or School co-ordinator of program to help pilot research component to publication.

The Teaching-Research Nexus

(j) Improve the ‘Science’ experience of our undergraduates in 2nd and 3rd years.

FLPS OPP: Objective 2 To improve the teaching-research nexus Strategy 1 Increase in number
of students entering UWA Science to undertake a Science degree with a research focus

(k) Increase exposure of undergraduate students to quantitative analysis, including statistics, in 2nd and 3rd year units.

UWA OPP Objective 4 To further develop the links between teaching, learning & research.
Strategy 3 Further support the development of research skills among UWA undergraduate students

Commitment to map where quantitative analysis addressed across all School units. Encourage analysis of data generated within context of laboratory sessions

(1) Enhance student learning of generic skills in all units.

FLPS OPP: Objective 3 To enhance the student experience Strategy 4 Improve work readiness of student

Commitment to map where generic skills addressed across all School units. Need to label generic skill components in all units as such so students recognise them as such

Infrastructure and flexible delivery

(n) Extend the amount of basic computer-aided learning hardware facilities from 60 to 120 units.

UWA OPP: Objective 1 To extend good teaching approaches and improve learning outcomes Strategy 3 Implement an eLearning strategy

Have as yet just replaced 50 old with 50 new units. Pressure on space and funds precludes expansion for now.

(o) Encourage staff to continue to expand the incorporation of innovative teaching strategies, including flexible delivery.

Presentation of examples of innovative practice, their evaluation and the benefits arising in Teaching Meetings and School seminars. Need to locate sources of University and Commonwealth funding to support development and evaluation of particular cases.

(p) Develop instruments to measure the impact of teaching innovations.

Some headway made and lessons learned through evaluations of initiatives “Mutual learning: Can third years tutor second years to the benefit of both parties?” by N Milne, of re-organisation of the second year core science unit (K. Mearns et al) and the Carrick Project on feedback for online MCQ tests. Need to disseminate findings within School

(q) Participate in programs that enhance remote learning access and methodologies.

UWA OPP: Objective 3 To improve access to and participation in UWA courses.

A/Prof G Meyer’s Histology System “An innovative learning system for studying histology” [http://www.histology-online.com](http://www.histology-online.com) (Appendix 2) is now accessed by students from 63 countries.
(r) Expand and improve our teaching resource centre as an adjunct to self-directed learning.

_UWA OPP: Objective 3 To improve access to and participation in UWA courses._

(iv) Efficiencies

(s) Develop postgraduate coursework units as sub units of current undergraduate units.

(t) Increase the number of existing Science units that are available to Medical students as options. One additional unit which could be suitable include Forensic Anthropology, which is currently offered to students in the M.For.Sc. course
2.2 Evidence of Improved Success in Teaching and Learning

Evidence for the quality of teaching in the School includes -

a) Student evaluation - SURFS
Mean SURFS (Students’ Unit Reflective Feedback) for the School of Anatomy and Human Biology reveal students rate the School’s teaching highly when benchmarked against the rest of the University. The accompanying six graphs (Figure 6 a-f) show the responses to the six standard SURF questions over the past three years for all the schools in the University. A dotted line is drawn at the “high-water mark” for Anatomy & Human Biology – i.e. the best result for this School. Across the University, only a few results are able to match or better this.

b) Course Experience Questionnaire (CEQ)
The annual Course Experience and Graduate Destination Surveys over the past five years provide an indication of the quality of our courses as shown in Figure 7. Overall satisfaction with the course is high at nearly 80%, and graduates from the School of Anatomy & Human Biology rank the School's courses and units a little higher than the average for the four other schools in the Faculty of Life and Physical Sciences.

c) Surveys
Surveys of both graduates and current students of the School conducted by the Institutional Research Unit for the 2007 review yielded overwhelmingly positive assessments of teaching in the School. Particularly pleasing were the responses relating to graduate attributes - ninety one percent of 120 current students and 100% of 23 graduates surveyed agreed that the School had assisted them to work independently. Equivalent figures for those agreeing that the School had assisted them to acquire skills needed to learn from a variety of sources were 93% and 96%, to master subject matter, concepts and techniques 93% and 96% and to think logically 91% and 96%. Graduates also rated highly the assistance it had provided them in learning to communicate clearly, concisely and logically (96%), to adapt acquired knowledge to new situations (95%), to take responsibility and make mature judgments (95%), to embrace new technologies (91%) and to question accepted wisdom and be open to new ideas and possibilities (91%).

Overall, 96% of graduates and 98% of current students thought that the quality of teaching in the School was good. A substantial majority indicated that the quality of teaching in tutorials (95% graduates, 82% current students), laboratories (95% and 89%) and in lectures (90% and 93%) was of a high standard. All or most respondents regarded teaching staff positively with the highest number of students agreeing or strongly agreeing that staff clearly demonstrated their knowledge (100% and 97%), gave clear and concise instructions (100% and 92%), prepared useful handouts (95%), displayed enthusiasm for the subject matter (91% and 95%), presented material in an interesting way (90% and 91%) and made good use of examples, illustrations and demonstrations (90% and 96%).

Source: Report No 07/3b - School of Anatomy and Human Biology – Graduates Survey Institutional Research Unit, The University of Western Australia, September 2007 and Report No. 07/3a - Review of the School of Anatomy & Human Biology – Current Student Survey Institutional Research Unit, The University of Western Australia, September 2007
Figure 6a. Student Unit Reflective Feedback (SURF)  An arrow and dotted line indicate the "high-water mark" for Anatomy & Human Biology - i.e. the best result for this School. [Source: Student Evaluation of Units, Semester 2, 2006, Summary of Results p10, UWA]
Figure 6b. Student Unit Reflective Feedback (SURF) An arrow and dotted line indicate the “high-water mark” for Anatomy & Human Biology - i.e. the best result for this School. [Source: Student Evaluation of Units, Semester 2, 2006, Summary of Results p12, UWA]
Figure 6c. Student Unit Reflective Feedback (SURF) An arrow and dotted line indicate the “high-water mark” for Anatomy & Human Biology - i.e. the best result for this School. [Source: Student Evaluation of Units, Semester 2, 2006, Summary of Results p14, UWA]
Figure 6d. Student Unit Reflective Feedback (SURF) An arrow and dotted line indicate the “high-water mark” for Anatomy & Human Biology - i.e. the best result for this School. [Source: Student Evaluation of Units, Semester 2, 2006, Summary of Results p16, UWA]
Figure 6e. Student Unit Reflective Feedback (SURF). An arrow and dotted line indicate the “high-water mark” for Anatomy & Human Biology – i.e. the best result for this School. [Source: Student Evaluation of Units, Semester 2, 2006, Summary of Results p18, UWA]
Figure 6f. Student Unit Reflective Feedback (SURF) An arrow and dotted line indicate the “high-water mark” for Anatomy & Human Biology - i.e. the best result for this School. [Source: Student Evaluation of Units, Semester 2, 2006, Summary of Results p20, UWA]
Respondents to the Course Experience Questionnaire were asked to record their responses to 49 statements about various aspects of the courses completed. The responses on the five-point scale have been converted into a percentage in agreement scale by counting those agreeing (i.e., with a response of 4 and 5 as a percentage of all nonblank responses).

The Overall Satisfaction Index is derived from responses to the question:

Overall, I was satisfied with the quality of this course

The Good Teaching Scale (GTS) is derived from aggregated responses to the following items:

The teaching staff of this course motivated me to do my best work
The staff put a lot of time into commenting on my work
The staff made a real effort to understand difficulties I might be having with my work
The teaching staff normally gave me helpful feedback on how I was going
My lecturers were extremely good at explaining things
The teaching staff worked hard to make their subjects interesting

The Generic Skills Scale is derived from aggregated responses to the following items:

The course developed my problem-solving skills
The course sharpened my analytic skills
The course helped me to develop my ability to work as a team member
As a result of my course, I feel confident about tackling unfamiliar problems
The course improved my skills in written communication
My course helped me to develop the ability to plan my own work

The Graduate Qualities Scale is derived from aggregated responses to the following items:

The course provided me with a broad overview of my field of knowledge
University stimulated my enthusiasm for further learning
I learned to apply principles from this course to new situations
I consider what I learned valuable for my future
My university experience encouraged me to value perspectives other than my own

The Learning Community Scale is derived from aggregated responses to the following items:

I felt part of a group of students and staff committed to learning
Students’ ideas and suggestions were used during the course
I learned to explore ideas confidently with other people
I felt I belonged to the university community
I was able to explore academic interests with staff and students

Figure 7 [Source: Teaching and learning Indicators, UWA, 2007]
d) Choice of Options

One example of the value placed upon our undergraduate teaching by students is the proportion of
students from the Bachelor of Health Science who choose to major in Anatomy and Human Biology.
It is by far the most popular choice for students in both the single and combined degree (Table 5).

<table>
<thead>
<tr>
<th>Major</th>
<th>Single Degree</th>
<th>Combined Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
</tr>
<tr>
<td>Anatomy and Human Biology</td>
<td>20</td>
<td>22.0</td>
</tr>
<tr>
<td>Anthropology</td>
<td>15</td>
<td>16.5</td>
</tr>
<tr>
<td>Biochemistry</td>
<td>3</td>
<td>3.3</td>
</tr>
<tr>
<td>Biophysics</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>Cell Physiology</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Environmental Microbiology</td>
<td>1</td>
<td>1.1</td>
</tr>
<tr>
<td>Genetics</td>
<td>2</td>
<td>2.2</td>
</tr>
<tr>
<td>Geography</td>
<td>3</td>
<td>3.3</td>
</tr>
<tr>
<td>Human Movement</td>
<td>9</td>
<td>9.9</td>
</tr>
<tr>
<td>Information Technology Systems</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Microbiology</td>
<td>9</td>
<td>9.9</td>
</tr>
<tr>
<td>Pathology</td>
<td>5</td>
<td>5.5</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>4</td>
<td>4.4</td>
</tr>
<tr>
<td>Physiology</td>
<td>6</td>
<td>16.6</td>
</tr>
<tr>
<td>Psychological studies</td>
<td>13</td>
<td>14.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>91</td>
<td>100.0</td>
</tr>
</tbody>
</table>

There has also been a sustained demand, which has always exceeded our supply of places, for the
second year medical option IMED2283 Surgical and Clinical Anatomy: A Regional Approach by
Dissection, as can be seen from Table 2.

Other student indicators of the quality of our undergraduate courses include a steady intake of students
from outside the School into our Honours program, reflecting an appreciation of our teaching
reputation.
e) Student Attrition

The relatively low rate of loss of students from our units, in particular in first year, may be taken as a reflection of student satisfaction with the quality of our teaching. Figure 8 below shows that attrition rates – the proportion of students who start but do not complete a unit - for Human Biology 1101 (1st semester) and 1102 (2nd semester) compare favourably with cognate units in the BSc degree.

Figure 8

(Data from Callista SMS, UWA. Attrition was defined as those students with a result of
- FN (failed – non complete) or
- WD (withdrawn) or
- WN (withdrawn – failed)
Non-attrition consisted of those students with any other pass or fail grade.

Students with the following results were excluded from these analyses:
- WA (withdrawn – not approved)
- WP (withdrawn pre-semester)
- WZ (enrolment cancelled)
- EX (exempt)
- WC (unit cancelled)
- NA (result not available))

Only data from the Crawley campus was included in this analysis.)
The data are even more impressive when the students who withdrew from their entire course, and not just the first year Human Biology unit, are excluded from consideration (Figure 9). Withdrawals from the unit and not the course have fallen to below 1% of enrolments, beginning from the time the unit was restructured to increase face-to-face staff/student contacts.

**Figure 9**

The withdrawal rate from the first year units by students who can potentially major in the School has always been lower than for other than Science students (Figure 10). It is encouraging to note that they continue to fall.

**Figure 10**
f) Retention and Progression

First year Human Biology 1101 and 1102 act as both beginning units for a major in Anatomy & Human Biology and as service units for a variety of other courses. For between 20 and 46% of students they act as “service” units for students who cannot proceed to a major in Anatomy & Human Biology. Such students include those enrolled in the Bachelor of Arts, (they are able to take second year units in the Department), “Other” students (eg Architecture, Economics and Commerce and BCM include ANHB 1100/1102 in their course as an option, and the few people each year who take the units on an external basis through University Extension, exchange or study abroad). Those enrolled in programs within the BSc such as Bioinformatics, Earth Sciences, Molecular Biology and Biotechnology, Mathematics and Statistical Sciences and Wildlife Management cannot proceed to a major in ANHB, while those in Biomedical Science and Exercise and Health Science are provided with limited routes to an ANHB major. The growth of enrolments in the BSc specialist programs, with their prescribed majors, at the expense of enrolments in the traditional liberal BSc has limited the potential of first year ANHB students to choose to proceed in the area without changing courses. First year Human Biology has also traditionally served as one of the first year units taken by students not selected directly into medicine from school and aspiring to a nonstandard placement.

All other students (ie around 70%) are considered potential majors. These include Science/Engineering students, Law/Science students, Bachelor of Health Science Students and students only ever intending to use first year Human Biology as a prerequisite for microbiology, pathology, pharmacology, physiology, biochemistry etc.

- Progression from 1st - 2nd year in A&HB

Accurate determination of the rate of retention, or the proportion of students who continue from one level of units in the School to the next would require a full cohort analysis with tracing of individual students. The pattern of progress through a degree of students enrolled in the School renders any cross-sectional approximation of retention or continuation rate so inaccurate as to be worthless for this purpose. For example, more than 40% of individuals enrolled in a second year unit in the School in 2003 had no enrolment in our first year unit in 2002, and 35% to 40% of students who took their first third year unit with us in 2003 or 2004 and went on to complete a major in ANHB did so over two or more years. Such patterns of discontinuous progression do not necessarily reflect the presence of relatively weak students spreading their load, but the presence as well of students in combined degree programs who must attend the needs of both degrees, students in combinations of units which have timetable clashes and students in specialist programs or from outside this university who have alternative first year prerequisites.

This combination of factors produces the apparent anomaly indicated in Figure 11, where in some years enrolments in Level 2 units actually exceeds the pool of students who passed the Level 1 unit and were eligible to proceed to Level 2.
Figure 11. [Source: Callista. Passes estimated for each year individually by pass rates published in EIS]

While consideration of just students who complete units at Level 2 and who are eligible by virtue of the degree in which they are enrolled to proceed to a major (ie ignoring the effects of programs with the BSc) (Figure 12) gives a somewhat more realistic picture of the effectiveness of the School in retaining those students it could possibly retain in its major stream, though it is still distorted by students who delay proceeding to the next level.

Figure 12. [Source: Callista. Passes estimated for each year individually by pass rates published in EIS]

The impact of such students on this measure of retention will vary with the relative sizes of the year groups from which they emerged and to which they return. Nevertheless, the overall message is clear – the School draws into the second year of its major stream a large proportion of the students available to it.
• **Progression from 2nd – 3rd year in A&HB**

This is less the case for retention from level 2 to level 3 (Figure 13).

![Graph showing Level 3 Completions Relative to Level 2 Completions by Individuals Eligible to Proceed to a Major](image)

**Figure 13.** [Source: Callista. Passes estimated for each year individually by pass rates published in EIS]

Between 50 and 60% of those who are eligible to major and enrol in a level 3 unit actually complete a major in ANHB (Figure 14)

![Graph showing Majors in Relation to Level 3 Completions](image)

**Figure 14.** [Source: Callista]

The limited rate of progression from second to third year studies does not appear on the face of it to be due to a lack of regard for what the School has to offer. In a survey of current students, the majority of whom were in year 2, conducted by the Institutional Research Unit (IRU) for the 2007 review of the School

> “many agreed or strongly agreed the assessment procedures used by the School were fair (94%) and indicated the course content matched their expectations (89%). Most felt there was a good balance between theory and practical work (94%) and overall 90% agreed they would recommend doing a major in the School to other students.”

Indeed

> “When considering the results of all School review student surveys conducted in 2007, the School of Anatomy and Human Biology achieved excellent results and performed consistently the best on all on
There are indications from the free comments offered by both current students and graduates of ANHB in the IRU surveys that one factor affecting the decision to major in Human Biology may be the lack of a clear vision of the way forward rather than any actual limitations on employment opportunities arising from a Human Biology a degree. Even amongst students who had majored in Human Biology comments concerning future options were common, for example

"More practical experience would be good. Some more information about the careers available with the degree."

"Work experience would be handy."

"It would be good if there were more information or advice available within the School on employment after graduation. I.e. Your options."

"I loved studying the degree, just not a lot of opportunities to use the knowledge I gained."

"The double major I completed offered little in the way of job opportunities. I'm now studying Physiotherapy which has been easy through the knowledge gained at UWA."

g) Pass Rates
Pass rates in Science units in ANHB were relatively constant between 2002 and 2006 (Table 6).

| Table 6. Percentage pass rates amongst students completing ‘Science’ units in ANHB |
|-----------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| year 1                           |                 |                 |                 |                 |                 |
| Comb. Sci. degrees               | 97.7            | 93.4            | 93.4            | 97.2            | 97.8            |
| BSc/ BHealthSci                  | 90.0            | 86.8            | 93.2            | 93.5            | 87.2            |
| Arts & others                    | 55.6            | 78.7            | 75.0            | 73.3            | 25.0            |
| year 2 (all units)               |                 |                 |                 |                 |                 |
| BSc/BHealthSci                   | 87.0            | 86.3            | 87.4            | 89.5            | 88.5            |
| year 3 (all units)               |                 |                 |                 |                 |                 |
| BSc/ BHealthSci                  | 97.8            | 96.9            | 96.7            | 95.5            | 96.6            |

The difficulty with interpreting such figures as a measure of excellence or even adequacy of teaching, however, is that pass rates depend on the quality of the student, the quality of the teaching (including the clear specification of desired outcomes) and the difficulty of the assessments set.

The quality of students entering our courses is not out of the ordinary. The median tertiary entrance rank (TER) of students entering the first year Human Biology unit closely matches the median across the BSc and compares favourably with the medians for cognate groups (Figure 15).
h) Performance in subsequent units

That the assessments in Level 1 Human Biology units, at least, are set at an appropriate level is suggested by the equivalence of the performance of students using them as preparation for further studies in the biomedical sciences to those who have taken other level 1 biology units (Figure 16). That the School has particular skill in supporting the learning of students who come to our Level 1 courses without any previous (secondary) study in a biological science subject is suggested by consideration of their results in Level 2 biomedical science units. Such students preparing for their biomedical studies by taking other level 1 biology units carry some disadvantage into their second year studies (Figure 17a). No such effect is seen by those who study Level 1 Human Biology. Indeed, for students without any biology background, Human Biology would seem to offer a superior preparation for further studies in the biomedical sciences (Figure 18).

Figure 15. Tertiary Entrance Rank of students entering first year courses. [Source: UWA Institutional Research Unit, 27th July 2007]

Figure 16. Scores in Level 2 biomedical units by type of Level 1 preparation. Other biology - black; human biology - hatched.
Figure 17. Scores in level 2 biomedical units by secondary school biological background followed by a) other level 1 biology units (pale = no secondary biology) b) level 1 Human Biology (darker = no secondary school biology)

Figure 18. The performance of students, who had not done secondary school biology, in second year biomedical sciences units. The open bars are students who entered biomedical units via other level 1 biology units and the hashed bars are students who entered via Level 1 Human Biology. A Microbiology, B Molecular biology, C Molecular Genetics, D Biochemistry, E Physiology, F Pharmacology. [Source: SRS 2002-2004]
i) Honours

The number of students achieving the Faculty criterion score (average 65% across a major) in ANHB has been maintained since 1997 and, somewhat against the general trend, so have Honours enrolments (Figure 19).

![All Honours Enrolments](image1)

**Figure 19. Size of Honours intake.** [Source: EIS Pass-Rates]

While the proportion of Honours students gaining first class awards has remained at one of the most conservative in the Faculty (Figure 20), that this reflects the standard of our assessment procedures rather than a relatively low quality of Honours student is reflected in the rising number of PhD students which we have been able to accommodate within the School because they have obtained competitive scholarships for postgraduate studies - 20 EFTSL in 2002, 25 in 2003, 36 in 2004, 43 in 2005 and 45 in 2006. Seven of our PhDs have been awarded the degree with distinction since 2002.

![Proportion of First Class Honours 1997-2006](image2)

**Figure 20.** [Source: EIS Pass-Rates]
j) Graduate Qualities

Our students have shown themselves to be employable. Having acquired skills that equip them to be flexible and adaptable, they are able to adjust to employment in a variety of workplaces - administration, teaching, industry, science journalism, government and a variety of biomedical, technical, technological and health related professions. For example, Paul Nicholls (Honours 1991-1992) has become the Director of Science Education at Scitech Discovery Centre, Sean Smids (third year 2001) was one of the first laboratory trainees taken on by Verigen when they began working with artificial cartilage knee implants, but has since risen through marketing and management branches while Peter Burton became the Scientific Director at Concept Fertility Clinic, a managerial position, immediately upon completion of his PhD with us.

Other graduates enter academic careers in teaching and research in Anatomy and Human Biology itself and in related biomedical disciplines.

Our students are confident, autonomous and self-sustaining learners and communicators. Students who transfer to courses such as medicine and dentistry do not just cope, but do better than average, frequently becoming prize winners within that Faculty as well (eg Karen Majda, Richard Hay).

Evidence for the effectiveness of our students as communicators can be seen most easily in the regularity with which they win prizes for presentations at scientific meetings (Table 7).

Each year our postgraduate students organise a very successful symposium, SEXPO, for the public presentation of student research from the School. They are entirely responsible for all aspects of organisation of this meeting, including venue booking, attraction of sponsorship, organisation and chairing of sessions etc.

### Table 7. External Awards and Prizes to Postgraduate Students 2000-2007

<table>
<thead>
<tr>
<th>PRIZE/AWARD</th>
<th>RECIPIENT</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jean Rogerson Studentship</td>
<td>Frank Gemmiti</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>Siew-Moon Lim</td>
<td>2006</td>
</tr>
<tr>
<td>Student Internships (introduced 2000)</td>
<td>Sharon Roughton</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>David Coall</td>
<td>2001</td>
</tr>
<tr>
<td></td>
<td>Frank Gemmiti</td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>Jeremy Drake</td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>Dan Franklin</td>
<td>2003</td>
</tr>
<tr>
<td></td>
<td>Russell Chapman</td>
<td>2004</td>
</tr>
<tr>
<td></td>
<td>Michelle Harvey</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td>Kasie Mearns</td>
<td>2006</td>
</tr>
<tr>
<td></td>
<td>Jana Vukovic</td>
<td>2006</td>
</tr>
<tr>
<td></td>
<td>Maria Grade Godinho</td>
<td>2007</td>
</tr>
<tr>
<td>PhD Distinctions</td>
<td>Michael Abdo</td>
<td>2003</td>
</tr>
<tr>
<td></td>
<td>Ricky Lareu</td>
<td>2003</td>
</tr>
</tbody>
</table>
Ken Wessen 2003
Jeremy Smith 2004
Thea Shavlakadze 2005
Simone Leaver 2006
Hu Ying 2007
Ionat Zurr 2008

Rotary Foundation Ambassadorial Scholarship

Kirsty Spalding 2000

Finalists Novartis Junior Scientist Award (Endocrine Society of Australia)

Ricky Lareu 2000
Kayty Plastow 2000
Sharon Roughton 2000
Jeremy Smith 2000
Caitlin Wywoll 2005

Novartis Junior Scientist Award (Endocrine Society of Australia)

Jeremy Smith 2000

Society for Reproductive Biology Junior Scientist Award

Jeremy Smith 2002

Faculty Valedictorian

James Ridgley 2002
Siew-Moon Lim 2007

Journal of Reproduction, Fertility and Development Travel Award

Michael Abdo 2001

Thoracic Society of A & NZ (WA) Allen & Hanbury Travel Award

Jana Kovar 2001

Australian Neuroscience Society Student Poster Prize

Helen Barbour 2001

WA Youth Awards (environment) Finalist

Helen Barbour 2001

Graduate Association Travel Award

Carla Mellough 2001

Alex Cohen Convocation Travel Award

Helen Barbour 2002
Jana Vukovic 2007
Mark Reynolds 2007
Susan Hayes 2007
Kelvin Poon 2007
Kathryn Stokes 2007

Women in Neuroscience Eli Lilly and Pfizer Travel Award (international)

Carla Mellough 2002

Combined Biological Sciences Meeting Student Poster Prize

Melissa Berg 2002
<table>
<thead>
<tr>
<th>Award</th>
<th>Recipient</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodside Neurotrama PhD Excellence Award</td>
<td>Helen Barbour</td>
<td>2002</td>
</tr>
<tr>
<td></td>
<td>Hu Ying</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td>Kevin Park</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td>Jana Vukovic</td>
<td>2006</td>
</tr>
<tr>
<td>A &amp; NZ Placental Research Association Prize for Best Presentation by a Young Scientist</td>
<td>Damien Hewitt</td>
<td>2005</td>
</tr>
<tr>
<td>Department of Health Prize (ASMR)</td>
<td>Kristyn Bates</td>
<td>2005</td>
</tr>
<tr>
<td>Australian Neuroscience Meeting Poster Prize</td>
<td>Thalles De Mello</td>
<td>2005</td>
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<tr>
<td>Thoracic Society of Australia Young Investigator Award</td>
<td>Kelly Shepherd</td>
<td>2005</td>
</tr>
<tr>
<td>Alexander Humboldt Fellowship</td>
<td>Shari Forbes</td>
<td>2005</td>
</tr>
<tr>
<td>Annual A/Asian Society for Human Biology Conference Student Prize</td>
<td>Algis Kuliukus</td>
<td>2005</td>
</tr>
<tr>
<td>Annual A/Asian Society for Human Biology Conference Student Prize R/Up</td>
<td>Susan Clifford</td>
<td>2005</td>
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<tr>
<td>Annual A/Asian Society for Human Biology Conference Postgraduate Award</td>
<td>Emma Dove</td>
<td>2005</td>
</tr>
<tr>
<td>A/Asian Society for Human Biology Student Travel Scholarships</td>
<td>Wade Corderoy</td>
<td>2005</td>
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<td></td>
<td>Brilliana Katterfeld</td>
<td>2005</td>
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<tr>
<td></td>
<td>Kasie Mearns</td>
<td>2005</td>
</tr>
<tr>
<td>Australian Society for the Study of Obesity &amp; ASHB Student Travel Award</td>
<td>Emma Dove</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td>Susan Clifford</td>
<td>2005</td>
</tr>
<tr>
<td>WA Woman of the Year (Science)</td>
<td>Michelle Harvey</td>
<td>2005</td>
</tr>
<tr>
<td>Symposium on WA Neuroscience Encouraging Student Poster Prize</td>
<td>Kevin Park</td>
<td>2006</td>
</tr>
<tr>
<td>School of BBCS Research Forum Student Poster Prize</td>
<td>Clare Berry</td>
<td>2006</td>
</tr>
<tr>
<td>Professor Barry Marshall/Trimed Prize (ASMR)</td>
<td>Simone Leaver</td>
<td>2005</td>
</tr>
<tr>
<td></td>
<td>Jana Vukovic</td>
<td>2006</td>
</tr>
<tr>
<td>Murdoch University Award for Animal Research (ASMR)</td>
<td>Caitlin Wyrwoll</td>
<td>2006</td>
</tr>
<tr>
<td>Whitfeld Fellowship</td>
<td>Nicole Koehler</td>
<td>2007</td>
</tr>
<tr>
<td>Symposium of Australian Society for Medical Research Student Prize</td>
<td>Hannah Radley</td>
<td>2007</td>
</tr>
</tbody>
</table>
2.3 The Extent to which Teaching and Learning is Systematically Reviewed within the School

a) Evaluation of assessment

The School has an internal Teaching and Learning Committee and Board of Examiners that both monitor the appropriateness of the assessment methods in each unit and the results of that assessment to ensure comparability of student performances across all our units. There is an Assessment Policy in which, within guidelines, diversity of approaches is encouraged.

A computer-based reporting system is now in use for presenting the results of assessments in all of our units to our Internal Board of Examiners. The output of this system includes a breakdown of the distribution of marks and grades, and allows for the comparison of results for particular aspects of performance across units. For example, in our Semester 1 meeting for 2004 one second year unit was seen to have awarded lower marks on average than the others. The discrepancy was traced to one small component of the assessment in that unit, and the background and achievements in units outside our School of the students performing poorly in that component evaluated. This process was able to distinguish clearly between subset sampling effects and those arising from the difficulty of the exam.

We receive very few complaints about the amount of assessment we require, but more about its timing. We are making attempts to develop a means of tracking the pattern of submission dates we set across units, but students would really like us to take assessments in all of their units into account. This is not possible with the information currently available to us.

From time to time we evaluate the appropriateness of our unit content and its assessment by examining the relationships between the marks we award and marks in those units outside the School for which we are preparing our students. (see Figures 16-18 for an example)

b) Evaluation of teaching effectiveness

The effectiveness of teaching and learning within the School is evaluated through the obligatory SURF surveys, SPOT surveys, occasional in-house surveys, surveys and analyses specifically developed to evaluate innovations and through regular meetings for the purpose with students within units and at the School level. It is also monitored through indices of students’ choice and persistence with our units.

Units within the School have been able to maintain a relatively high level of SURF responding since the initial change from an in class to an online presentation. SPOT evaluations of units are almost ubiquitous within the School, and casual tutors and demonstrators are encouraged to obtain SPOT evaluations of their own teaching both to shape their development and contribute towards their teaching portfolios.

Dissemination of the outcomes of these forms of review occurs as issues arise in Academic Staff meetings (monthly), in meetings of the School Board of Examiners (all unit co-ordinators, each semester), in Teaching Meetings (all academic staff, 1-2 times per semester) and in School Planning Retreats (all staff, approximately once every three years).
Reviews and analyses are also conducted whenever data is requested by an outside body (eg the School Review in 2007), when making applications for Teaching grants and awards, when a new form of a course is first implemented, whenever a particular issue, such as an expression of dissatisfaction by a student representative arises, as part of curriculum development for Teaching Interns, and as part of teaching research. In all of these cases reports are prepared and presented to the people providing the incentive for the review. Postgraduate student representatives have representation on most major management committees (Executive, Occupational Health and Safety) within the School and provide regular input concerning their needs. Teaching Interns are invited to attend Teaching Meetings. Postgraduate students are also interviewed once a year by a member of the Postgraduate Committee to ascertain issues of supervision, circumstance or conditions which may impede their progress.

c) Improvements to student experience

Wherever possible and appropriate remedial action is taken in the light of the findings of such reviews. School Staff-Student meetings are minuted and action lists with designated people responsible for implementation are drawn up (see example in appendix 3).

Examples of improvements made in response to student requests include.

- the development of new units in Functional Morphology, Developmental Biology and Forensic Anthropology from a third year unit in which each played a very popular ‘guest’ part (2002-2004)

- extension of times of student access to the room containing shared computing facilities (unfortunately this is still limited to normal ‘working’ hours, as the lab lies inside the building with no further access or security) (Staff-Student Meeting S1 2007)

- the appointment of one tutor as the logistics co-ordinator for tutors, students, laboratories and times in the restructured second year core unit in response to student perceptions of disorganization in an in-house survey conducted after it was first introduced. The management scheme developed by this tutor was such a success that she has since been employed to set up a similar system for a third year unit where the students are happy, but where numbers have grown, placing strain upon the organisation of individual projects.

- extension of a very successful trial of provision of feedback comments for online first year MCQ tests to the whole of the formative test bank. Students were extremely positive about the provision of this facility and improvements in performance in the areas for which feedback was written could be demonstrated. Faculty funding has also been obtained to extend this development to the summative tests taken by first year students on six occasions each semester.

“They are a great help! Thanks for the time & effort! Definitely it would be great to have access to more similar feedback in the future, it is a fantastic study tool (UWA)”

“the feedback comments really help me alot. all other biology units should have this system to help students to understand better.(CURTIN)”

[Responses to Survey Evaluation of Trial Implementation 2006]

- restructuring first year Human Biology so as to increase the amount of face-to-face interaction between tutors and students in lab/ tutorial sessions Students clearly appreciate our focus on striving to personalize the learning environment. Despite enrolments of 500-600 students in
each unit, our students do not feel isolated or anonymous. Rather they respond with increased enthusiasm for the subject matter and with a greater capacity to integrate the diverse material they cover in the curriculum.

“I like the labs, working in small groups is helpful in consolidating knowledge”

“Labs: well organised, push students to actively learn the material”

[Comments from Student Perceptions of Teaching survey, 2005]

- development of unit web sites which not only provide for alternative access (audio, visuals, notes, handouts) to course material presented in lectures and tutorials, but also as resources for individual in depth pursuit of issues raised and as a virtual meeting place especially for students in large units. Facilities are gradually added to websites as students request them or as staff learn about their possibilities. The first year website is particularly well regarded by students.

“Collectively the students all commended the website as being excellent and an invaluable source of information on course content and requirements. Students found the website to be extremely user friendly. The practice quizzes are good and a great learning tool”

[Minutes of HB I student group representatives meeting, 2005]

“Brilliant helpful website. Len Freedman [resource] room is also a great resource.”

[Comment from Student Perceptions of Teaching survey, 2005]

“Congratulations on your fantastic web-page. The Human Biol. 100 students are fortunate to be so well supported on-line”

[Krystyna Haq, Learning Skills Advisor (Science and Applied Science), 2003]

- provision of a quiet minimal-share room for postgraduates in the last throes of thesis writing. This arose from repeated complaints at Staff-Student Meetings of how the previously supportive communal life of the larger postgraduate rooms palled as the need for concentrated effort emerged.

**d) Forward planning**

Most importantly, regular review of course processes and content is used for forward planning for each year’s teaching. An example of the way in which systematic review guides the running of a course, in this case the first year Human Biology unit, is presented in Table 8. First year students, in particular, respond well to the appearance of organisation such planning brings.

“It’s a very well structured course. There is good cooperation between the lecturers and lab tutors.”

“Excellent introduction to human biology. Well organised lectures, labs etc. Lecturers showed enthusiasm and a wide depth of knowledge”

“Easy to follow well organised, manages to teach aspects of HB separately but in such a way that they end up integrating.”

[Comments from Student Perceptions of Teaching survey, 2004, 2005 & 2006 respectively]
# Table 8. Team-Teaching Large Classes: Policies and Practices in First Year Human Biology at UWA

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>Policies and Practices in First Year Human Biology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Planning and Teaching</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Provide optimal course information and meaningful expectations for students | - *HB website* provides access to the unit outline, objectives and expected outcomes, assessment schedule and guidelines, bulletin board, practice MCQ’s, answered past exam papers, tutor contact details.  
- *Unit Manual* includes the “Yellow pages” of important unit information including unit outline, assessment schedule and guidelines, tutor contact details, plagiarism policy, policies for special consideration and deferred exams.  
- *Lectures and Labs* – first lecture and lab session covers unit outline, responsibilities of staff and students, and provides an introduction to the use of the web-site.  
- *Student Administrative Officer* available full-time to answer student queries. |
| Create a welcome and engaging environment | - *Laboratory/tutorial program* - weekly 90-minute session, each with ~16 students and a tutor. Helps negate the depersonalising experience of large classes and provides for development of small group learning and teamwork.  
- *Staff-student meetings* held once a semester to gauge student feedback. |
| Employ a range of learning resources | - *Unit manual* with questions and discussion topics for all lab/tutorial sessions, and guided pre- and post-lab exercises.  
- *HB website* with links to web based activities and answers to lab/tutorial questions.  
- *Resource centre* provides flexible access to anatomical specimens and models, information charts, displays and computing facilities with a wide range of interactive CDs.  
- *Interactive learning aids* (customized and off-the-shelf) for use in class and as part of pre- and post-lab exercises (e.g., protein synthesis animation; Primate Biology CD). |
| Vary learning experiences | - *Lecture and laboratory/tutorial program* provides variety in student learning activities including traditional lectures, small group discussions and activities, question-answer sessions, self-paced exercises with models, specimens, charts and computers. |
## Encourage active note-taking

- **Lecture outlines** provided for all lectures and are also available on the HB web-site. PowerPoint slides available for download prior to lectures.

- **Study skills workshops** administered by Student Services advertised in lectures and on notice board of HB web-site. A link to study skills web-site provided.

## Clarify learning goals for each session

- **Expected outcomes** for each topic provided in the Unit Manual and on the web-site.

- **Integrated lecture and laboratory/tutorial program** ensured by weekly meetings of all team members (lecturers, tutorial and technical support staff). All lecturing staff teach in the laboratory/tutorial component.

## Incorporate content AND learning processes

- **Pre-lab exercises** provide a foundation for problem based learning activities and class discussions. For example, in a session on Microevolution the pre-lab exercise steps students through the mathematics required for calculating gene and genotype frequencies of populations. Students’ apply this knowledge in the lab to determine whether the gene frequency of different populations have changed over time. A discussion of the likely mechanisms of gene frequency change is held.

## Regularly monitor students’ learning

- **Online MCQ quiz facility** of correct and incorrect statements provides for formative and summative assessment of all subject areas throughout the year.

- **Laboratory-based quizzes** provided in lab/tutorial session on a 3-weekly basis. Provides for formative and summative assessment with individual feedback.

- **In class essay** completed early in each semester provides students with individual feedback.

## Plan and prepare for group work

- **Group activities** fundamental to lab/tutorial program and initiated early in semester (week 2).

- **Class time allocated** for students to work together with guidance from tutor.

- **Use of small group presentations** to explain key concepts. For example, in a session on Cells, students work in groups of 3-4 to prepare short presentations on differing aspects of cellular function (DNA replication, mitosis, protein synthesis). Focus questions are provided to ensure sufficient depth of coverage.
Use technology to support learning

- **Audio-visual recording of lectures** – all lectures are recorded and the audio-visual is available from a link on the HB website allowing for flexible access. Pod-cast available.

- **Interactive learning aids** for use in class and for pre- and post-lab exercises and revision. Particularly useful for illustration of conceptually difficult material. For example in the laboratory session on Embryology a computer simulation of the dynamic process of embryonic folding is used to complement static diagrams and models.

- **Computer laboratory access** provided to all students and instruction on use made available the first week lab/tutorial session. A web-site guide included in Unit Manual.

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**Planning and Conducting Assessment**

**Align assessment tasks with course objectives**

- **Expected outcomes** for each topic provided in the Unit Manual and on the web-site.

- **Diverse assessment strategies (see next)** ensure generic skills and higher-order learning are assessed in addition to factual knowledge.

**Make the assessments valid and reliable**

- **Diverse assessment strategies** used to reach the final grade. These include online MCQ (12%), lab quizzes (8%); in class essay (5%), laboratory examination (35%) and multi-mode theory examination (MCQ-20%, essay-10% and short answer-10%).

- **Formative assessment** is provided by means of online MCQ quizzes and monthly lab-based quizzes.

**Make assessment criteria and standards explicit to students**

- **Answered past exam papers** are available on the web-site providing students with an indication of the level of understanding required.

- **Guidelines for essay preparation** provided on web-site and explained to students in lab/tutorial session. Individual tutors available for consultation outside lab class – widely advertised.

**Make assessment criteria and standards explicit to markers**

- **Detailed marking guides** provided to all markers and discussed at the teaching meeting.

- **Standard across markers maintained** by cross marking and moderation where necessary.

**Encourage higher level thinking**

- **In class essay** requires students to complete independent library research and synthesize ideas to explain the how and why of a topic in Human Biology.

**Make assessment part of the learning process**

- **Formative assessment** provided throughout semester via online MCQ and lab-based quizzes. MCQ questions based on correct and incorrect statements and can have an associated image therefore enhancing the type of knowledge tested.
Provide feedback to students on their performance

- **Individual and generic feedback** provided early in semester following lab quizzes and the in-class essay. Time is made available in lab/tutorial session for tutors to deal with identified common problems.
- **Assessment statistics** available for viewing via HB website allows students to compare their performance to that of others.
- **Student interviews** conducted following end of semester exam to provide feedback to individual students.

Be strategic in your choice of assessment modes

- **Innovative approach to assessment of laboratory component** involving six versions of the exam, each with similar but not identical questions. Facilitates testing of 500+ students without logistical problems (eg. requiring multiple copies of specimens) and difficulties with cheating or creating an unfair advantage.
- **Continuous assessment** in form of online MCQ, lab quizzes and in-class essay provides for ongoing feedback throughout semester.

Set up a system to control for quality

- **Standard across markers maintained** by cross marking papers and moderation where necessary. Detailed marking guides provided and discussed at tutors meetings.
- **Constant monitoring of student achievement in lab quizzes and exams** to identify ambiguities in questioning and to balance different versions of the quiz or exam (eg. for laboratory exam – see above).

### Administration and Management

**Configuration of classes**

- **Increased emphasis on laboratory/tutorial program.** In 2001, HB lectures were reduced from four to three per week and the formal laboratory/tutorial time increased from 45 to 90 minutes.
- **Small class size for laboratory/tutorial sessions** with a maximum of 17 students per class.

**Organising assessment and feedback procedures**

- **Online submission** of MCQ results and marks made available to students through WebCT.
- **Variety of assessment types offered** (see Planning and Conducting Assessment).
| Staff development and coordination issues | - **Compulsory weekly tutor meetings** of all team members including lecturers, tutors and support staff to discuss all aspects of unit (content, teaching strategies, assessment). Sessional tutors paid to attend. Minutes of meeting circulated to all staff.

- **Formal tutor training** provided via the Teaching Internship scheme of the University’s Centre for Staff Development.

- **Tutor guide** provided to all team members at beginning of semester and weekly updates of new ideas, approaches, clarifications circulated in Minutes of teaching meeting (see above). All team members have access to audio and visual of the lectures and the discussion forum via the unit website.

| Using on-line support | - **HB web-site** provides students with access to all aspects of the course other than direct interaction with staff and specimens. Site is also useful communication channel for teaching team members to maintain integration.

| Coordinating and managing labs and pracs | - **Customized online lab allocation program** allows students to allocate themselves to lab/tutorial sessions.

- **Student administration officer** employed to handle student enquiries and provide technical support for lab classes.

- **Unit manual** provides expected outcomes, guidelines and questions for each lab/tutorial session.

| Approaching senior administration to elicit support for large-class teachers | - **Full School support of Unit philosophy and objectives** – the development of human biology as a discipline is a deliberate strategy of the school. **Head of School** (current and past) are current members of the first year teaching team.

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### Tutoring and Demonstrating

| Preparing and supporting tutors during semester | - **Weekly tutor meetings** facilitate tutor preparation and support. All aspects of the unit discussed including administrative issues, unit content, teaching strategies, assessment guidelines. Part-time tutors paid to attend meeting.

- **Unit manual** with answers provided to all tutors.

- **Formal tutor training encouraged** through the teaching **Teaching Internship Scheme**, which provides new tutors with teaching related skills through Centre for Staff Development Workshops

- **Access to taped lectures** is provided to all tutors

| Evaluating performance | - **Student perceptions of teaching** questionnaires are used by all lecturers and most tutors to evaluate teaching (see main document).

- **Peer feedback** encouraged. Teaching strategies fully discussed at weekly teaching meetings.
References


2.4 Extent of curriculum review, development and innovation

a) Program innovations

A determination has been developed out of consideration of the pressure we are under with respect to teaching loads not to yield to the natural impulse of the besieged to simply defend the status quo or even to adopt modifications which are simply parings-down of current offerings. We have recognised that we must continue to innovate to survive. We need to be innovative not only in pursuit of solutions to difficulties, but in order to continue to be part of the ever-changing academic life. If we stand still we will be left behind and become irrelevant. Deliberately taking time out from our day-to-day activities for Teaching Meetings and Planning Retreats has proved to be essential in order to work out where we are, where we want to go, and how to get there.

- **BSc (Anatomical Sciences) and BSc (Human Biology)** One example of an initiative developed in response to discussions at a Planning Retreat has been the development of a pair of specialist BSc programs based in the School, the Bachelor of Science in Anatomical Sciences and the Bachelor of Science in Human Biology.

- **The BSc (Anat.Sc) program** (Table 9) aims to bring together in recognisable form the diversity of units which inform the understanding of the structure and function of the mammalian body. The depth of understanding of functional morphology it offers provides an exceptionally sound background for postgraduate medical or paramedical studies and for research and practice in relation to sports potential, performance, training, injury and rehabilitation. This program not only addresses the challenge posed by the growth of specialist BSc programs directing students away from majors and higher studies in Anatomy and Human Biology, but offers very real opportunities to a forge deeper understanding of the functional meaning of human structure. It has already fostered greater co-operation between anatomists from our School and from Zoology.

The BSc(Anat.Sc) obtained Faculty support in 2006 and immediately attracted enrolled students into its second and third year components. With the addition of 16 de novo enrolments in 2007 it has already attracted 39 students.
### Anatomical Sciences (MG-ANTSC)

In this program, you complete one of four streams: Anatomy & Preclinical Studies (PC), Anatomy & Sport Science (SS), Comparative Anatomy (CA) or Anatomy, Forensic Science & Archaeology (FSA). Each stream includes a major sequence in anatomy & human biology and a complementary major sequence.

**Level 1:** (48 points) The core units of your chosen stream:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>PC</th>
<th>CA</th>
<th>SS</th>
<th>FSA</th>
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<td>X</td>
<td>X</td>
<td>X</td>
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<th>PC</th>
<th>CA</th>
<th>SS</th>
<th>FSA</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB1102 Hum Biol 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SCIE1106 Mol Biol Cell*</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL1131 Biol Plt Anim*</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM1104 Biol Inorg Phys Chem</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHEM1106 Biol Chem</td>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HMES1102 Hum Mvmt</td>
<td>X</td>
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<td></td>
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<tr>
<td>ARCY1102 Arch Tribes Emp</td>
<td>X</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Notes: X = compulsory in this stream; A,B = take either both As or both Bs; *maximum of two of these three units permitted.

And units chosen in consultation with a Faculty adviser.

Recommended:(a) units from another stream in the table; (b) chemistry, mathematics, statistics, physics (see Foundation Package in Biological Sciences, p.11, for choices).

Students with only TEE discrete maths (or equivalent) must take MATH1050 Calculus C in Semester 1 or 2.

### Level 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>All of ANHB2212 Human Structure &amp; Dev't ANHB2217 Human Neurobiology</td>
<td>ANHB2213 Human Functional Anatomy ANHB2214 Human Organs &amp; Systems</td>
</tr>
</tbody>
</table>

And the units for your stream, as follows:

**Stream PC: Anatomy & Preclinical Studies**

Four of

| BIOC2201 Biochemistry of the Cell | ANHB2216 Human Reproductive Biology |
| PHYL2255 Physiol Hum Body Sys | BIOC2202 Biochem Reg'n Cell Fnctn |
| MICR2203 Intro Immunology | PHYL2245 Physiology of Cells |
| PHYL2260 Physiol Adapt & Stress | PATH2201 Intro to Human Disease |

**Stream CA: Comparative Anatomy**

Both of

| ANIM2203 Invertebrate Zool | ANIM2204 Vertebrate Zool |

and two of

| ANIM2205 Invertebrate Studies | ANIM2206 Vertebrate Adapt |
| ANHB2215 Biol Anthrop: Hum. Adapt. & Var. | FNSC2200 Myst Forensic Sci |
### Stream SS: Anatomy & Sports Science

All of

<table>
<thead>
<tr>
<th>HMES2250 Biomechanics</th>
<th>HMES2240 Motor Learning &amp; Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMES2260 Exercise Physiology</td>
<td>HMES2270 Psychosocial Aspects of HM&amp;ES</td>
</tr>
</tbody>
</table>

### Stream FSA: Anatomy, Forensic Science & Archaeology

Any four of

<table>
<thead>
<tr>
<th>ANHB2215 Biol Anthrop: Hum. Adapt. &amp; Var.</th>
<th>FNSC2200 Myst Forensic Sci</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCY2226 Arch Field Methods (N/A 2007)</td>
<td>ARCY2227 Arch Lab Methods (N/A 2007)</td>
</tr>
<tr>
<td>ARCY2225 Indig Aust Archaeol II</td>
<td>ARCY2215 Indig Aust Arch I (N/A 2007)</td>
</tr>
<tr>
<td>ARCY2222 Europ Prehist: (N/A 2007)</td>
<td>ARCY2262 Early China (N/A 2007)</td>
</tr>
</tbody>
</table>

Other ARCY units may be possible – consult Faculty adviser.

### Level 3 (48 points)

Units to complete a major in anatomy & human biology, as follows:

#### Semester 1

<table>
<thead>
<tr>
<th>The unit</th>
<th>ANHB3304 Human Funct'l Morphol (12 pts)</th>
</tr>
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<tbody>
<tr>
<td>And at least 12 points from</td>
<td></td>
</tr>
<tr>
<td>ANHB3313 Cell &amp; Tissue Organisation (12 pts)</td>
<td>ANHB3316 Human Reproduction</td>
</tr>
<tr>
<td>ANHB3311 Biological Anthropology (12 pts)</td>
<td>NEUR3325 Advanced Neuroscience (12 pts)</td>
</tr>
<tr>
<td>ANHB3308 Dev Biol (12 pts, summer sem)</td>
<td></td>
</tr>
</tbody>
</table>

And units to complete your second major, as follows:

#### Stream PC: Anatomy & Preclinical Studies

24 points from

| BIOC3352 Cell Metab Biochem (12 pts) | PATH3311 Biotherap Regeneration |
| BIOC3351 Mol Struct Biochem (12 pts) | PATH3354 Immunol & Immunopath |
| PATH3301 Pathobiol Hum Disease (12 pts) | PHYL3350 Physiol Control Mech (12 pts) |
| PHYL3300 Mammalian Cell Biol (12 pts) | NEUR3325 Adv Neurosci (12 pts) |
| PHYL3340 Adv Cell Physiol (12 pts) | |

#### Stream CA: Comparative Anatomy

24 points from box ANHB above (units not counted to A&HB major), and/or from

| ANIM3320 Comparative Neurobiol | ANIM3303 Zoophysiology |
| ANIM3313 Marsupial Biol | |
| ANIM3315 Functional Zoomorph | |

#### Stream SS: Anatomy & Sports Science

Four of

<table>
<thead>
<tr>
<th>HMES3301 Exercise Prescription</th>
<th>HMES3302 Adv Phys Act &amp; Hlth</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMES3355 Biomechanics</td>
<td>HMES3356 Neuromusc Biomech</td>
</tr>
<tr>
<td>HMES3365 Sport Physiology</td>
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</tr>
</tbody>
</table>

#### Stream FSA: Anatomy, Forensic Science & Archaeology

Four units from box FSA above (not previously taken) and/or from other relevant units, chosen in consultation with a Faculty adviser.
The BSc (Hum.Biol) (Table 10) program provides an interdisciplinary course of study of the biological and socio-cultural aspects of humans as whole organisms and members of groups. It is concerned with how biology and culture influence one another (biosocial factors) and the interactions between humans and their environment (ecology). It allows students to draw together a range of human, behavioural and social sciences including Biological Anthropology, Geography, Anthropology, Archaeology, Linguistics and Psychology.

Introduction of the BSc (Human Biol) has had to await a restructuring which suppressed a similarly named BSc (Human Sciences) degree program, but is at the stage of presentation to Faculty. It is generally seen to have a better chance of success than the BSc (Human Science), being based in the School, a natural focus for first year students already intending to study just such combinations of units.
Table 10. Course options prepared for proposed Bachelor of Science (Human Biology)

### Human Biology (MG-HBIOL)

This program addresses the whole behaving person. Traditional Biological Sciences (Zoology, Genetics, Microbiology) may deal with humans, but without taking into account how their behaviour may impact upon their biology, or be influenced by it, and traditional Behavioural Sciences (Psychology, Anthropology, Archaeology, Linguistics) may deal with humans as social beings without taking into account to any great extent the way in which social behaviour reflects the circumstances of the environments in which they live or evolved. This program provides four major streams of study addressing these interfaces, two for those whose primary interest is in the social sciences, the other two for those primarily interested in biology and ecology.

In this program, you complete one of four streams: Individual Behaviour (IB), Cultural Biology (CB), The Human Life Cycle (HLC) or Biological Diversity (BD). Each stream includes a major sequence in human biology and a complementary major sequence.

**Level 1:** (48 points) The core units of your chosen stream:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>IB</th>
<th>CB</th>
<th>HLC</th>
<th>BD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB1101</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>PSYC1101</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>ANTH1101</td>
<td>A</td>
<td></td>
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</tr>
<tr>
<td>ARCY1101</td>
<td>B</td>
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<tr>
<td>HMES1101</td>
<td></td>
<td>X</td>
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<tr>
<td>CHEM1103</td>
<td></td>
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<td>A</td>
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<tr>
<td>CHEM1105</td>
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<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>MATH1050</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** X = compulsory in this stream; A,B = take either both As or both Bs;

And units chosen in consultation with a Faculty adviser.

Recommended: (a) units from another stream in the table; (b) chemistry, mathematics, statistics, physics (see Foundation Package in Biological Sciences, p.11, for choices).

Students with only TEE discrete maths (or equivalent) must take MATH1050 Calculus C in Semester 1 or 2.

**Level 2**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB2215</td>
<td>ANHB2216</td>
</tr>
<tr>
<td>Biological Anthropology II</td>
<td>Human Reproductive Behaviour</td>
</tr>
</tbody>
</table>

And the units for your stream, as follows:

**Stream IB: Individual Behaviour**

<table>
<thead>
<tr>
<th>Four of</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB2217 Human Neurobiology</td>
<td>PHYL2245 Physiology of Cells</td>
</tr>
<tr>
<td>PSYC2203 Psychological Research Methods</td>
<td>PSYC2207 Normal &amp; Abnormal Development</td>
</tr>
<tr>
<td>PSYC2205 Behavioural Neuroscience</td>
<td>PSYC2206 Social &amp; Cognitive Psychology</td>
</tr>
<tr>
<td>COMM2205 Intro to Science Communication</td>
<td>COMM2205 Intro to Science Communication</td>
</tr>
</tbody>
</table>
Stream IB: Individual Behaviour

<table>
<thead>
<tr>
<th>Four of</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB217 Human Neurobiology</td>
</tr>
<tr>
<td>PSYC2203 Psychological Research Methods</td>
</tr>
<tr>
<td>PSYC2205 Behavioural Neuroscience</td>
</tr>
<tr>
<td>LING2203 Language Variation &amp; Change</td>
</tr>
<tr>
<td>COMM2205 Intro to Science Communication</td>
</tr>
<tr>
<td>PHYL2245 Physiology of Cells</td>
</tr>
<tr>
<td>PSYC2207 Normal &amp; Abnormal Development</td>
</tr>
<tr>
<td>PSYC2206 Social &amp; Cognitive Psychology</td>
</tr>
<tr>
<td>LING2240 Lang. Learning &amp; Applied Linguistics</td>
</tr>
<tr>
<td>COMM2205 Intro to Science Communication</td>
</tr>
</tbody>
</table>

Stream CB: Cultural Biology

<table>
<thead>
<tr>
<th>Four of</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTH2221 Sex &amp; Aggression I</td>
</tr>
<tr>
<td>ANTH22230 Sex &amp; Aggression II</td>
</tr>
<tr>
<td>ANTHXXX Other Anthropology as Available</td>
</tr>
<tr>
<td>ARCYXXX Other Archaeology as Available</td>
</tr>
</tbody>
</table>

Stream HLC: The Human Life Cycle

<table>
<thead>
<tr>
<th>Four of</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB2212 Human Structure &amp; Development</td>
</tr>
<tr>
<td>HMES2250 Biomechanics</td>
</tr>
<tr>
<td>HMES2260 Exercise Physiology</td>
</tr>
<tr>
<td>PHYL2260 Physiol Adapt &amp; Stress</td>
</tr>
<tr>
<td>ANHB2213 Human Functional Anatomy</td>
</tr>
<tr>
<td>HMES2240 Motor Learning &amp; Control</td>
</tr>
<tr>
<td>HMES2270 Psychosocial Aspects of HM&amp;ES</td>
</tr>
</tbody>
</table>

Stream BD: Biological Diversity

<table>
<thead>
<tr>
<th>Any four of</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB2212 Human Structure &amp; Development</td>
</tr>
<tr>
<td>ANIM2204 Vertebrate Zool</td>
</tr>
<tr>
<td>PHYL2255 Human Body Systems</td>
</tr>
<tr>
<td>SCIE2225 Molecular Biology</td>
</tr>
<tr>
<td>EART2201 Introduction to GIS</td>
</tr>
<tr>
<td>ANHB2213 Human Functional Anatomy</td>
</tr>
<tr>
<td>ANIM2206 Vertebrate Adaptation</td>
</tr>
<tr>
<td>PHYL2260 Physiol Adapt &amp; Stress</td>
</tr>
<tr>
<td>GENE2240 Introduction to Genetics</td>
</tr>
<tr>
<td>GENE2230 Molecular Genetics</td>
</tr>
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</table>

And units chosen in consultation with a Faculty adviser

Level 3 (48 points)
Units to complete a major in anatomy & human biology, as follows:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>The unit</td>
<td>ANHB3315 Human Evolutionary Ecology (6 pts)</td>
</tr>
<tr>
<td>ANHB3311 Biological Anthropology (12 pts)</td>
<td>ANHB3316 Human Reproduction (6 pts)</td>
</tr>
</tbody>
</table>

And units to complete your second major, as follows:

Stream IB: Individual Behaviour

<table>
<thead>
<tr>
<th>24 points from</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSYC3316 Perception &amp; Neuropsychology</td>
</tr>
<tr>
<td>PSYC3315 Cognitive Psychology</td>
</tr>
<tr>
<td>ANIM3320 Comparative Neurobiol</td>
</tr>
<tr>
<td>PSYC3312 Social Psychology</td>
</tr>
<tr>
<td>PSYCH3313 Developmental Biology</td>
</tr>
<tr>
<td>NEUR3325 Adv Neurosci (12 pts)</td>
</tr>
</tbody>
</table>
Stream CA: Cultural Biology

<table>
<thead>
<tr>
<th>24 points from</th>
<th>ANTHXXXX</th>
<th>ANTH2230 Sex &amp; Aggression II</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTHXXXX Other Anthropology as Available</td>
<td>ANTHXXXX Other Anthropology as Available</td>
<td></td>
</tr>
<tr>
<td>ARCYXXXX Other Archaeology as Available</td>
<td>ARCYXXXX Other Archaeology as Available</td>
<td></td>
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</tbody>
</table>

Stream HLC: Human Life Cycle

<table>
<thead>
<tr>
<th>24 points from</th>
<th>ANHB3308 Developmental Biology (12 pts)</th>
<th>ANHB3304 Human Functional Morphology (12 pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMES3345 Motor Skills Development</td>
<td>HMES3346 Skill Acquisition &amp; performance in Sport</td>
<td></td>
</tr>
<tr>
<td>HMES3365 Sport Physiology</td>
<td>HMESXXXX Other level 3 Human Movement</td>
<td></td>
</tr>
</tbody>
</table>

Stream BD: Biological Diversity

<table>
<thead>
<tr>
<th>24 points from</th>
<th>ANHB3308 Developmental Biology (12 pts)</th>
<th>ANHB3304 Human Functional Morphology (12 pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANIM3315 Functional Zoology</td>
<td>ANIM3304 Behavioural Ecology</td>
<td></td>
</tr>
<tr>
<td>ANIM3302 Genetics &amp; Evolution</td>
<td>MICR3306 Ecology of Microbes</td>
<td></td>
</tr>
<tr>
<td>ANIM3313 Marsupial Biology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANIM3301 Animal Ecology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EART3330 GIS &amp; Remote Sensing</td>
<td>EARTXXXX Other level 3 Geography</td>
<td></td>
</tr>
<tr>
<td>EART3320 Environmental Change</td>
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</tr>
</tbody>
</table>

- **Developmental Biology.** In response to student interest in the subject while it formed part of another unit, and an uncoordinated accumulation within the Faculty of appointments in the general area, the School developed a third year unit in Developmental Biology (ANHB3308 – Appendix 4). The unit was innovatively taught, bringing together presenters with interests in Developmental Biology from within our own School (Professor Miranda Grounds, Dr L. Filgueira), from Physiology (Dr D. Newgreen), from Biochemistry (Prof. G Yeoh), from The Telethon Institute of Child Health (Dr Anke van Eekelen), from Botany (A/Prof S Barker) and other areas. Being offered in the Summer semester, it was able to take advantage of the availability of world-class European academics in the area including Dr Rupert Hallman from Lund university and Dr S Jesathasan from the Developmental Neurobiology Group at Temasek Life Sciences Laboratory in Singapore. Each year the course finished with a one day conference with additional national and international speakers (see Appendix 4). Thus, it offered students the opportunity for complete immersion in a subject taught by leading researchers in the field in styles not usually encountered in Australian Universities, and a first experience of a scientific conference.

Building on the networks established in creating this course Prof. Grounds lead a Faculty appointed committee for the design of an interdisciplinary Developmental Biology Course, based around the appoint of one or two Chairs in the area at UWA (see Appendix 5). This initiative reached the stage of placing of advertisements before being overtaken by other funding issues which emerged within the Faculty.

- **Core Second Year Unit.** In line with our goal of helping students to acquire an holistic Human Biology mindset, and to understand that apparent sub-disciplines are inextricably

Page 50  School of Anatomy & Human Biology
interwoven and as a practical response to the disruption of enrolment patterns arising from the university-wide standardization of the weighting of units we restructured our second year Science teaching. First semester units in anatomy and histology were combined, together with portions of introductory neuroscience and embryology from second semester units to create a new core unit “Human Structure and Development” (ANHB 2212) which provides a basis for a series of specialisations in anatomy, histology, reproductive biology, biological anthropology and neuroscience. This unit has also been the basis for a number of innovative teaching practices and has served as a pattern of curriculum development and assessment for a number of postgraduate tutors in the UWA Teaching Internship Scheme. The teaching interns were able to take an active part in the design of the curriculum, the logistics of mounting the course, the design of management structures, evaluation of content and processes and adjustments to address perceived problems.

- **Integrated Human Studies.** A/Prof Neville Bruce has lead a team in the development of postgraduate and undergraduate programs in Integrated Human Science. The purpose of Integrated Human Studies (IHS) is to bring together the sciences, social sciences, arts and humanities in order to focus on the nature and future of humankind. IHS aims to allow students to focus on themselves, their place in the world, and, above all, how they plan to influence the future and in so doing, it is hoped, acquire over the course of their studies an orientation to the learning experience. The Postgraduate studies have now been approved by the appropriate university bodies, Work is still underway on the undergraduate units.


- **Art and Science Programs.** The School of Anatomy and Human Biology has a long tradition of working with artists. Hans Arkeveld, sculptor and painter, has been working with the department for the last three decades. Other artists have come and gone on an *ad hoc* basis. Oron Catts and Ionat Zurr from the Tissue Culture and Art Project (TC&A) had been working as artists/researchers in residence in the School of Anatomy and Human Biology and the Lions Eye Institute since 1996. SymbioticA, an artistic laboratory dedicated to the research, learning and critique of life sciences was established in 2000 by cell biologist Professor Miranda Grounds, neuroscientist Professor Stuart Bunt and artist Oron Catts. SymbioticA is the first research laboratory of its kind, in that it enables artists to engage in wet biology practices in a biological science department. It provides an opportunity for researchers to pursue curiosity-based explorations free of the demands and constraints associated with the current culture of scientific research while still complying with regulations. SymbioticA also offers a new means of artistic inquiry, one in which artists actively use the tools and technologies of science, not just to comment about them, but also to explore their possibilities. It has been remarkably successful since its establishment in gaining international grants and prizes, including the inaugural Golden Nica for Hybrid Arts in the Prix Ars Electronica.

SymbioticA has recently established an academic programme for both undergraduate and postgraduate students where they have hands on experience with life sciences. These programs introduce students to issues, concepts and techniques relating to contemporary arts
practices dealing with the manipulation of living forms. Emphasis is placed on developing critical thought, ethical issues and cross-disciplinary experimentation in art (art/science collaborations, art as research). Students are introduced to biological lab practices and techniques and are expected to get their hands wet. Cultural issues such as gene patenting, ownership of living systems, issues of partial life, population diversity, new reproductive technologies, modifying bodies, nature/culture boundaries, emerging perceptions of life are researched and discussed. In particular, the ethics of living art and/or science production are debated (see VISA units in Appendix 1).

b) Innovations in practice

In a recent workshopping of our application for an AUTC Institutional Award in Category 2: Teaching Large First Year Classes, we discovered that many of the practices developed inhouse in ANHB and taken for granted were considered innovative within the broader institutional setting. Some, such as the development of the computer-assisted flexible delivery of second year histology courses, can be identified because outside bodies have conferred awards upon them. Other innovations, which have made a great deal of difference to the effectiveness of our teaching and communication with students, are thought of outside the discipline more as organisational approaches than as teaching innovations. Some example are

- **Restructuring first year Human Biology.** In response to growing emphasis by the University upon the quality of the transition experience for first year students, and in the light of several years worth of SPOT comments to the effect that the best part of the first year course was the ‘small’ group laboratory sessions, we restructured our first year teaching specifically with the aims of reducing the time the students had to spend as one of a herd and maximising face-to-face contact between staff and students. This strategy of downsizing the learning environment has been crucial to motivating students. Unlike many traditional laboratory-based science courses, our first year Human Biology units are built around 90-minute, weekly laboratory/tutorial sessions, each with 16-18 students. Here, students develop an ongoing working relationship with their tutor and a small group of peers. Tutors remain with the same group for the duration of the semester and serve as mentors to provide guidance throughout the whole course. Such an approach enables students to experience very small group learning and the development of teamwork under conditions similar to those usually present only in the humanities and arts, or in later years of a science degree. It negates the depersonalizing experience of large lecture and laboratory classes. At the same time students enhance their communication skills through regular presentations to, and dialogue with, their tutor and peers. The key roles played by members of the teaching team in this context are twofold: each serves as a tutor and each provides guidance to all other tutors in their area of expertise. Students clearly appreciate our focus on striving to personalize the learning environment. Despite enrolments of 500-600 students in each unit our students do not feel isolated or anonymous, as evidenced by comments such as

> “Everything! The labs are fantastic. I have thoroughly enjoyed this unit. I have learned things that have aided me in everyday life. Thankyou!”

[Comments from Student Perceptions of Teaching survey, 2005]

Quality time to spend with 500-600 students was gained by reducing the number of lectures, moving to online continuous assessment and rearranging the timetable. We now run just two tutorial groups at any one time, but have two groups running almost all of the hours of the
teaching week except those occupied by our own lectures. This restructuring incidentally pleased the students for the greater choice it gave them in timetabling labs, and the pool of tutors, who are much more likely to be able to find another tutor not already teaching when they are not able to attend their own laboratory/tutorial session.

- **Mutal Learning in a second and a third year unit.** This initiative involved having the Human Functional Morphology (HFM) 3304 students act as demonstrators and tutors during the laboratory classes for Human Functional Anatomy 2213. The HFM 3304 students spent 4 hours each week dissecting the human body. They also received lectures in specialist topics such as spinal anatomy or evolutionary applications. In addition to these activities they have a two hour session in which they preview the second year laboratory class for that week, then spend another two hours in the second year laboratory class as demonstrators and tutors.

The second year students receive two lectures and a two hour lab class each week, 80 minutes of which is unstructured time where they use the specimens and teaching materials to work their way through the activities in their laboratory manual. During this time the third year students are available in the lab and their role is to interact informally with the 2nd years, answering questions and demonstrating the anatomical specimens available in the lab.

During the last 25 minutes of the laboratory session the second year students gather in tutorial groups under the guidance of a pair of third-year tutors. With 140 students in the 2nd year group and about 30 in the 3rd year group, this means that the tutorials can be quite small – about 9 students. The tutors pairs were designed to even out the abilities of the tutors and to provide them with support, in what, to some, maybe a quite stressful activity. Activities during this period include a roll-call to promote attendance, and other activities to encourage students to keep up to date with their studies and to focus on and further develop aspects of the topic. This period also gives the opportunity for continuous assessment activities.

External examiners were brought in to listen to presentations by the third year students, and to assess their performance on the following criteria:

- That the presenter engaged and interacted with the group and didn’t just read from a sheet
- That the presenter prepared a tutorial that clarified the topic and presented the material in a useful way
- That the tutorial handout was clear and correct.

The same external examiners were also invited in during a viva week to assess the 3rd years’ performance on the following criteria:

- That they ask triplets of questions in a non-intimidating way.
- That questions were graduated and fair among the students in the group.
- That the *viva* is educational for the whole group, not just the student who is being quizzed.
Experienced staff who came in to assess the 3rd year performance in tutes and vivas were all very impressed. All staff who casually came into the teaching space were impressed with the atmosphere and the “positive buzz” in the classes.

More details of this initiative can be found in Appendix 6

Milne, N (2006) Mutual learning: Can third years tutor second years to the benefit of both parties? Invited address to UWA community for Education Week, April 2006

- Learning Resources in first year Human Biology. The constant challenge of finding effective teaching aids for laboratory classes in the face of marked budgetary constraints, in particular, for a very large first year class has been met by very deliberately arranging for as few students as possible to be doing the same thing at the same time (thereby limiting the number of copies of any one piece of equipment needed) and by developing in-house devices using extremely cheap materials. For example, the team, lead by one of the postgraduate tutors, recently devised a multi-mode approach for the teaching of protein synthesis; a fundamental biological process but one that students traditionally find difficult to understand fully. During the lab class students view a custom-made computer animation of the process, then simulated the major events of the process in a hands-on activity, and finally, explained the process to other class members and the tutor (Figure 21). Comments made at the most recent Human Biology staff-student representatives meeting confirm that this multi-mode approach facilitated student engagement.

Figure 21. Resource centre with protein synthesis demonstration based upon a toy construction set
- Large group practical exams. There is a natural tendency with very large groups to limit the types of assessment presented to those which are simple to handle and for which it is easy to ensure equity of marking, such as online tests, multiple choice exams and short-answer papers. This represents a severe reduction in the types of opportunities made available to the students in such courses to display their learning and develop new skills, however. Practical exams for very large groups can be particularly difficult to manage with the need for many replicates of each test item and the potential for breaches of security between students from the many repeat sessions conducted. The coordinators of the first year Human Biology course have developed a simple and ingenious scheme for running ‘musical chairs’ type practical exams which allows as many as 120 students to be examined at any one time with minimal risk of cheating and minimal invigilation. Basically six alternate versions of each 12 question (5 parts per question) test are set. Everything for each version is colour coded – student identity slips, question papers, and answer papers. Questions for the different versions of the exam are interspersed with one another, with different starting points for each set so that no two students at the same table are taking the same version of the test or answering the same question (Figure 22). Students are randomly allocated (no choice) to a colour and a set of tables as they enter the test room. At the bell between questions each block of three students moves together to the next table and set of questions. Since students have no control over which version of the test they will be answering there is little point in attempting to pass on information to friends in later groups. Since at no point in the test is there any gain to be had from looking at a neighbour’s work there is a greatly reduced need to check for cheating and staff can present themselves as friendly helpers, rather than guardian dragons, which reduces student stress levels. The system has been working flawlessly for a number of years.

![Figure 22. Different versions of the test (P = pink, B = blue, M = mauve, Y = tallow, G = green, W = white). Numbers indicate particular questions and arrows the direction of student movement.](image-url)
2.5 Extent of co-ordination and collaboration in teaching achieved between the school’s teaching areas

Co-ordination of the School’s teaching programs is planned and formally arranged at twice-yearly Teaching Meetings and at longer intervals at School Planning Retreats.

Quality outcomes, particularly for large classes, require good communication and integration between contributing staff, but this can be very difficult to achieve in team-taught units. The strategy of our highly successful first year team involves a strict policy of integrated academic input requiring, for example, that every lecturer be involved in the preparation and delivery of the whole curriculum including academic content, tutoring, writing the unit manual, setting and marking examinations, and formulating strategy. As a result, the students see an integrated and consistent package that provides clearly-defined outcomes and enables them to tackle the diverse curriculum with confidence. This enhances student engagement with the subject matter and with the resources provided to facilitate the learning process.

“It’s a very well structured course. There is good cooperation between the lecturers and lab tutors.”

“Easy to follow well organised, manages to teach aspects of HB separately but in such a way that they end up integrating.”

[Comments from Student Perceptions of Teaching survey, 2004 & 2006]

On a less formal, person-to-person basis, co-ordination is achieved by team-teaching most units. Thus, the co-ordinator of the second year core unit Human Structure and Development also lectures in first year Human Biology, as do the co-ordinators of second and third year Biological Anthropology and second year Reproductive Biology. The co-ordinator of third year Human Evolutionary Ecology also lectures in the second year unit and in third year Biological Anthropology and the co-ordinator of the second year core science unit in the Graduate Medical Bridge program and undergraduate Medical Normal Systems courses. Such arrangements provide for both horizontal and vertical integration within the course. On occasions where cross-course lecturing does not provide an insight into the content of preceding or succeeding units other arrangements are made to ensure that they fit with one another. For example, when setting up the Human Structure and Development unit Dr Bharadwaj attended lectures in parts of first year Human Biology related to the course and viewed all of the first year material on the web. Web pages for units are available for any other staff members to view. Staff frequently substitute for one another when leave arises. On such occasions, or when handing a unit on to a new lecturer, it has become the custom to hand on as well PowerPoint presentations etc related to the teaching of the unit – not so as to preserve it unaltered, but to provide for some continuity and a resource for the person taking on the onerous task of preparing lectures in a new area.

It was the determination of a recent teaching meeting that audits mapping the distribution of teaching of quantitative and other generic skills across the School’s unit curricula be prepared.
2.6 Evidence of interaction between teaching and research

All levels of the curriculum involve reference to current research within the School and recent enlightening findings from the literature (including the web). Specific academic staff within the School (and from outside UWA) provide lectures in their research disciplines to emphasise the research directions within each topic of the course. An emphasis is placed upon students finding things out for themselves. At first year level this might involve an exercise occupying no more than a part of one laboratory session, at second year level it may involve a project spanning several weeks of lab classes and each third year unit includes at least one semester long project involving experimental design, testing, analysis, written and oral reporting.

a) How research and researchers are used in undergraduate teaching

- Teaching by researchers. There active researchers involved in every level of teaching through the School, including first year. In fact, all of the academic members of the first year teaching team are active researchers in their respective specialties so that the lectures for each subject are presented by academics with expertise in the area. The strict policy of integrated academic input in these units ensures that all teaching staff, including tutors, are aware of the latest developments in the various fields. As a result students feel confident that their lecturers and tutors are abreast of the latest scientific developments. The lecturers make a point of including examples and anecdotes from their own research experience in lectures and of leading students to the point of what is still unknown – the questions being tackled today. They are made aware of their place as heirs of an academic tradition (eg “Raymond Dart, who found the first Australopithecine supervised Len Freedman, who created this unit you are taking now”). More details of current controversies and questions are included in second and third year units. Many units include guest lectures from researchers or practitioners in their field (eg from Concept Fertility in Reproductive Biology units)

- Journal clubs. The third year unit in Advanced Neuroscience, like many third year science units, included a journal club amongst its tutorial options from its inception. In semester 1 2007 one of the School’s Teaching Interns, Maria Grade Godinho, extended this practice to the second year neuroscience unit ANHB2217, along with discussions on generic areas of scientific debate of relevance to neuroscience such as the ethics of stem cell work, animal-based research and science funding. Her evaluation of the trial indicated that many students found the experience difficult, but rewarding.

- Teaching by recent graduates. In the third year Biological Anthropology unit ANHB3311 lectures are set aside for very recent Honours students and working graduates in the area to present their own research. Such sessions are always lively. Students seem to be able to see themselves in equivalent positions more readily than they can see themselves doing what older academics do and feel uninhibited about challenging the speaker on issues of procedure, experimental design, analysis and interpretation of results. They are often excited by the questions posed by the previous year’s Honours students and encouraged by the fact that there are very recent graduates already employed as research scientists.

- Generic research skills. At third year level several units include segments explicitly teaching generic research skills of design, analysis and presentation. For example, Biological Anthropology 3311 includes lectures and practice session on the design of questionnaires and
other types of survey and one fifth of all of its teaching time is spent in active exploration of data generated by activities the students themselves have undertaken. Students are given initial guidance, but allowed to follow through with less than optimal approaches until they reach the point of seeing what they could have done (since they are encouraged to work co-operatively this generally does not take too long). As two comments from the S1 2007 SPOT survey indicated, this brought home to them the reality of research

“Very good that we had assignments where we collected AND analysed data to write a report, I felt like a little scientist!”

“… Various experiments and study designs provided valuable experience in how to conduct experiments”

Explicit lectures and workshop exercises are also conducted on successful teamwork skills before group projects get under way.

- **Projects.** Most third year units also include at least one practical mini-research project in which students design their own question apply the necessary techniques to address the question, analyze the resulting data and present their findings in the form of written articles and seminar presentations. In the course of these projects practical skills relevant to the area of research are learned (eg morphometry, microscopy, immunolabelling, hormonal assay) in addition to generic research skills.

- **Developmental Biology.** The third year Developmental Biology unit ANHB3308 described above and set out in detail in Appendix 4 was taught entirely by active, internationally recognized researchers from various fields of developmental biology. They presented the material in the course from the point of view of what has been learned stage by stage from which critical experiments, and what the most recent findings suggest. The course was relatively small and all students had many opportunities to talk these researchers one-on-one. The conclusion of the course in the form of an open one day conference gave the students a very real opportunity to see the research community in action and to understand how ideas are disseminated.

### 2.7 Specific Policies to Promote Teaching and Learning Embedded in School

- **Clearly linked to budget practices.** Two thirds of Faculty funding to the School is derived from teaching. Promotion of teaching and learning is absolutely necessary to the School’s survival and is obviously linked to our budgetary processes. Careful analysis of the income from and distribution of budgetary resources associated with each unit is prepared for each semester’s teaching meeting (see, for example, Tables A7:1 and A7:2, Appendix 7). If the point is reached where budgetary constraints foreshadow serious compromise to the quality of the teaching which can be offered in a unit, the unit is temporarily suspended while active efforts are made to secure additional funding, as has occurred for 2008 in the case of the very high quality Developmental Biology Course ANHB3308. Having a clear picture of the costs associated with each unit allows for precise and realistic targeting of the funds which must be obtained. Considering these costs together in a meeting open to all staff produces a shared resolve to find mechanisms for dealing with the situation. We have policies of actively seeking Teaching and Learning performance funds, specific infrastructure for teaching funds and University Strategic and Teaching and Learning Funding. Teaching meetings include discussion of priorities for the application of targeted funding and of possible sources of funds.
appropriate to each. Through these means we have secured funding for upgrading (though not expansion) of CAL facilities in the Histology Class Room and of the system for the online presentation of tests.

Forward modelling of our budgetary position (see, for example Figures A7:1-4), and the setting of operational priorities in the light of the results of these models forms part of School Planning Retreats held every 2-3 years. The broad priority set at the last meeting was to secure the sustainability of our teaching offerings. That is, a requirement was put in place that all new course and unit restructures bring about not just improved learning outcomes, but reduce the costs associated with their presentation. Examples of this policy in action are seen in the scheme for running practical exams in HB1101 & 1102 (Figure 22); in the development of an online system for automatic delivery of targeted feedback in the same units; in the scheme for bringing third year students into second year labs as tutor/demonstrators and in the move away from set tutor-led demonstration stations to individualized self-paced study in second year medical anatomy labs. Planning for restructuring to reduce the number of units we teach at any one time (while preserving the diversity of our offerings) and to further reduce the amount of scheduled contact time within units in favour of self-directed project based learning has advanced to the point where some elements have been initiated. To ensure the quality of the learning experience is enhanced at the same time as budgetary efficiencies are achieved means that time must be devoted at the outset to the preparation of activities and materials that can be shown to better support independent learning, however.

Anatomy and Human Biology was the first, and remains one of the few Schools to pay tutors in its large, partly “service”, first year units to attend regular weekly review and preparation meetings. This arrangement has shown itself across the years to improve both the efficiency and sustainability of the unit. Tutors are well prepared, they are more likely to continue with the unit for a number of years (which means that we get a higher quality product for our investment) and the reputation of the units for good teaching continues to attracts and retain students (which increases income).

Another element of the School’s budgetary procedures directed towards the support of teaching and learning is the institution of the Annum. Every year each academic receives a basic budget of $5,000 for discretionary spending, including spending on items to enhance their teaching. Additions to the basic annum are earned for each Honours and postgraduate student supervised and for successful completions, as well as for research productivity.

- **Linked to School’s, Faculty’s & Universities Teaching & Learning Priorities.** It is a policy of the School to participate actively in the University’s Teaching and Learning activities and, to that end, to place members of the School on University committees and working parties involved with Teaching and Learning. In recent years the person responsible for the School’s Teaching and Learning Portfolio (A/Prof Milne then Dr J Meyer) has been a member of the Faculty Teaching and Learning Committee, Dr J Meyer has been a member of the University Teaching and Learning Committee, the selection panel for the Guild Excellence in Teaching and Learning Awards and the Working Party on Academic Conduct (Plagiarism). Both Dr Meyer and Prof. Waddell have been members of the Board of Management for the Bachelor of Health Science degree program. Ms J Hill was a member of the Faculty’s working party for the development of Learning Outcomes and was the liaison for the trialling
the Science version of the online self-paced Introductory Research and Information Skills unit on our large first year class.

Long before it was required the School had a management committee structure (for example, Figure 23) which included specific portfolios with responsibility for various aspects of teaching and learning including the Board of Examiners, Teaching and Learning Committee, Dissecting Room Management Committee, IT Committee and coordinator of Teaching Internships. The activities of the holders of these portfolios included the early production of policy documents governing assessment, plagiarism and procedures for dealing with suspected cases of academic misconduct (see Appendix 8).

2.8 The role of the Head of School in promoting and encouraging excellence in teaching and learning

The primary role of the Head of School in promoting and encouraging excellence in teaching and learning is to provide the vision and values – to be seen to value the practices of teaching and a culture of learning. The Head of School also has responsibility for overseeing the processes of quality assurance in teaching and learning, including the development and implementation of policy, though in practice the articulation of policy statements is usually delegated to the holder of the School Teaching and Learning Portfolio and policing of the implementation to bodies such as the School Board of Examiners. Similarly, liaison with the bodies promulgating various levels of Operational Priorities Plans, and the dissemination of these plans amongst the staff is usually delegated to staff members serving on Faculty and University Committees.

Sitting at the interface of Academic, budgetary and administrative aspects of the running of the School the Head is uniquely placed to see that the policies which promote excellence in teaching and learning are underpinned by the resources which provide for their realization and regard. In a climate of severe financial constraints and strong competing demands for funding for research and maintenance, it may be only the Head’s determination to continue to reserve funds for staff training, innovative practice and reward of excellence that sees them continue at all – or that gives people the heart to continue the attempt. The Head sets in place the mechanisms (the Teaching Meetings, Planning Retreats, Staff-Student Meetings) for ensuring regular review and planning of teaching practice then shares the burden of organisation, including development of an agenda, with various members of the academic and administrative staff.
Figure 23. Committee Structure for School of Anatomy & Human Biology, UWA
Section 3: Optional Indicators

3.1 Research into Higher Education Teaching

a) Feedback for Online MCQ Tests
The School, along with cognate departments at Curtin University of Technology and Edith Cowan University, had the good fortune of success in the first round of Carrick Project grants in 2005 for the project “Online Assessment as an Instrument of Reflective Learning Practice in Human Biology”. The primary aim of the project was the writing of explanatory feedback comments for every single option of every question which appeared in online MCQ tests for first year human biology units at each of the three universities. A secondary aim was to construct a short online Reflective Practice Quiz to be completed by students immediately after each test experience. As preparation for these tasks we surveyed the first year students within the first three weeks of their course to determine the composition of the group, in terms of age, language background, work commitments, disabilities etc and how these factors affected their attitudes towards, expectations of and use of feedback, and their expectations of success in the course. This provided us with such valuable and surprising insights into the nature of our student group that we have determined to repeat this part of the exercise every few years. The linking of follow-up surveys of users of the online tests with feedback with the same demographic information and with performance in parts of the final assessment related to the areas for which feedback had or had not been provided enabled us to determine that the system was very well appreciated and that it produced significant performance benefits which extended beyond the online test environment (Figure 24). Analysis also revealed that the benefits decreased as the amount of paid work in which students were engaged increased, and that engagement of less able students with the system could be increased substantially by decreasing the length of tests to just 10 questions (Table 11 references 3-13)

![Helped Understand Wrong Answers](image1)

![Apply to Other Human Biology Modules](image2)

![Feedback Module Score (%)/Other Modules Score (%)](image3)

Figure 24. Effectiveness of Feedback for Online MCQ Tests
b) Perceptions of Class Organisation in Second Year Core Unit

Another study, which began as a diagnostic evaluation of the first run of a newly created core second year unit (Human Structure and Development ANHB2212), not only revealed that one portion of the course was not working as well as it might and needed restructuring, but a significant correlation between how students rated many aspects of the course as a whole and the perceived approachability of their tutor. Marked influences of the time of day at which the laboratory session occurred on the students’ ratings of the organisation of the course, tutors and laboratory manual were also uncovered. Students with early morning classes found the very same laboratory manuals as the midday classes praised relatively disorganised and inappropriate to their learning style. These effects were stronger than those arising from variations in the student/staff ratio or the degree of crowding of the laboratory. The issues related to the unpopular section of the course were easily addressed, but no solution has yet been found for time of day effect. This study, lead by one of our Teaching Interns, has been presented at a Teaching and Learning Forum and published in a refereed journal (Table 11 reference 14).

3.2 Research into Learning Outcomes

a) Evaluation of In-House Instructional CD

Previous evaluations by teaching interns of new tools and curriculum developments in our large first year units in particular have also lead to publications. For example, use of the ‘Primate CD’, a special teaching resource developed locally by one of the team members, was assessed as part of an intern research project, with quantitative assessments confirming its value in terms of student learning outcomes. In its inaugural year, 63% of students surveyed used the CD at least once and 96% of these students recommended it be used by future first year students (Table 11 Reference 1). Furthermore, use of the CD improved student marks for the short answer primate biology questions by 15%, and there was a significant correlation between the number of features used on the Primate CD and student performance.

b) Evaluation of Online MCQ Tests

The online quiz system was evaluated as part of another intern project and this revealed that almost all respondents (95%) would recommend the practice quizzes and graded tests for future students in the unit (Table 11 Reference 2). Average online test grades increased significantly the more practice quizzes were attempted. More importantly, overall semester-one performance was positively associated with the use of the online practice quizzes.

c) Evaluation of Feedback for Online MCQ Tests

This is described in the previous section and more fully in Reference 10, (Table 11). Not only was the system very popular with students, but could also be shown to enhance subsequent test performance specifically in areas related to the feedback-enhanced questions.
Table 11. Publications Arising from Teaching Research in the period 2002-2007

<table>
<thead>
<tr>
<th>No.</th>
<th>Author(s)</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Gemitti, F</td>
<td>“Did human biology students use, recommend and benefit from computer-based assessment?” Research and Development in Higher Education 26, 231-249.</td>
</tr>
<tr>
<td>7</td>
<td>Ziman, M; Meyer, J; Plastow, K; Fyfe, G; Fyfe, S</td>
<td>“Increased Participation by University Students in External Paid Employment Fuels the Need for Flexibility in Online Delivery” 5th International Conference on Researching Work and Learning, December 2007, Cape Town, South Africa</td>
</tr>
<tr>
<td>8</td>
<td>Meyer, J; Fyfe, S; Fyfe, G; Ziman, M; Plastow, K; Sanders, K &amp; Hill, J</td>
<td>“An articulated approach to the development and evaluation of automated feedback for online MCQ quizzes in Human Biology” National Uniserve Conference, The University of Sydney, September 2007</td>
</tr>
<tr>
<td>9</td>
<td>Plastow, K; Meyer, J; Fyfe, G; Fyfe, S &amp; Ziman, M</td>
<td>“Expectation, feedback and performance amongst students speaking languages other than English in first year human biology units in Western Australia” Australian International Education Conference, Melbourne, October 2007</td>
</tr>
<tr>
<td>11</td>
<td>Fyfe, G; Fyfe, S; Meyer, J; Plastow, K; Ziman, M; Sanders, K &amp; Hill, J</td>
<td>“Does online reflective practice enrich assessment feedback to undergraduate students?” (In Preparation for HERDS)</td>
</tr>
<tr>
<td>12</td>
<td>Sanders, K; Hill, J; Meyer, J; Fyfe, G; Fyfe, S; Ziman, M &amp; Koehler, N</td>
<td>“Gender and reaction to automated online test feedback in first year human biology” (In Preparation for ASCILITE Annual Conference, December 2007, Nanyang Technical University, Singapore)</td>
</tr>
</tbody>
</table>
3.3 Systematic Mentoring in the School

a) Mentoring of junior staff by senior staff

Our integrative, team-teaching approach to first year Science has, as its centrepiece, a compulsory weekly tutor meeting (for which part-time tutors are paid). Almost half the tutors are members of academic staff, most of whom lecture in the unit, while the remainder are postgraduate research students. At the weekly meeting academic staff clarify the current lecture focus, provide tutors with guidance on how best to present the associated laboratory/tutorial material and ensure a robust discussion of the material in an holistic context. The presence of all lecturers (not just those currently lecturing), all tutors and the unit technician maintains the integrated presentation of material. This forum also provides an opportunity for tutors currently undertaking professional development training via Teaching Internships to share new insights with the rest of the group. We entrust our tutors with considerable responsibility, and we provide them with abundant support; new lecturers and tutors clearly appreciate this approach.

"As a new tutor to Human Biology I was warmly welcomed onto the teaching team where I felt my knowledge, skills and past experience were highly valued. In preparation for my tutorials I was amply supplied with all relevant texts, reference material, lecture notes, tutorial guides and marking keys."

[Fiona O'Shea, Tutor, 2006]

"I found weekly tutors’ meetings, along with notes about these meetings, beneficial in clarifying any issues that I was previously unsure of. Furthermore, the unit’s enthusiastic coordinators always welcomed ideas on improving the unit in subsequent years."

[Nicole Koehler, Postgraduate Tutor, 2006]

b) Individual mentoring

The School has developed a relationship with the Premedicine Program at The School of Indigenous Studies which includes providing access to the Len Freedman Resource room and its contents, lending teaching aids, recommending casual tutors and participating in the lecture program for students about to enter first year studies in Medicine, Dentistry or Health Science. Premedical and Health Science programs at the centre are largely taught by Mr Kurtis Leslie, who is under the mentorship of Dr J Meyer from this School. Mr Leslie and Dr Meyer meet once a week and exchange ’phone calls and emails. The mentorship has been formally acknowledged by the School of Indigenous Studies.

c) Mentoring of students by staff

Systematic development of teaching skills in postgraduate research students. The School of Anatomy and Human Biology has been an active and enthusiastic participant in the Carrick Award winning UWA Teaching Internship Scheme since its inception in 1999. We are the only School to have successfully secured at least one internship every year from that time until 2007 and have supervised a larger number of individuals to completion of their internships than any other organisational unit (Table 12). Under this scheme postgraduate students undertake a pre-approved program of teaching which includes a limited amount of higher order tasks (eg original lecture development) as well as the sort of tutoring and demonstrating which is normally the lot of postgrads. They are
# Table 12

**LIST OF INTERNSHIPS BY SCHOOL / DISCIPLINE GROUP**

<table>
<thead>
<tr>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
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<tr>
<td>22 applications were received from 10 departments. 14 internships were offered to the following departments:</td>
<td>22 applications were received from 15 departments. 12 internships were offered to the following departments:</td>
<td>16 applications were received from 10 schools/10 discipline groups. 11 internships were offered to the following schools (discipline groups):</td>
<td>21 applications were received from 10 schools across 7 faculties. 12 internships were offered to the following schools (discipline groups):</td>
<td>24 applications were received from 17 schools. 24 internships were offered to the following schools (discipline groups):</td>
<td>43 applications were received from 17 schools. 26 internships were offered to the following schools (discipline groups):</td>
<td></td>
</tr>
</tbody>
</table>

- Anatomy and Human Biology (x2)
- Chemistry (x2) (b)
- English
- Environmental Engineering (CWR)
- Health Studies
- Geology and Geophysics
- History (x2)
- Human Movement and Exercise Science
- Political Science
- Public Health (x2)
- Physics (x2)
- Soil Science and Plant Nutrition

- Anatomy & Human Biology (x2)
- Environmental Management
- Earth and Geographical Sciences
- Education
- Human Movement and Exercise Science (x2)
- Liberal Arts
- Mathematics and Statistics
- Plant Sciences
- Public Health

- Anatomy & Human Biology
- Agricultural and Resource Economics
- Architecture, Landscape & Visual Arts
- Computer Science & Software Engineering
- Earth and Geographical Sciences
- Education
- Environmental Science
- Human Movement and Exercise Science (x2)
- Humanities (x2)
- Physics
- Social & Cultural Studies (English and Social Work) (x2)

- Anatomy & Human Biology
- Animal Biology
- Civil and Environmental Engineering
- Computer Science & Software Engineering (x2)
- Earth & Geographical Sciences
- Human Movement & Exercise Science
- Humanities (History x4) (Classics & Ancient History x1)
- Law
- Mechanical Engineering
- Plant Biology
- Social & Cultural Studies (Archaeology x1) (English, Classics & Ancient History x1) (Social Work & Soc. Policy x1)
- Social & Cultural Studies (Asian Studies)
- Water Research

- Anatomy & Human Biology (x2)
- Biomedical, Biomolecular & Chemical Sciences (x3)
- Civil & Resource Engineering
- Human Movement & Exercise Sciences
- Humanities (History x4) (Classics & Ancient History x1)
- Law
- Mechanical Engineering
- Plant Biology
- Social & Cultural Studies (Anthropology x1) (English, Classics & Ancient History x1) (Social Work & Soc. Policy x1)
- Social & Cultural Studies (Asian Studies x1)

(a) Letter withdrawn for program (b) One letter did not complete

Updated 1 March 2007

Plus 1 internship was offered which has been referred to 2008
supported in these endeavors through the same professional development as is offered to new staff and by a nominated mentor within the School. This mentor provides casual guidance and discussion to the intern, as well as easing their way through organisational difficulties and ensuring their attendance where appropriate on School Boards and committees dealing with teaching and learning. They are also responsible for arranging curriculum development opportunities for the intern and for supervision of a teaching related research project. The students involved receive formal certification upon completion of their internships. The School has obtained the agreement of Organisational and Staff Development Services for placing up to two additional postgraduate tutors in each professional development course. This has been used to accommodate keen but unsuccessful candidates for internships. It has also provided an opportunity for turning some less than optimal tutors into valuable resources, rather than discarding them or focusing unduly upon their deficiencies.

### 3.4 Development of Inclusive Curricula

The diversity of the human experience is the meat of our subject. It is no great difficulty to be open to differences in life experience and educational aspirations and styles, for they provide the raw material for helping our students to understand the peculiarities and generalities of their own experiences and for recognizing the same underlying phenomena in different guises. It has been a matter of recurrent but undiminishing satisfaction in Biological Anthropology when discussing the nature and attitudes of migrants compared with indigenes to witness the moment when students from Sarawak, Croatia and Poland all suddenly burst out with claims of identically impossible attitudes amongst their parents concerning home cultures and the obligations of their offspring.

While it is easy to determine and cater on an individual basis for the diversity within a relative small (30-50 student) third year unit, it is as easy to fail to recognise it amongst a first year class of 500-600. It was not until analysing the results of the demographic section of the initial questionnaire of a Carrick project aimed at developing appropriate feedback for online MCQ tests for first years that the School became quite aware of the extent of the language and cultural backgrounds represented. As has been mentioned previously, it was found that 22% of the first year class spoke at least one of 42 different languages other than English at home (14% exclusively so). The first year Human Biology unit had in large part established its reputation upon the basis of its ability to present difficult concepts simply, of seeing the unit from the point of view of the naïve student and building sequentially upon material gradually introduced. Its success in preparing students without previous background in the biological sciences for second year studies justified its reputation amongst the students. Nevertheless, more than 10% of all students in the unit listed language and terminology as their area of greatest difficulty when surveyed. Our experience in this case has made us aware of the need to actually monitor the shifting composition of our classes on a regular basis, rather than to rely upon general impressions or outdated data.

It is an element of our Assessment Policy (Appendix 8) that each unit should include a variety of types of exercises in its assessment, to cater for the different learning approaches of students, and to maximise their capacity to demonstrate their understanding of the course. The range of assessments used in science units across the School is set in Table 13. Even though it is labour intensive in the short term we have deliberately persisted with broad essay type questions, amongst other forms of assessment, even in our very large first year units. The skills of integrating elements of a course and applying concepts to novel situations must be developed gradually from the beginning of a course. Feedback and encouragement are the most valuable aids we have to offer students in making this journey of understanding successfully – in growing up academically, and marking guidelines for tutors.
stress that this is as much a learning as an evaluation exercise and the need to provide as much and as informative feedback as is possible.

Two postgraduate students, Maria Grade Godinho and Susan Clifford, and A/Prof Bruce have, with the support of an Equity and Diversity Initiative Grant, successfully set up a series of “Diversity at University” lunchtime seminars which bring together students and staff of different cultural backgrounds to share experiences, support, conversation and food.

3.5 Development of Literacy

a) Expectations

It is our expectation that our graduates should have developed the ability to structure their listening and reading so as to discriminate core ideas from illustrative information, to synthesise information from a diversity of sources to develop a personal framework of ideas, and to critically evaluate new input in the light of this framework.

We expect that they will have developed the ability to express themselves clearly in the idiom appropriate to the task at hand.

In the case of written work for which there has been preparation time we expect the use of Standard English sentence structure and spelling to the level provided by common spellcheckers. We aim for the development of some feeling for the basic elements of English grammar, such as agreement of tense and number, but cannot honestly say that we expect it.

Simple clarity of expression, by whatever means, including the use of well-labelled diagrams, tables and point-form summaries, is expected of written work produced under examination conditions.

By the time they graduate our students are expected to be able to give clear, well-timed and interesting verbal presentations. They are, therefore, expected to be able to recognise and use the appropriate conversational modes of address which engage an audience, and to be competent in the use of modern electronic means of audiovisual presentation.

Whatever the context, we expect our graduates to be able to construct a focussed and coherent argument or, at the least, a sensible line of reasoning unobscured by irrelevant content.

We expect our students to be able to use the conventions of scientific writing, including the formulation of hypotheses, detailing of methodology, presentation and discussion of results and referencing.
### Table 13. Distribution of types of assessment across science units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Continuous Assessment</th>
<th>Theory Examination</th>
<th>Practical Examination</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANHB1101 Human Biology 1</td>
<td>25%</td>
<td>40% (2hrs)</td>
<td>35% (1hr)</td>
</tr>
<tr>
<td>ANHB1102 Human Biology 2</td>
<td>25%</td>
<td>40% (2hrs)</td>
<td>35% (1hr)</td>
</tr>
<tr>
<td>ANHB2212 Human Structure &amp; Development</td>
<td>20%</td>
<td>50% (3hrs)</td>
<td>30% (2 hrs)</td>
</tr>
<tr>
<td>ANHB2213 Human Functional Anatomy</td>
<td>10%</td>
<td>50%</td>
<td>40%</td>
</tr>
<tr>
<td>ANHB2214 Human Organs &amp; Systems</td>
<td>Three hour examination confirming weekly, continuous assessment packages/ learning outcomes have been completed Section A 30%, Section B 30%, Section C 40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANHB2215 Biological Anthropology 215</td>
<td>15% (Five bi-weekly readings)</td>
<td>60%</td>
<td>25% Final Essay</td>
</tr>
<tr>
<td>ANHB2216 Human Reproductive Biology</td>
<td>6% Seminar present 8% assignment</td>
<td>50%</td>
<td>30%</td>
</tr>
<tr>
<td>ANHB2217 Human Neurobiology 217</td>
<td>5%</td>
<td>60%</td>
<td>35%</td>
</tr>
<tr>
<td>ANTH2221 Sex &amp; Aggression I</td>
<td>20% Tutorial participation 40% In-class mid-term examination</td>
<td>40% Final essay</td>
<td>Nil</td>
</tr>
<tr>
<td>ANHB3304 Human Functional Morphology</td>
<td>15% Human dissect 10% Mystery bone 15% Res. project</td>
<td>35%</td>
<td>15% Lab test</td>
</tr>
<tr>
<td>Course Code</td>
<td>Course Name</td>
<td>Weightage Breakdown</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>ANHB3308</td>
<td>Developmental Biology</td>
<td>36% Oral exams, 4% Research task</td>
<td></td>
</tr>
<tr>
<td>ANHB3311</td>
<td>Biological Anthropology</td>
<td>15% Inclass project, 5% Exercises, 5% Reports, present, 20% Major essay</td>
<td></td>
</tr>
<tr>
<td>ANHB3313</td>
<td>Cell &amp; Tissue Organisation</td>
<td>3% Essay, 6% Journal Club, 20% Project/present, 3% Workbook/Reflective Journal</td>
<td></td>
</tr>
<tr>
<td>ANHB3315</td>
<td></td>
<td>20% Tutorial participation, 35% Mid-term theory exam with essays &amp; short-answer questions</td>
<td></td>
</tr>
<tr>
<td>ANHB3316</td>
<td></td>
<td>35% Assignments, 15% Portfolio/laboratory book</td>
<td></td>
</tr>
<tr>
<td>NEUR3325</td>
<td>Advanced Neuroscience 325</td>
<td>10% Journal present, 25% Essay</td>
<td></td>
</tr>
<tr>
<td>NEUR3325</td>
<td>Advanced Neuroscience 326</td>
<td>35% Essay</td>
<td></td>
</tr>
</tbody>
</table>

School of Anatomy & Human Biology

Page 70
b) Place of Literacy in the Curriculum

Literacy is addressed at each of the levels at which we teach, though not directly in each unit, as very few of our students enrol in just one unit at any year level.

In our first year units, despite the difficulties arising from the large size of the class (approximately 500) and the relative shortage of staff, largely formative essay-writing exercises are held early in each semester. Relatively few marks are allocated to these exercises, but tutors are instructed to maximise feedback comments and corrections. Students in obvious difficulties with these exercises are referred to Student Support. Essay-style and short answer questions are also included in examinations in this unit, despite the workload generated. One lecture-demonstration is devoted to a presentation by Student Services on note taking.

Literacy is addressed directly in the two second year units prerequisite for our commonest majors. In one unit this is done by way of fortnightly tutorial papers where marks are allocated on the basis of participation, but feedback is directed to issues of presentation, expression, argument and referencing. The other requires the regular submission of laboratory books. Both units include essays and essay-style examination questions in their assessment procedures.

The two third year units which most students include in majors from this department, are also the focus of literacy development exercises at third year level. Part of each unit is devoted specifically to the development of generic scientific skills, including critical evaluation of the scientific literature, conference- and general public-style presentations, use of electronic media and the preparation of resumes and applications. Both also include several in-context group mini-projects and presentations and long essays. In one unit repeated submission and refinement of essays in the light of feedback is permitted.

Honours students undergo an orientation program which covers, amongst other topics, the preparation and presentation of theses. Honours students are also required to prepare an essay on a topic completely outside of their field of research, mainly to demonstrate to them the general applicability of the skills they have acquired.

c) Assessment of Literacy

Assessment of the effectiveness of our measures to develop literacy is confined to examination of the written work we set students. Little value could be seen in the general instrument for assessing literacy distributed by the Faculty in 1997, as it seemed to be directed more towards evaluating familiarity with formal grammatical 'rules' than the skills of effective reading and listening and clear expression in which we are primarily interested.

3.6 Quality of staff

Recognition of the excellence of the quality of the teaching of staff in the School is seen in the number of prizes and awards which they have received in the last seven years. Several staff have received individual teaching awards. For example, Professor John McGeachie received a 2007 national Carrick Citation for Outstanding Contributions to Student Learning and Professor Paul McMenamin received UWA Excellence in Teaching Awards in 2002 and 2005, a commendation in 2004 and a nomination for a Carrick Award. First Year Human Biology was nominated for AUTC/Carrick/ALTC awards in 2003, 2004, 2006 and 2008 for team teaching to large first year classes (Table 14).

Staff are encouraged to maintain this level of excellence and to refresh their approach to teaching by attendance at staff development workshops. Acknowledgement of the quality of teaching in the
School has also come from invitations to address staff development sessions and to present staff development workshops. Dr J Meyer, amongst others has addressed the Foundations of Teaching and Learning group for the past five years on “The Essence of a Good Lecture”, and the first year Human Biology team was invited to present a staff development workshop on “Effective Team Teaching”.

We have a steady stream of international visitors who contribute to the quality of our teaching programs. Recent international scholars who have made substantial contributions to teaching include Professor John Campbell (UCLA, Histology), Professor Brian Hall (Dalhousie University, Evolutionary Developmental Biology), Professor Rebecca German (Johns Hopkins, Human Biology and Development) and the whole group of developmental biologists visiting for presentation of the course each summer (see Appendix 4).

A number of staff have produced textbooks, chapters in textbooks or online equivalents including

- A/Professor Geoffrey Meyer who has produced commercial software for use in histology teaching.
- Professor Paul McMenamin who has co-authored a popular text book on the eye.
- A/Professor Nick Milne who has developed an innovative peer-teaching program for human morphology.
- Professor Jim Chisholm who has written a text on evolutionary biology entitled “Death, Hope and Sex: Steps to an Evolutionary Ecology of Mind and Morality”

### 3.7 Activity in Professional Teaching Associations

The School has a long history of involvement in professional associations with a role in teaching and learning. It has provided a university representative to the Board of Examiners and/or curriculum committee for the secondary school subject Human Biology since its inception, the person currently serving in this capacity being Dr Judge. Dr J Meyer was for 6 years on the judging panel for the Guild Excellence in Teaching and Learning Awards and A/Prof G Meyer on the selection panels for Carrick awards for Excellence in Learning and Teaching.
<table>
<thead>
<tr>
<th>YEAR</th>
<th>RECIPIENT</th>
<th>PRIZE / AWARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>Geoff Meyer</td>
<td>Joint Winner AAUT Award for University Teaching (Flexible Delivery/Learning)</td>
</tr>
<tr>
<td>2000</td>
<td>Hans Arkeveld</td>
<td>Chancellor’s Medal</td>
</tr>
<tr>
<td>2000</td>
<td>Charles Oxnard</td>
<td>Leverhulme Award: for lectures to general public, post-graduate teaching, and research stimulation of graduate students and post-docs</td>
</tr>
<tr>
<td>2001</td>
<td>Charles Oxnard</td>
<td>Darwin Award for Lifetime Achievement in Physical Anthropology, USA.</td>
</tr>
<tr>
<td>2002</td>
<td>Paul McMenamin</td>
<td>Faculty Excellence in Teaching Award</td>
</tr>
<tr>
<td>2003</td>
<td>Len Freedman</td>
<td>Chancellor’s Medal</td>
</tr>
<tr>
<td>2003</td>
<td>John McGeachie</td>
<td>Faculty Excellence in Teaching Award</td>
</tr>
<tr>
<td>2003</td>
<td>Kathy Sanders</td>
<td>Member of finalist team Australian Awards for University Teaching (Innovative and Practical Approach to Teaching Large 1st year Units)</td>
</tr>
<tr>
<td>2003</td>
<td>Kathy Sanders</td>
<td>High Commendation Excellence in Teaching (Honours Research Supervision) UWA</td>
</tr>
<tr>
<td>2003</td>
<td>School</td>
<td>Finalist AAUT Innovative and practical approach to team teaching in large, first year classes</td>
</tr>
<tr>
<td>2004</td>
<td>Kathy Sanders</td>
<td>High Commendation Excellence in Teaching (Honours Research Supervision) UWA</td>
</tr>
<tr>
<td>2004</td>
<td>Kathy Sanders</td>
<td>Member of finalist team Australian Awards for University Teaching (Innovative and Practical Approach to Teaching Large 1st year Units)</td>
</tr>
<tr>
<td>2004</td>
<td>School</td>
<td>Finalist AAUT Teaching Large First Year Classes</td>
</tr>
<tr>
<td>2005</td>
<td>John McGeachie</td>
<td>Winner UWA Excellence in Teaching Award</td>
</tr>
<tr>
<td>2005</td>
<td>John McGeachie</td>
<td>Appointed Fellow of the International College of Dentists (FICD) for outstanding academic leadership and professionalism</td>
</tr>
<tr>
<td>2005</td>
<td>Paul McMenamin</td>
<td>Winner UWA Excellent Unit Award</td>
</tr>
<tr>
<td>2005</td>
<td>School</td>
<td>Requested by University to enter a submission in AAUT again (declined)</td>
</tr>
<tr>
<td>2005-2007</td>
<td>Jan Meyer</td>
<td>Carrick Higher Education Project Grant (Assessment: Biological Sciences)</td>
</tr>
<tr>
<td>2006</td>
<td>John McGeachie</td>
<td>Carrick Award Nominee Teaching Excellence</td>
</tr>
<tr>
<td>2006</td>
<td>John McGeachie</td>
<td>Order of Australia Medal (service to dentistry)</td>
</tr>
<tr>
<td>2006</td>
<td>Geoff Meyer</td>
<td>University Teaching Fellowship</td>
</tr>
<tr>
<td>2006</td>
<td>Paul McMenamin</td>
<td>Carrick Award Nominee Teaching Excellence</td>
</tr>
<tr>
<td>2007</td>
<td>Paul McMenamin</td>
<td>FMDHB Aweard for Outstanding Contributions to Student Learning</td>
</tr>
<tr>
<td>2006</td>
<td>Brendan Waddell</td>
<td>Carrick Award Nominee Teaching Excellence Team Teaching</td>
</tr>
<tr>
<td>2007</td>
<td>John McGeachie</td>
<td>Carrick Citation Winner</td>
</tr>
<tr>
<td>2007</td>
<td>Paul McMenamin</td>
<td>Premier’s Science Award for Excellence in Science Teaching: Tertiary</td>
</tr>
<tr>
<td>2007</td>
<td>Charles Oxnard</td>
<td>Nominee for UWA Chancellor's Medal</td>
</tr>
<tr>
<td>2007</td>
<td>School</td>
<td>Nominated by Faculty for Carrick Teaching Award</td>
</tr>
<tr>
<td>2007</td>
<td>SymbioticA</td>
<td>Golden Nica Award</td>
</tr>
<tr>
<td>2007</td>
<td>Kathy Sanders, Julie Hill, Wendy Colangelo</td>
<td>UWA Award for Excellence in Teaching (Team/ Program)</td>
</tr>
<tr>
<td>2008</td>
<td>Miranda Grounds</td>
<td>Nominated for FLPS Award for Excellence in Coursework Teaching</td>
</tr>
<tr>
<td>Year</td>
<td>Name</td>
<td>Award Description</td>
</tr>
<tr>
<td>------</td>
<td>-----------------</td>
<td>-----------------------------------------------------------</td>
</tr>
<tr>
<td>2008</td>
<td>Avinash Bharadwaj</td>
<td>Nominated for FLPS Award for Excellence in First Year Teaching</td>
</tr>
<tr>
<td>2008</td>
<td>Alan Harvey</td>
<td>Nominated for FLPS Award for Excellence in Research Supervision</td>
</tr>
<tr>
<td>2008</td>
<td>John McGeachie</td>
<td>Nominated for Award for Individual Teaching with FMDHS (UWA Employee)</td>
</tr>
</tbody>
</table>
Appendix 1  Details of Units
(descriptions from Handbooks)
Units for Anatomy and Human Biology - Life and Physical Sciences

Level 1
ANHB1101  Human Biology I: Becoming Human
Unit Co-ordinator(s): Julie Hill and Dr Kathy Sanders
This unit explores the biology of 'becoming human' in an integrative way, with emphasis on human evolution, genetics, development and structure. How we 'become human' is explored from the perspective of both the individual and the species, with topics encompassing the structure and function of the human body at the level of molecules, cells and tissues, our reproduction, growth and development, all considered within the context of evolution. The latter involves understanding evolutionary principles, human genetics including the structure and function of genes, inheritance patterns in families and the causes of genetic disease, cell replication, human behaviour including social aspects of human sexuality and reproduction, use of reproductive technology, and aspects of human evolutionary history including links with other living primates.
http://www.lab.anhb.uwa.edu.au/ANHB1101/

ANHB1102  Human Biology II: Being Human
Unit Co-ordinator(s): Julie Hill and Dr Kathy Sanders
This unit explores the biology of 'being human' in today's world with an emphasis on how humans interact with the environment and with each other. Topics include the structure and function of human body systems, including the role of the endocrine and nervous systems in maintaining homeostasis, and their implications for emergency care. Nutrition is considered within the context of growth and ageing across the human life cycle. Human population genetics and ecology (the interactions between humans and their environment) are presented with emphasis on the impact of our genes and lifestyle on disease, the differences between human groups and the fallacy of human 'races', how the environment and evolution have shaped our appearance and genes, and the role of genes in determining human behaviour.
http://www.lab.anhb.uwa.edu.au/ANHB1102/

Level 2
ANHB2212  Human Structure and Development
Unit Co-ordinator(s): Dr Avinash Bharadwaj
In histology the study begins with a focus on the mammalian cell and histological patterns and continues through the primary tissues of the body—epithelium, connective tissue including skeletal tissues, muscle and nervous tissue. The histological basis of the body’s defence system is also explored. While histological organisation of the organs and systems is part of a semester two unit devoted to histology, this unit studies functional integration of the primary tissues. An outline of histological techniques is introduced, but details of these methods are relevant only to basic interpretation of histological material.
Gross anatomy and embryology begin with early development. The anatomy of the vertebral column and the body wall follow. The systemic and regional anatomy of the thorax, abdomen and the pelvis come next, with the development of the relevant systems. The anatomy component concludes with an overview of joints and the anatomical plan of the limbs. Conventional X-ray, CT and MRI imaging of the regions under study is introduced in this unit as an adjunct. The link between functional anatomy and real-life situations makes the study of human structure interesting.
The anatomy and histology components are woven together to make each topic a functional module, with developmental and evolutionary spotlights.

http://www.lab.anhb.uwa.edu.au/ANHB2212/

**ANHB2213 Human Functional Anatomy**

**Unit Co-ordinator(s):** Associate Professor Nick Milne

This unit offers a regional study of the entire upper and lower limbs, describing joints and joint movements, muscle groups and patterns of innervation. It draws attention to specialised functions of the limbs such as hand mechanisms and locomotion. Topics of interest like nerve injuries relate the basic structure to altered function. This is followed by the study of the anatomical organisation of the head and neck. In addition to the topographic organisation of this region, attention is paid to functional areas like speech and swallowing along with embryonic development and its correlation.

http://www.lab.anhb.uwa.edu.au/ANHB2213/

**ANHB2214 Human Organs and Systems**

**Unit Co-ordinator(s):** Associate Professor Geoff Meyer

Lecture topics are as follows: cardiovascular system; respiratory system; oral cavity; teeth and gingiva; alimentary canal; digestive glands; bone marrow; lymhatic and immune system; immune system 2; endocrine organs; male reproductive organs; female reproductive organs; and urinary system.

http://www.lab.anhb.uwa.edu.au/hpa/hos

**ANHB2215 Biological Anthropology: Human Adaptation and Variation**

**Unit Co-ordinator(s):** Professor Jim Chisholm

Biological anthropology is concerned with the nature of variation and the ways in which the biology and behaviour of humans are influenced by genetic, developmental, ecological and cultural factors. This unit looks at human variation in contemporary populations from the perspective of evolutionary ecology. It focuses on ecological principles as applied to human populations, the emergence of adaptations during the process of gene–environment interaction during development, and the interplay of cultural and biological factors in human behaviour. Topics covered include principles of individual and kin selection, principles of human ecology, genetic sources of variation (beyond mutation), evolution of human development, reproductive and parental investment strategies, biological approach to culture, and evolutionary and developmental perspectives on the human life cycle.

http://www.lab.anhb.uwa.edu.au/ANHB2215/

**ANHB2216 Human Reproductive Biology**

**Unit Co-ordinator(s):** Dr Kathy Sanders and Professor Arun Dharmarajan

This unit builds on Level 1 human biology to develop the structural and functional basis of human reproduction including structure and function of the reproductive organs, gametogenesis, fertilisation, early embryogenesis, foetal development and preparation for birth, maternal adaptations to pregnancy and reproductive ageing. Particular emphasis is placed on the hormonal control of reproduction. This information is then used to examine social issues including human sexuality, infertility, birth control, the cause and prevention of malformation and the impact of new techniques in reproductive biology. The unit provides students with a sound understanding of human reproduction in light of our evolutionary history, culture and society.

http://www.lab.anhb.uwa.edu.au/ANHB2216/
**ANHB2217** Human Neurobiology

*Unit Co-ordinator(s):* Professor Stuart Bunt

This unit considers the development, gross anatomy and cellular organisation of the brain and spinal cord and examines the structural and functional organisation of major sensory and motor pathways. Attention is also paid to an understanding of some contemporary issues in neuroscience including neural plasticity, memory, ageing and regeneration. The evolutionary perspective is added by an introduction to comparative structure. Laboratory classes allow both self-paced and supervised examination of the human brain. Examples of the increasingly complex methods for observing and studying the human brain are introduced. Tutorials may cover generic areas of scientific debate of relevance to neuroscience such as the ethics of stem cell work, animal-based research, science funding, etc.


**VISA2214** Aesthetic Crossovers of Art and Science

*Unit Co-ordinator(s):* Oron Catts

Students learn to understand, through the use of the technologies of the life sciences, ways for exploring practically and theoretically methods and ideas concerned with the crossovers between the fields/cultures of art and science (particularly the life sciences).


**VISA2249** Art and Life Manipulation

*Unit Co-ordinator(s):* Oron Catts

This unit introduces the basic practical and theoretical working methodologies for the construction of works of art that include living elements. Topics include basic methods of tissue engineering, tissue culture, DNA isolation, breeding principles, and drawing with fungi/micro-organisms. The ethical and aesthetic issues of bio-art are also discussed.


**Level 3**

**ANHB3304** Human Functional Morphology

*Unit Co-ordinator(s):* Associate Professor Nick Milne

This unit explores human functional anatomy in relation to biomechanics and the constraints and opportunities provided by the human vertebrate heritage. To reinforce and consolidate the general understanding of human topography, students are involved in the ANHB2213 Human Functional Anatomy laboratories. To extend and deepen understanding of human morphology, students dissect parts of the human body and undertake a spinal anatomy component that covers an area of the body not covered in Level 2 units, and that helps to integrate the understanding of other regions. The flexible structure of the unit allows for reading, tutorials and practical project work in areas of particular interest to individuals or small groups of students. Some flexibility of scheduling is also possible, with the consultation and consent of the unit co-ordinator.


**ANHB3308** Developmental Biology

*Unit Co-ordinator(s):* Professor Miranda Grounds

This unit is held over six weeks each January/February. It is run in conjunction with Professors Rupert Hallmann and Lydia Sorokin from Lund, Sweden.
This unit offers an advanced intensive course in understanding the molecular mechanisms of developmental biology. The lectures, seminar/tutorials and laboratory classes cover the cellular, molecular and genetic control of the development of complex multicellular organisms. The main themes are the molecular basis of axis development and pattern formation (cell differentiation and morphogenesis), and organogenesis. Examples from Drosophila, Xenopus and mouse are used to present the basic concepts. The unit includes a conference on molecular mechanisms of development with international and interstate participants.

http://www.lab.anhb.uwa.edu.au/ANHB3308/

**ANHB3311 Biological Anthropology**

*Unit Co-ordinator(s): Dr Jan Meyer*

This unit is concerned with the nature, development and causes of human variation from an evolutionary perspective, developing many of the integrative themes of Level 2 human biology. It encompasses human structure and development, population biology, ecology and genetics.

Topics covered include the further study of growth and development; the population biology of human disease; secular trends and the impact of modernisation; population variation and affinities and sex differences, social organisation and other life history traits as mediating factors between environment and individual. A series of laboratory sessions focuses on the measurement of human anthropometric and genetic variation and the use of these techniques in the study of human population biology. A special area of focus each year serves as a model for integration of the various elements of the unit. Over the past several years this area has included the study of disease, food and sleep with contributions from experts such as forensic anthropologists, forensic dentists, sleep pathologists and anatomists.

Students are encouraged to develop their own individual areas of particular interest within the unit.

http://www.lab.anhb.uwa.edu.au/

**ANHB3313 Cell and Tissue Organisation**

*Unit Co-ordinator(s): Professor Miranda Grounds*

This unit offers an advanced course in investigating the organisation of human cells and tissues. The lectures, seminars/tutorials and laboratory classes cover the sophisticated cellular interactions and molecular events that lead to the following: (1) tissue formation during embryogenesis; (2) growth; (3) homeostasis of normal adult tissues; (4) repair in response to damage; (5) disease; (6) ageing; and (7) tissue engineering. The theory, practice and applications of methods of tissue preparation, cell culture, immunocytochemistry, autoradiography, confocal and electron microscopy, *in situ* hybridisation and image analysis are emphasised. Using these techniques, students carry out their own projects to investigate the organisation of a specific tissue or organ and present the results by way of a report and a seminar.

http://www.lab.anhb.uwa.edu.au/

**ANHB3315 Human Evolutionary Ecology**

*Unit Co-ordinator(s): Professor James Chisholm*

This unit is an extension of **ANHB2215 Biological Anthropology: Human Adaptation and Variation** (formerly **ANHB2215 Biological Anthropology II/910.215 Biological Anthropology 215/910.205 Biological Anthropology 205**). Emphasis is placed on human reproductive biology and ecology in relation to growth, development, behaviour and evolution. Particular attention is paid to using principles of life history theory, parental investment theory, and parent–offspring conflict theory for developing new perspectives in public health and social policy.

http://www.lab.anhb.uwa.edu.au/hb315/
**ANHB3316** Human Reproduction  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce  
This unit is an extension of ANHB2216 Human Reproductive Biology. Emphasis is placed on integrating molecular, cellular, structural and functional aspects of reproduction to address contemporary problems. For example, the molecular basis of hormone secretion, action and metabolism is dealt with as a basis for considering determinants of reproductive success for the individual. This information is integrated in relation to social, ethical and ecological pressures that influence issues such as patterns of human fertility. These pressures include nutritional status, general well-being and the effects of new technologies. Laboratory sessions cover topics ranging from experimental methods in molecular endocrinology to assisted reproductive technology.

**NEUR3325/ NEUR3326** Advanced Neuroscience (with Physiology)  
*Unit Co-ordinator(s):* Professor Donald Robertson and Professor Alan Harvey  
This interdisciplinary unit considers many of the important and emerging ideas of modern cellular and systems neuroscience. The unit comprises advanced lectures taught jointly by Physiology (School of Biomedical, Biomolecular and Chemical Sciences) and the School of Anatomy and Human Biology.

**Honours**  
**ANHB7401 & ANHB7405** Honours Assignment Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce and Professor Arunasalam Dharmarajan (Dharma)  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2.  
The unit teaches candidates how to address broad scientific areas and social concerns in anatomy or human biology in a rigorous scientific manner. Candidates are set a topic to research. They formulate a plan to address the topic, search for relevant literature and established data and present a written report of their findings, interpretations and conclusions.

**ANHB7402 & ANHB7407** Honours Seminar and Thesis Defence Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce and Professor Arunasalam Dharmarajan (Dharma)  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2.  
The unit teaches candidates to present a seminar to standards expected at a national scientific conference, engage in rigorous and critical discussion of the work presented and defend their findings in an oral examination.

**ANHB7409 & ANHB7403** Honours Research Dissertation Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce and Professor Arunasalam Dharmarajan (Dharma)  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2.  
Candidates carry out original research by conducting a guided research project. The project includes a critical review of literature, formulation of hypotheses or experimental objectives, selection and use of appropriate methods, execution of the project, analysis and interpretation of results and completion of a written thesis incorporating all aspects of the work.
Postgraduate Diploma

**ANHB8404** Investigative Techniques: Data Acquisition and Analysis
*Unit Co-ordinator(s):* Associate Professor Neville Bruce

This unit teaches students how to acquire and record experimental data and how to statistically analyse data in view of the original hypotheses or objectives of the experiment. Particular emphasis is placed on techniques applicable to anatomical sciences and human biology. The unit develops a good understanding of the basic principles and practice of analysing and interpreting biological variation through discussions on underlying theories and practical application.

**ANHB8405** Investigative Techniques: Experimental Design and Bioethics
*Unit Co-ordinator(s):* Associate Professor Neville Bruce

This unit teaches students about the principles and practice of experimental design, including the initial setting up of hypotheses or objectives, and the formulation of statistically valid and appropriate tests. It also examines the principles and practice of bioethics as applied to experimentation in anatomical sciences and human biology.

**ANHB8414 & ANHB8415** Human Variation and Adaptation Parts 1 & 2
*Unit Co-ordinator(s):* Associate Professor Neville Bruce

This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. This unit explores various facets of human variation and adaptation both from an evolutionary viewpoint and as an index of individual and population health and well-being.

**ANHB8416 & ANHB8417** Human Morphology: Form and Function Parts 1 & 2
*Unit Co-ordinator(s):* Associate Professor Neville Bruce

This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. The unit deepens the student's understanding and knowledge of gross anatomy and the relationship of structure and function through theory and practice. It can be modified to suit each student's background and interests. They may monitor parts or all of appropriate undergraduate units and carry out dissections or small anatomical projects. Students are also exposed to the various experimental approaches to human anatomy conducted in the School of Anatomy and Human Biology.

**ANHB8418 & ANHB8419** Cells and Tissues: Form and Function Parts 1 & 2
*Unit Co-ordinator(s):* Associate Professor Neville Bruce

This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. The unit extends and deepens the student's understanding of the biology of cells and tissues at both a theoretical and practical level. The unit can be modified to suit each student's background and interests. Students may monitor parts or all of appropriate undergraduate units and undertake small projects and assignments. Students are also exposed to experimental approaches to cell and molecular biology conducted in the School.

**ANHB8420 & ANHB8421** Morphometric Techniques and Analysis Parts 1 & 2
*Unit Co-ordinator(s):* Associate Professor Neville Bruce

This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. Recent advances in morphometric techniques have stimulated important new studies into human structure and function at the whole body to
cellular level. The unit examines the theory and practice of state-of-the-art morphometric technology. Students carry out small morphometric projects and monitor some of the research studies conducted in the School.

**ANHB8422 & ANHB8423** Human Ecology and Reproduction Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. The unit explores contemporary issues in human reproduction and their social and ecological consequences. Students investigate theoretical and practical aspects of problems ranging from birth control and infertility through to the population explosion and its social and ecological consequences.

**ANHB8424 & ANHB8425** Human Biology: Field and Laboratory Studies Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. It provides students with a sound theoretical and practical understanding of a range of experimental techniques commonly used in human biological studies. Techniques range from field surveys and anthropometry through to laboratory analysis of hormones and other biomarkers. Students have the opportunity to use some of these techniques in experimental projects.

**ANHB8426 & ANHB8427** Research Project Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. Students learn about the principles and practice of small research experiments by conducting a guided project of their own. They search for and interpret literature, construct experimental hypotheses or objectives, develop and understand appropriate methodologies, plan and execute experiments, analyse and interpret findings and prepare a report on their work.

**ANHB8428 & ANHB8429** Anatomy and Human Biology Dissertation Parts 1 & 2  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce  
This unit is taken over two successive semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. Students can commence the unit in either semester 1 or semester 2. Students learn about the principles and practice of research by conducting an experiment of their own. They search for and interpret literature, construct experimental hypotheses or objectives, develop and understand appropriate methodologies, plan and execute experiments, analyse and interpret findings and prepare a scientific thesis based on their work.

**Masters by Coursework**

**ANHB8501** Changing Concepts in Anatomy and Human Biology  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce  
Knowledge and concepts in anatomy and human biology are rapidly advancing and expanding. In this unit, areas are selected in consultation with individual students in which advances have been particularly rapid or important, or where the students wish to upgrade their knowledge and develop investigative skills. Lectures and seminars assume a basic grounding. Collateral reading may be required in the topics being updated.

**ANHB8502** Advanced Topics in Anatomy and Human Biology  
*Unit Co-ordinator(s):* Associate Professor Neville Bruce
This unit examines a range of new methodological advances in anatomy and human biology that have significantly enhanced our conceptual understanding of the area. For example the discipline of molecular biology has added much to the study of human evolution. Similar examples are selected to fit in with each students main area of study.

**ANHB8503  Research Methods in Anatomy and Human Biology**

*Unit Co-ordinator(s): Associate Professor Neville Bruce*

The techniques used in anatomy and human biology range from the scalpel to the electron microscope and from multivariate statistical analysis to starch gel electrophoresis, and include ethics and methods of human experimentation. Research methods for emphasis in this unit are chosen to complement those already mastered by each student participating.

**ANHB8504 Integrative Anatomical and Human Studies**

*Unit Co-ordinator(s): Associate Professor Neville Bruce*

In this unit, students are expected to examine modern anatomical and human problems at a professional level, which calls particularly on their integrative skills. A central element of anatomy and human biology is the need to integrate diverse subject disciplines. The human biologist must recognise the significance of human evolution, history, sociology and culture to human present biology and behaviour, and must develop the imagination and scientific rigour that are specially required for the difficult task of integrating these areas with conventional biological disciplines. The modern anatomist also needs to understand the evolutionary basis of structure as well as structure at different levels ranging from the whole body to the molecule, and relationships of structure to function.

**ANHB8507 Anatomy and Human Biology Dissertation**

*Unit Co-ordinator(s): Associate Professor Neville Bruce*

This dissertation unit enables a research project to be devised in consultation with students for 50 per cent of the master's degree year. The dissertation must be undertaken in conjunction with two of the four 12-point coursework units available. This combination provides students with the opportunity to prepare for progression to a higher degree research candidacy.

**ANHB8511 Advanced Art and Life Manipulation**

*Unit Co-ordinator(s): Ionat Zurr*

The basic practical and theoretical working methodologies for the construction of works of art that include living elements are introduced. The classes include basic methods of tissue engineering, tissue culture, DNA isolation, breeding principles, drawing with fungi/micro-organisms, etc. The ethical and aesthetic issues of bio-art are also discussed.

**ANHB8512 Project Unit Research**

*Unit Co-ordinator(s): Ionat Zurr*

This unit provides students with access to laboratories and expert personal supervision relevant to their field of research. The unit also provides them with regular contact with their supervisor for assistance in writing their research proposal.

**ANHB8513 Major Project and Dissertation**

*Unit Co-ordinator(s): Ionat Zurr*

This unit provides students with access to laboratories for the accomplishment of their final project. It also provides them with regular contact with their supervisor for assistance in writing their final dissertation.
ANHB9505  Anatomy and Human Biology Thesis (full-time)

Unit Co-ordinator(s): Associate Professor Neville Bruce

This dissertation unit enables a research project to be devised in consultation with students for 75 per cent of the master's degree year, providing students with the opportunity to prepare for progression to a higher degree research candidacy. The dissertation must be undertaken in conjunction with one of the four 12-point coursework units available.

Units for Medicine, Dentistry & Podiatry

Level 1

IMED1100  Normal Systems

Unit Co-ordinator(s): Professor Stuart Bunt

This is an integrated unit delivered in second semester. It consists of two modules dealing with the structure and function of the cardiovascular and respiratory systems respectively, and one module on general aspects of cell biochemistry and molecular biology including some aspects of the immune system. The unit is taught jointly by the Schools of Biomedical, Biomolecular and Chemical Sciences, Anatomy and Human Biology, and Physics. Although emphasis is on normal function, clinical examples are used extensively to highlight the basic mechanisms and principles of homeostasis and the relationship of structure to function. The cardiovascular and respiratory modules are delivered at the same time as closely related problem-based learning sessions in the unit IMED1112  Foundations of Clinical Practice (formerly 909.112 Foundations of Clinical Practice 112).

IMED1101  Bridging Unit with several other Schools & Departments

Unit Co-ordinator(s): Associate Professor Sally Sandover

This is a 26-week integrated unit. The social, public, psychological, clinical and scientific aspects of health and illness are studied. In this unit, students discuss a series of health scenarios. The clinical presentation is explained through an understanding of the structure and function of the body systems. Learning takes place through clinical and science laboratory sessions, tutorials, lectures and problem-based learning tutorials. The Lectopia system is available to assist in self-directed learning. In addition, students observe doctor–patient interaction in a general practice setting.

IDNT1134  Introduction to Normal Systems (Dental)

Unit Co-ordinator(s): Professor Stuart Bunt

This unit introduces students to the normal functioning of bodily systems. Although emphasis is on normal function, clinical examples are used extensively to highlight the basic mechanisms and principles of homeostasis and the relationship of structure to function. The cardiovascular and respiratory modules are delivered at the same time.

IMED1106 / IDNT1121  Foundations of Animal and Human Biology with Zoology

Unit Co-ordinator(s): Dr Brenton Knott

This unit reviews the basic structure and function of the major organ systems (skin, digestive, circulatory, respiratory, urogenital, endocrine, and somatic and autonomic divisions of the nervous system) in large vertebrates, including humans, set in the overarching context of the evolution of the vertebrates.
909.105 / 909.120 Foundations of Cell Biology 105 (with Biochemistry & Physiology until 2006)
This unit is an integrated course of lectures, tutorials, laboratory classes and self-directed learning that provides an introduction to the important principles of cell and tissue structure and function. It is taught jointly by the Schools of Anatomy and Human Biology, and Biomedical and Chemical Sciences. Topics covered are (1) an overview of the component structures of living organisms; (2) general mammalian cell structure and organelles; (3) structure of specialised cells and formation of tissues; (4) basic overview of cell chemical composition, metabolism and information transfer; (5) cell division; (6) the function of cell membranes, permeability, transport, chemical and electrical modes of cell signalling; (7) basics of defence mechanisms including antibody-antigen recognition, immunity, sensitisation, inflammation and allergic reactions; and (8) mechanisms of motility and force generation by cells.
http://www.meddent2.uwa.edu.au:8100/login.html (password access required)

800.100 Anatomy for Dental Students (2002-2003)

Unit Co-ordinator: Professor J. McGeachie
This unit provides a detailed introduction to the development and structure of normal oral and dental tissues and their function. It enables students to recognise oral health and have a scientific understanding of the development, progression and treatment of developmental and acquired oral and dental diseases.
This unit is presented within four streams throughout the course:
Oral and Dental Anatomy: Clinical anatomy of the oral cavity; a study of the primary and secondary dentitions including chronology of development, arrangement of teeth in the arches, systems of tooth numbering, normal occlusion, crown and root morphology, anatomy of pulp chambers and root canals, tooth contours in relation to periodontal health, and development of occlusion.
Oral Histology and Embryology: Embryological development of the face, oral cavity and teeth; developmental defects of clinical significance; microstructure of teeth, periodontium and oral soft tissues; tooth eruption and exfoliation; correlation of microscopic structures with radiographic features.
Oral Physiology: Salivary secretion; properties of saliva; the role of saliva in health and disease; physiology of the periodontium; the inter-relationship of tooth morphology and oral physiological function; physiology of occlusion; mastication and deglutition; mineralisation of dental tissues.
Head and Neck Anatomy: The anatomy component of this unit consists of a course of lectures, tutorials and practical dissections of the head, neck and brain designed specifically, but not exclusively, for dental students. The emphasis is on developmental, functional and applied anatomy of the above regions and is supplemented by radiological examinations. Practical applications of the anatomy relevant to clinical dentistry are emphasised. The whole anatomy course actually covers second semester in first year and first semester in second year (as an integral part of Anatomy for Dental Students 201). In first year the topics include the neck, brain, cranial cavity, basic neuro-anatomy, osteology of the skull, the nasal cavity and palate. The detailed anatomy of the face and jaws is covered in second year.

Level 2
IMED2201 / IDNT2221 / PODI2201 Normal Systems

Unit Co-ordinator(s): Dr Naomi Trengove
The unit, taught jointly by the Schools of Anatomy and Human Biology, and Biomedical, Biomolecular and Chemical Sciences, emphasises the importance of understanding the scientific basis of these systems and their relevance to clinical medicine.
This unit provides students with a sound basis for understanding the structure and function of normal gastrointestinal, renal and endocrine systems including aspects of nutrition, reproduction and fluid and
electrolyte balance. This is an umbrella unit consisting of three separate system modules: (1) Nutrition and Gastrointestinal Systems; (2) Endocrine and Reproductive Systems; and (3) Renal Structure and Function.

**IMED2202** Normal Systems  
*Unit Co-ordinator(s):* Professor Paul McMenamin  
This unit consists of three separate modules which give students a firm grounding in the structure and function of (1) the Musculoskeletal System (of the upper limb, lower limb and vertebral column), peripheral nervous system and head and neck; (2) the Central Nervous System, Behaviour and Special Senses; and (3) a module entitled Integrative Systems which provides an overview of all organ systems. The unit emphasises the importance of understanding the scientific basis of these systems and their relevance to clinical medicine.  
*Note:* Students must attend all laboratory sessions and tutorials.

**IMED2203** Bridging Unit with several other Schools & Departments  
*Unit Co-ordinator(s):* Associate Professor Sally Sandover  
This is a 26-week integrated unit. The social, public, psychological, clinical and scientific aspects of health and illness are studied. In this unit students discuss a series of health scenarios. The clinical presentation is explained through an understanding of the structure and function of the body systems. Learning takes place through clinical and science laboratory sessions, tutorials, lectures and problem-based learning tutorials. The Lectopia system is available to assist in self-directed learning. In addition, students observe doctor–patient interaction in a general practice setting.

**PODI2206** Normal Systems  
*Unit Co-ordinator(s):* Professor Paul McMenamin  
This unit consists of three separate modules which give students a firm grounding in the structure and function of those systems not covered in the Level 1 unit IMED2201 Normal Systems: (1) the musculoskeletal system (of the lower limb and vertebral column), peripheral nervous system; (2) the central nervous system, behaviour and special senses; and (3) integrative systems which provides an overview of all organ systems in physiological control mechanisms. The unit emphasises the importance of understanding the scientific basis of these systems and their relevance to clinical podiatry.

**IMED2231 & IMED 2232 Normal Systems Parts 1 & 2**  
*Unit Co-ordinator(s):* Professor Donald Robertson and Professor Paul McMenamin  
This unit is taken over two semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. The unit comprises an integrated three-hour written theory examination that tests students' understanding of the structural, biochemical and functional interrelationships of the different organ systems and how they work together as control systems to regulate important physiological variables. The examination draws on material in the preceding three semesters of Normal Systems units.

**IMED2282** Biological Anthropology: Human Adaptation and Variation  
*Unit Co-ordinator(s):* Debra Judge  
This unit examines the principles of evolutionary ecology as a basis for understanding variation in human biology and behaviour. Topics covered include principles of natural kin and sexual selection, genetics, the evolution of human development, reproductive strategies, and capacity for culture as adaptational complexes. These complexes are related to human social behaviour, especially family dynamics and health.
**IMED2283**  Surgical and Clinical Anatomy: A Regional Approach by Dissection

*Unit Co-ordinator(s):* Professor Paul McMenamin

This unit offers medical students a different perspective in their study of human clinical and surgical anatomy. The unit is a largely self-directed, self-motivated exploration and investigation of regions of human anatomy by dissection. Topics/regions explored are chosen on the basis of their relevance to a range of medical specialties, including but not limited to surgery. This unit may interest those students who wish to pursue a postgraduate career in a specialty where practical skills, dexterity and a three-dimensional perspective of human topographical anatomy are important in the management of disease. Students personally prepare a number of anatomical specimens, each performed over the course of a six-week period (two 2-hour dissections per week). Students are also encouraged to liaise with surgeons and other specialists with expertise in this area and efforts are made to allow students to attend operating theatre sessions. Mini symposia give students the opportunity to present their observations to the rest of the group in the form of a verbal presentation. At the end of the unit (week 13) students present their observations in the format of posters in a conference-like environment.

**800.201 Anatomy for Dental Students (2202-2003)**

*Unit Co-ordinator:*
Professor J. McGeachie

This unit is designed to give a detailed knowledge of the anatomy of the head and neck and the growth and development of the orofacial structures. It is presented as a series of lectures, seminars and practical sessions and is a continuation of Anatomy for Dental Students 100. The primary focus of the first semester is a detailed understanding of head and neck anatomy relevant to dentistry. As a separate stream of this unit, students also develop a detailed understanding of the development of orofacial structures including basic embryology. This is linked closely with the clinical applicability of development to dentistry.

*Anatomy of the face and jaws:* This is a continuation of the head and neck anatomy presented in first year as part of Anatomy for Dental Students 100. In second year the emphasis is on the detailed anatomy of the orofacial region with specific application to clinical dentistry. The topics include the mouth, mandibular nerve, infratemporal fossa, face, muscles of mastication, temporomandibular joint, and the pharynx and larynx.

**910.250 Histology for Dental Students (2002-2003)**

*Unit Co-ordinator:*
Associate Professor G. Meyer

**Histology 250** presents the microscopic and functional anatomy of tissues and systems of the body at both the light and electron microscopic levels. All the histological work is closely integrated with gross anatomy.

**Higher Years**

**IMED4501 & IMED4502 Research and Discovery Parts 1 & 2**

*Unit Co-ordinator(s):* Dr Doug McKitrick

This unit is taken over two semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. At the beginning of fourth year available projects are posted on the unit web site (http://y4rd.meddent.uwa.edu.au/). Students can select from these projects by contacting the listed supervisor. Alternatively students may approach faculty members directly to arrange projects of mutual interest. The project usually runs throughout the academic year but may be conducted as an applied vacation project by application to and with prior approval of the unit co-ordinator. The project may be laboratory or clinically based. It must involve either the collection and analysis of original data or data extracted in relation to a particular research question. Students are required to produce a written report on their research project. Students may work alone or in groups, with a maximum of three per group for data-collecting projects. Further information about topics may be obtained from the unit co-ordinator, school co-ordinators or project supervisors.
Appendix 1
Details of Units

IMED5591 / IMED5592  Medicine Specialities Parts 1 & 2

Unit Co-ordinator(s): Dr Adam Gajdatsy (Ophthalmology)
This unit is taken over two semesters and parts 1 and 2 must be completed to fulfil the requirements of the unit. The unit consists of a two-week ophthalmology attachment based around outpatients. The first Monday morning involves a tutorial with all students covering basic examination techniques and basic ophthalmology. Students are subsequently divided into groups at the three major teaching hospitals and distribute themselves between clinics and theatre as is appropriate for each hospital setting. The content of the course is covered in the lecture which is available on the web site as well as on CD if required, through the Royal Perth Hospital Outpatients Eye Clinic. The lecture series covers common ophthalmic problems and eye-/vision-threatening medical conditions. Students are given a series of lecture notes and these, combined with the web-based lectures, provide adequate written and pictorial information to cover the contents of the unit.

Postgraduate

ANHB8515  Surgical Anatomy

Unit Co-ordinator(s): Professor Paul McMenamin and Professor Bryant Stokes
This unit is part of the Graduate Diploma in Surgical Anatomy which provides participants with the opportunity to dissect human cadaver material and study topographical anatomy in detail appropriate for postgraduate study from a surgical and medical perspective. This unit has a high relevance to medical graduates intending to become surgeons, radiologists or other specialists who require a high level knowledge of human anatomy. It may also provide in-depth and hands-on experience for general practitioners with a desire for further professional development. Other graduates who wish to become anatomy teachers within medical schools may find the postgraduate qualification a useful credential in career progression. The focus of the unit is primarily on detailed, regional anatomy, and the anatomical principles behind a number of commonly performed medical procedures.

ANHB8516  Dissection Methods

Unit Co-ordinator(s): Professor Paul McMenamin and Professor Bryant Stokes
This unit forms part of the Graduate Diploma in Surgical Anatomy and provides participants with the opportunity to dissect human cadaver material. The unit focuses on dissection technique and skills. Participants are also required to make regular presentations and descriptions of their dissection projects to staff and fellow students.

ANHB8517  Special Topics in Anatomy

Unit Co-ordinator(s): Professor Paul McMenamin and Professor Bryant Stokes
This unit forms part of the Graduate Diploma in Surgical Anatomy and provides participants with the opportunity to explore special topics in anatomy from a clinical and research perspective and has high relevance to medical graduates intending to become surgeons. It also provides an in-depth coverage of anatomical problems that may prove valuable to general practitioners and other graduates who wish to become anatomy teachers within medical schools.
Appendix 2: An innovative learning system for studying histology

http://www.histology-online.com

Geoffrey T. Meyer
School of Anatomy and Human Biology
The University of Western Australia
Crawley 6009

Traditionally, the study of histology (study of the microstructure of living tissues) has included a significant practical component. Students attend practical laboratory classes to receive instruction on how to appreciate the structure and function of the cells while they view stained tissue sections with microscopes. The conduct of such laboratory classes is becoming increasingly expensive. The cost derives from the need to employ highly skilled instructors and laboratory demonstrators whose role it is to guide the students in their use of the microscope and identification of the tissue structures. The maintenance and replacement costs of microscopes and sets of slides is increasingly expensive; to the stage where academic departments are reluctant to consider replacing damaged and worn out equipment.

Histology-online.com has been designed from the perspective of the learner and the instructor. It includes a full set of images at magnifications and resolutions appropriate to ready identification of tissue structure. The images are complemented with text and multimedia objects to efficiently transfer the learning contained within the image to the user. This sets Histology-online.com apart from all existing paper and internet-based histology education.

Whilst understanding the need for microscopy, what sets this innovative learning system apart is recognising that education (in any discipline/area) today requires modern didactic concepts - the focus is now on the learners. Learning now needs to be student centred and self-directed learning principles used:

- Where learning is not dependent on time and place.
- Where content and curriculum tools are current, relevant and have flexibility in adapting to changes in emphasis when desired.
- Where instruction adapts to the needs of the individual student and recognises individual learning preferences/skills/habits.
- Where students learn more and differently and can choose the option of depth rather than breadth.
- So students can self-assess their learning outcomes.
- So students can have fun and use modern technology.
- To encourage a collaborative learning environment.

And as a result, academic staff need to:

- become facilitators/motivators and manage a more flexible delivery of their course.
- have access to an extensive array of quality resources/learning tools.
- use/promote innovative technology.
- understand digital kids and the media rich life they lead - and how they learn in the digital age.

Accessing the website: http://www.histology-online.com
• is designed to be recommended as the course “textbook” – but delivered via the internet and so a major cost saving for the student. The access fee for each student is a much cheaper option than purchasing a traditional printed text – and Histology-online.com contains much more information, interactive images, and assessment packages not able to be included in textbooks. There is no cost to the University.

• provides access to student assessment packages. These review quizzes have demonstrated their effectiveness in improving student performance in examinations.

• may provoke you to reconsider the objectives of your histological courses. Is it necessary that your medical and dental students examine every tissue/organ using a microscope given time restraints on modern medical curricula? I am sure the more theoretical understanding of cell/tissue/organ structure and function is the key objective – certainly with some basic skills in the use of the microscope (maybe?) but there is diminishing time in a changing medical/dental curriculum for detailed histology practical sessions. Histology-online.com condenses the information normally provided in lectures, prelabs and practical sessions into a single user-friendly website that students can access when appropriate (with perhaps your direction/recommendation) throughout their preclinical training.

• caters for modern, self-directed learning styles of today’s students. Operational Priority Plans within most University Strategic Planning Missions include and indeed emphasise the need to “meet the needs of students and improve the student experience”. Histology-online.com offers your university department/school an opportunity to deliver a histology curriculum to students at a time when they (the student) can best learn the material.

• reduces departmental/school teaching budgets. A reduced emphasis on formal practical classes significantly reduces the debit from your part-time teaching budget. Students are able to work more independently in a self-directed learning environment and require little (if any) assistance from faculty staff.

• encourages you to customise the content to suit your histology curriculum. Histology-online.com welcomes and encourages you to contact us to customise the site for your students. This includes adding your department/school/university logo, course name/code, course chairperson/contributors and arranging the “Table of contents” to suit your desired curriculum.

• encourages you to contribute to the content in this resource. Histology-online.com welcomes and encourages you to contribute images, text, assessment questions etc. Our aim is to extend the content of this resource to integrate more with basic pathological content and molecular biology content – as we normally do in our classes. Extra electron micrographs of cell/tissue/organ structure are welcome.

• enables you to interact with your students at a more personal level. Students receive more enriched teaching from you personally. One misconception may be that you lose contact with your students if they complete much of the learning objectives off campus. Let me reassure you this is definitely not the case. When students come to a scheduled practical class to view histological slides (after they have studied the material of each module) I am not spending my time moving from student to student directing their inquiries as to where to locate features on the histological sections - like the case with traditional practical classes – this resource does that most successfully. My interaction with them is more involved in extending their knowledge and interest in the subject areas – even highlighting current research focuses, or integrating what they have learned with their other subject areas – or getting to know their interests etc. Achieving that personal touch motivates them to learn the material.

• is highly regarded by the student here at The University of Western Australia (UWA).

Comments for 1st year Medical students at UWA

“Really easy to understand and to use – histology guide for dummies! Better than any histology book I have come across.”

Natalie
“Histology-online was very useful for revising before exams. The slides were practical and enabled me to study without a microscope”

Andrea

“Images were better than Wikipedia and search results – more focused than Google”

Abigail

“The website was really good because it was easy to study histology without using a textbook”

Jonathon

“It was really motivating because the quizzes made me realise that I needed to study some more!!”

Pri

“Information is self explanatory and easy to understand. Pictures have high resolution and are very easy to comprehend. Also, they demonstrate concepts clearly”

Arthur

Very useful and well structured study tool

Oscar

Lots of good pictures makes learning histology a lot easier

Diana
Information on commercialisation – after the first 5 weeks of operation

Date of launch: Semester 2 (July 23rd).

Since the launch of histology-online.com there have been 2833 visits to the site. A total of 782 students from Australian Universities have subscribed: Income received = $AUD 16496.00

The release has been on a restricted basis to test the delivery etc. Academic coordinators of histology courses from the following Universities have indicated they will recommend their students sign up in Semester 1 2008 (Students estimated number = 5500)

The University of Sydney
The University of NSW
The University of Queensland
The University of Tasmania
Bond University
Deakin University
James Sturt University
University of Newcastle
Monash University

Release of the resource to worldwide subscription (eg. Asia, USA, and European Universities) is scheduled for September 23rd, 2007
Appendix 3 Procedures

THE UNIVERSITY OF WESTERN AUSTRALIA
FACULTY OF
Life and Physical Sciences

SCHOOL OF ANATOMY AND HUMAN BIOLOGY

MINUTES OF TEACHING MEETING
HELD IN THE A&HB SEMINAR ROOM
ON TUESDAY, 31 OCTOBER, 2006, COMMENCING AT 9:00 AM

Present:
Assoc Prof Nick Milne (Chair); Dr Jan Meyer (Chair); Dr Avinash Bharadwaj; Assoc Prof Neville Bruce; Prof Stuart Bunt; Prof Arun Dharmarajan; Dr Luis Filgueira; Dr Silvana Gaudieri; Ms Julie Hill; Prof Alan Harvey; Dr Debra Judge; Prof John McGeachie; Prof Paul McMenamin; Assoc Prof Geoff Meyer (Deputy Head of School); E/Prof Charles Oxnard; Dr Kathy Sanders; Prof Brendan Waddell (Head of School)

In attendance: Ms Maxine Cutter (Senior Admin Officer), Dr Ron Swann (School Manager); Ms Heather Morton (Senior Admin Officer)

1. APOLOGIES:
   Prof Miranda Grounds; Assoc Prof Linc Schmitt; Prof Jim Chisholm

2. PREVIOUS MINUTES: 14 July, 2006
   These were accepted as circulated and signed by the Chair.

   As Professor Paul McMenamin had to attend a Faculty of Medicine, Dentistry & Health Sciences meeting, it was agreed that issues involving him be dealt with at the beginning of the meeting.

3. GENERAL SCHOOL ISSUES:

3.1. Faculty Travel Grants
   Alan Harvey requested a database be kept in the School of Faculty travel grants received by staff.
   
   Ron Swann advised that Faculty kept these records and it only involved a phone call from an academic to check his or her entitlement. The Faculty made $2500 available in every 2-year period.

4. BUSINESS ARISING FROM PREVIOUS MINUTES:

4.1. Proposal for BSc (Human Biology) Programme
   Jan Meyer advised this was progressing.

4.2. Developmental Biology Appointments
   Brendan Waddell advised that Miranda Grounds continued to push for the selection criteria to be finalised and advertisements placed, however it appeared that BBCS were having second thoughts regarding their involvement. He would discuss this with them and the Dean in order to progress these appointments.

5. STAFFING ISSUES:

5.1. Administrative Staff
   Ron Swann commented that the office had experienced a particularly difficult year staff-wise during 2006. While this problem was being addressed, he advised that a redistribution of workload would occur and be in place for the next few months. End of year exam results and Board of Examiners’ meeting would be managed by Heather Morton with the assistance of Wendy Colangelo.
5.2. (a) Staff Absences Flagged:

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Semester 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2008</td>
</tr>
<tr>
<td>Brendan Waddell (SL)</td>
<td>Luis Filgueira (SL)</td>
</tr>
<tr>
<td>Debra Judge (SL)</td>
<td>Paul McMenamin?? (SL &amp; SL)</td>
</tr>
<tr>
<td>John McGeachie (LSL April-June)</td>
<td>Stuart Bunt (SL)</td>
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<tr>
<td>Stuart Bunt (LSL)</td>
<td>Miranda Grounds?? (LSL or SL)</td>
</tr>
<tr>
<td>Neville Bruce (secondment)</td>
<td>Geoff Meyer</td>
</tr>
<tr>
<td></td>
<td>Jan Meyer</td>
</tr>
</tbody>
</table>

Jim Chisholm would coordinate 2215 in semester 1. Jan Meyer and Linc Schmitt would cover Debra Judge’s 311 lectures and Jan Meyer would cover her 1101 commitments.

John McGeachie would cover lectures usually delivered by Brendan Waddell in semester 1 and Neville Bruce or Kathy Sanders would cover them in semester 2.

John will honour his teaching commitments, taking the balance of his LSL around these. In August his appointment would change to part time but he would still undertake a full time teaching load.

Brendan Waddell, on behalf of the School, expressed gratitude to John for this plan. He hoped other staff would consider similar action.

Stuart Bunt’s LSL would be taken at half time, double pay, and would not affect his teaching.

6. FUNDING ISSUES

6.1. Annums

Alan Harvey queried why annums had not been indexed since their introduction some 10 years ago. The allocation had not increased since inception of the process.

Ron Swann advised there were insufficient funds available to increase these mini budgets. The School’s income was not indexed. The Academic group could decide to increase these allocations but at the same time must decide which other area of the School’s activities must have funding reduced. It appeared that the amount had been adequate. These comments were supported by the Head of School. He also pointed out that there had been increases to the annum over the past few years by way of the introduction of rewards for publications and HD completions.
## 7. UNIT COORDINATOR REPORTS

<table>
<thead>
<tr>
<th>Science</th>
<th>1101 Julie Hill/Kathy Sanders</th>
<th>Unit in hand. Lectures usually given by staff who will be unavailable in semester one have been covered.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1102 Julie Hill/Kathy Sanders</td>
<td>Preparation for the unit is in hand. Lectures usually given by staff who will be unavailable in semester one have been covered.</td>
<td></td>
</tr>
<tr>
<td>2212 Avinash Bharadwaj</td>
<td>A few issues from student feedback would be addressed. Julie Hill had agreed to undertake recording of attendances in 2007. The contribution to the running of the unit by Heather Morton and Wendy Colangelo had been invaluable. A thorough revision of all aspects of the manual was to be undertaken. Currently 3 different areas of anatomy required 3 different text books. Course reader and recommended text books planned and possible complete revamp of website. He would discuss aspects of the unit coordination and presentation with all staff involved in the teaching. Nick Milne queried whether the introduction of this unit had been a mistake. Avinash Bharadwaj did not feel it had been a mistake, but combining 2 x 4-point units into 1 x 6-points resulted in a very heavy content. It was a comprehensive unit which prepared students for 2213 and/or 2214. One main difficulty was Human Movement students did not see the point of the histology component. Brendan Waddell asked if there was too much histology in 2212. No. Only about 50% of students would be doing 2214. Others would be doing 2213. The content had already been streamlined. Human Movement students needed the histology, but could not see they did. Agreed. It was noted that 2214 enrolments had increased.</td>
<td></td>
</tr>
<tr>
<td>2213 Nick Milne</td>
<td>Everything OK. 3304 students did most of the demonstrating in 2213 which saved money, but the marking load was heavy because of the lack of tutors.</td>
<td></td>
</tr>
<tr>
<td>2214 Geoff Meyer</td>
<td>140+ students. Geoff Meyer had been awarded a teaching fellowship in semester 2. He had used the unit as a research project. Professor John Campbell from UCLA delivered the lectures. This was very well received. More slide boxes would be needed if enrolments increased further. The revamp of the histology classroom was excellent.</td>
<td></td>
</tr>
<tr>
<td>2215 Debra Judge</td>
<td>60 students, 2 Meds. Numbers down a little on previous year, but OK. The unit content had been revamped to prepare students for 3rd year units. Students found the content heavy. Jim Chisholm would coordinate in 2007. There was a heavy commitment for staff on feedback.</td>
<td></td>
</tr>
<tr>
<td>2216 Kathy Sanders Arun Dharmarajan</td>
<td>Enrolment same as 2006 (~70). There had been a timetable issue for Human Movement students which had been addressed. ~40 Human Movement students had withdrawn and enrolled in a Public Health nutrition unit, perceived to be because of the histology component. SPOTs were mid-4s. Student attendance at lectures very bad (~20) because of lectures.</td>
<td></td>
</tr>
<tr>
<td>2217 Alan Harvey Avinash Bharadwaj</td>
<td>Stuart Bunt would discuss the unit with Alan Harvey and reviewed accordingly for 2007.</td>
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</tr>
<tr>
<td>S&amp;A 2221 Jim Chisholm</td>
<td>No report</td>
<td></td>
</tr>
<tr>
<td>3304 Nick Milne</td>
<td>3304 students did most of the demonstrating in 2213 which saved money but there was a high teaching cost attached to 3304.</td>
<td></td>
</tr>
<tr>
<td>3308</td>
<td>Miranda Grounds</td>
<td>In Miranda’s absence, Luis Filgueira reported that Dr Anke van Eekelen would be coordinating the unit and undertaking considerable teaching with assistance from external people. The usual conference would go ahead.</td>
</tr>
<tr>
<td>3311</td>
<td>Jan Meyer</td>
<td>The unit was in a state of flux due to the planned absence of Debra Judge on sabbatical in 2007 and Linc Schmitt becoming Head of School thereby perhaps not being available to teach. Rebecca German had been contacted to elicit her plans. Silvana Gaudieri had agreed to teaching some of the genetics. Consequently, content was being reviewed.</td>
</tr>
<tr>
<td>3313</td>
<td>Miranda Grounds</td>
<td>No report</td>
</tr>
<tr>
<td>3315</td>
<td>Debra Judge</td>
<td>Excellent group of students. Lectures go on the web but no lectures. Jim Chisholm would resume coordination in 2007 but Debra Judge happy to assist.</td>
</tr>
<tr>
<td>3316</td>
<td>Neville Bruce</td>
<td>Numbers were low (~19), but an excellent group. No male students. Considered SPOTs of no value. Four visiting lectures had been well received.</td>
</tr>
<tr>
<td>S&amp;A 3321</td>
<td></td>
<td>No report.</td>
</tr>
<tr>
<td>3325</td>
<td>Alan Harvey, Don Robertson</td>
<td>Would like to change timetabling. All classes scheduled early and students not happy. Coordinators were very disappointed their teaching was not producing Honours students. They were going to other schools or centres. It was agreed Stuart Bunt and Alan Harvey would look at 2217 in case there was some associated reason which caused students to not go on to 3325. It was acknowledged that some students taking 3325 progressed to a Neuroscience programme Honours. SPOTs were 4+ average. Neville Bruce commented that the School needed to ensure our Honours year was rich and rewarding and publicize the benefits of doing Honours here.</td>
</tr>
<tr>
<td>3326</td>
<td>Alan Harvey, Don Robertson</td>
<td>No students in 2006.</td>
</tr>
<tr>
<td>NDA Physio</td>
<td>Geoff Meyer</td>
<td>There had been a significant increase in enrolments this year (from 50 in 2005 to 85 in 2006). NDA had appointed Dr Jens Hirschberg as a senior lecturer and he would be involved in 2007. This was an enjoyable course and Geoff Meyer hoped the School would continue with the arrangement with NDA.</td>
</tr>
<tr>
<td>Forensic Anthrop 8562</td>
<td>Jan Meyer</td>
<td>This was an enjoyable unit to be involved with although it may not be on offer in 2007. She felt it was a good unit to offer as a medical option. Agreed. Ron Swann emphasised that any involvement by A&amp;HB staff in the teaching of this unit in the future must be paid for by the CFS.</td>
</tr>
<tr>
<td>DNA 8564</td>
<td></td>
<td>No report.</td>
</tr>
<tr>
<td>Honours</td>
<td>Arun Dharmarajan Neville Bruce</td>
<td>It appeared that none of the 2006 group intended to progress to PhD which was very disappointing. Neville Bruce was concerned that the numbers were decreasing compared with the last few years. Other options could be influencing this, e.g. professional courses. Some Health Science students may come back for Honours at the end of their degree. He emphasised that, in his view, to build and maintain higher Honours numbers and encourage progression to PhD would required hard work by all academic staff. This also applied to the graduate coursework programmes. The first 12 months of coursework degrees required an enormous amount of work, particularly if students were to be encouraged to go on to PhD. He would not be coordinating Honours or the graduate courses in 2007. Someone new was required. Both Neville Bruce and Arun Dharmarajan agreed that having a different coordinator each semester for Honours was not the best for the students. The Honours Coordinator spent a great deal of time mentoring and instructing students in addition to the supervisor input. Brendan Waddell supported the importance of the role of the Honours Coordinator and requested supervisors to ensure they gave the students the attention and instruction which was required in this important year. Alan Harvey commented that medical students were keen on summer scholarships which could then encourage them into a BMedSc. Perhaps this should be fostered. Ron Swann pointed out that the School did not have funding for summer scholarships. If students brought their own scholarships, this could be accommodated. Alan Harvey felt we should also foster medical students to do a PhD. Brendan Waddell pointed out that from 2007, BMedSc’s were to be available to UWA Science and external students with a biomedical background. This could attract some students away from Honours.</td>
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<tr>
<td>Grad Dip/MSc (C/work)</td>
<td>Neville Bruce</td>
<td>See comments under Honours.</td>
</tr>
<tr>
<td>Grad Dip Surg Anat</td>
<td>Paul McMenamin</td>
<td>Although it had been disappointing to have to cancel this course this year, he was confident it would increase in popularity. He suggested a minimum of 6 students be applied. AGREED.</td>
</tr>
<tr>
<td>Postgrad (research)</td>
<td>Miranda Grounds</td>
<td>Alan Harvey advised there were a number of PhD students submitting in the near future. Completion funding should be healthy for 2006 and 2007 submissions. Jan Meyer advised she had been supervising around 6 Master of Forensic Science students and did not appear to be receiving any funding to support this supervision. As the Centre was no longer part of the School should such supervisions cease? Yes, unless funding compensation was received up front. Jenny Gamble to be consulted as to how to retrospectively receive funding support for these students and set a policy in place for any future students. Ron Swann commented that the School needed to discuss strategies to increase its scholarship success rate. He felt supervisors should be more involved in the preparation of applications. Agreed. It was also suggested that the HOS call a meeting of academic staff prior to the closure of IPRS applications to check possible/expected international applicants and obtain supervisor input to assist with ranking.</td>
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Science/Arts

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<thead>
<tr>
<th>Course</th>
<th>Instructor</th>
<th>Notes</th>
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<tbody>
<tr>
<td>VISA 2214</td>
<td>Ionat Zurr</td>
<td>Stuart Bunt reported this unit was OK. SPOTs had been good.</td>
</tr>
<tr>
<td>VISA 3314</td>
<td>Ionat Zurr</td>
<td>Not offered 2006.</td>
</tr>
</tbody>
</table>

Medicine/Dentistry

<table>
<thead>
<tr>
<th>Course</th>
<th>Instructor</th>
<th>Notes</th>
</tr>
</thead>
</table>
| IMED1100/IDNT1120/IDNT 1155 | Stuart Bunt | Stuart Bunt was concerned there would be some failures this year. The average MCQ marks:
Pods 50%
Dents 58%
Meds 68%.
SPOTs were not being taken seriously by students.
In 2007, Pods and Dents go to 1134.
Demonstrators had been difficult to get. May use selected 3rd year students in 2007.
There would be a new unit for Dents in 2007 (DENT1134) which he would coordinate. He asked for staff to assist with the teaching. John McGeachie and Geoff Meyer volunteered. |
| IMED1106/IDENT1121 | Brenton Knott, Julie Hill | The content of this unit was being reviewed. Stuart Bunt advised he needed to be informed of the final content to ensure there was no duplication in other first year units. |
| IMED2201/IDNT2221 | Luis Filgueira | Large enrolment. 140 Meds, 50 Dents, 24 Pods. He was planning on separating groups for labs and have separate exams in 2007. In 2008 there would be Meds only. Dents and Pods would have their own units. |
| IMED2202/IDNT1125 | Paul McMenamin | Podiatry students would be joining this unit in 2007. The unit content would be assessed ongoing and extra teaching provided if necessary. |
| IMED 2231/IMED 2232 | Paul McMenamin | Graduate students would be marking this unit. |
| IDNT2261/62 | John McGeachie | This was a supplementary anatomy unit which replaced 1125 and was not funded by Faculty. Brendan Waddell advised that it had received 50% funding in 2005 as a compromise and would be funded in 2006 and 2007. It would not be offered in 2008. Alan Harvey queried the School’s approach if funding was not forthcoming and Brendan Waddell confirmed that teaching would be withdrawn. |
| Musculoskeletal Disorders 580 | Nick Milne, Avinash Bharadwaj | OK |
| Graduate Medical Entry | Avinash Bharadwaj | There would be 60 students in 2007. Some extra classes were being considered by Avinash Bharadwaj and Paul McMenamin for 2007. |

MEDICAL OPTIONS

<table>
<thead>
<tr>
<th>Course</th>
<th>Instructor</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMED 2282</td>
<td>Debra Judge</td>
<td>OK.</td>
</tr>
<tr>
<td>IMED2283</td>
<td>Paul McMenamin</td>
<td>Unit went very well. 95 students applied. Capacity is 60 and he did not feel this should be increased in order to maintain the quality of the unit. 6 cadavers were used.</td>
</tr>
<tr>
<td>Options 490 (1/2 day per week full year)</td>
<td>Miranda Grounds, Luis Filgueira</td>
<td>Only one student, supervised by Kathy Sanders. She was happy with the experience.</td>
</tr>
</tbody>
</table>
8. OTHER BUSINESS:

8.1. Review of Histology Component of 2212 and 2216
2212 had been addressed. Kathy Sanders felt that the histology component of 2216 was appropriate.

8.2. New 2nd Year Unit on Nutrition
As there was a Health Science nutrition unit available to Science students, the Faculty of LPS was considering introducing a cross-school unit to provide Science students an option within its own faculty.

8.3. Marking Responsibility of NS200 Integrative Theory Exam
Geoff Meyer advised that, in consultation with Ron Swann and Stuart Bunt, the marking of the computer assessment component of the NS2200 integrative theory exam should be carried out by relevant part-time staff. Stuart Bunt would select these people.

If this form of assessment was to continue in later years, the School would need to decide whose responsibility it was to complete the marking process and then formalise this marking task as part of that academic staff member’s responsibility/duty in the unit.

This person needed to be suggested and formally confirmed at the next teaching meeting.

8.4. Carrick Awards
The Faculty had $238K to distribute to successful applicants. The awards provided an improved mechanism to nominate units and staff for Faculty excellence awards. It was suggested that SPOTs could be included in the applications.

Geoff Meyer advised that SPOTs were rarely looked at during the assessment phase for Carrick Awards. It was done purely on the written submission.

Kathy Sanders asked that, if possible, could there be some feedback to applicants. For example, first year teaching had been nominated by the University on three occasions for a national award, an enormous amount of work had gone into preparing the submission, each time the submission had failed but there had been no feedback to advise why.

Geoff Meyer responded that feedback would be provided on the process, but not on individual applications.

Nick Milne would check with Faculty as to whether or not staff could self-nominate.

8.5. Draft School 2007 Academic Year
Tabbed.

8.6. Unit Coordinators 2007
Tabbed.

8.7. Teaching Loads 2007
Still being formulated.
8.8. Medical Teaching in Integrated Clinical Teaching Rooms

Paul McMenamin advised there would be 6 integrative clinical teaching rooms on the ground floor of the refurbished biochemistry building which would provide an opportunity for the School to integrate anatomy teaching into this environment. Paul, Stuart Bunt and Luis Filgueira to discuss. Paul to check what materials would be needed.

*ACTION: PMcM/SB/LF*

It was proposed that Thursday 2-6 pm labs for IMED2202 would be moved to these facilities which would free up the DR for this period.

The space is biochemistry would be suitable for small tutorials although were already heavily booked.

Geoff Meyer to discuss with Paul the possibility of using these rooms for surface anatomy teaching for physiotherapists.

Avinash Bharadwaj advised that if the DR was freed up Mondays or Tuesdays, this would assist in coping with this year’s cohort of 60 graduate medical students. Paul and Avinash to discuss.

The Chair asked that if some NS and FCP teaching was integrated would there costs or reduced income to the School. Paul advised no.

Ron Swann expressed his concern about the labour costs involved with transferring teaching materials between buildings. Paul advised he was expecting AV delivery. Med Faculty would be purchasing any required skeletons so there was no need to move A&HB’s skeletons between buildings.

8.9. Prosections

Paul McMenamin requested a policy from the School regarding the replacement of prosected specimens due to the large number of students now using them and they were deteriorating at a fast rate.

Ron Swann advised that approximately $12K had been set aside in the budget for some years to employ prosectors, plus one prosector had been employed during semester two this year. Some specimens produced in semester two had used up most of the prosection budget. He agreed a policy needed to be put in place.

*ACTION: RS/HOS*

Stuart Bunt commented that the care of the prosections needed improving and he queried the method of replacing plastinated specimens.

The Chair commented that $12K was an insufficient allowance for this important part of the School’s teaching and thereby income. The Head of School and School Manager agreed, but a plan needed to be drawn up so the required allowance could be ascertained.

Avinash Bharadwaj, Paul McMenamin, Stuart Bunt, Nick Milne and Julie Hill plus other anatomy teachers to meet, discuss and draw up a plan of what was needed, how the specimens would be prepared, when and the anticipated cost to present to the Executive.

*ACTION: PMcM/AB/NM/SB/JH*

Paul advised that Ron Swann had suggested the possibility of getting a corporate scholarship to fund the process, but Paul had also had several students offering their services free.

It was agreed it was essential that the supply of prosections was improved to meet the School’s needs but they must be of good quality. It may be that a full time prosector would be required.

Neville Bruce pointed out that consideration should be given to the fact that the School is providing specimens to Notre Dame for their medical teaching which was earning income for the School and perhaps some of that income could be put towards replacing specimens.
8.10. 4 Stem MCQs

Stuart Bunt expressed grave concern that the use of 4-stem MCQs by Physiology in medical examinations provided the opportunity for students to get 25% of the questions right purely by guesswork. As there was no separation between the anatomy and physiology questions, students could pass without knowing their anatomy.

Paul McMenamin commented that this meant the MCQs were badly written. He had been unsuccessful in encouraging the physiologists not to use MCQs, but integrated teaching had to continue. He suggested that barrier questions be introduced to strengthen evidence of knowledge and this would be supported by the Faculty.

Stuart Bunt felt this was a good idea and would discuss the issue with the physiologists.

8.11. Redevelopment of FAHBs

The Head of School advised that the proposal to move histology teaching from FCB to a revamped FAHBs unit had been carried out by the unit coordinator but had caused some concern by A&HB staff teaching the histology as to the merit of the changes made. He asked Paul McMenamin to request Faculty to oversee the final outcome. Paul advised the proposed changes would be evaluated by the Faculty.

8.12 Annual Leave

Alan Harvey commented that academic staff were now required to take 4 weeks’ annual leave but failed to see, when looking at the academic year, when they might fit that in.

There being no further business, Nick Milne was thanked for his chairmanship and the meeting concluded at 1.25 pm.
Appendix 4: Developmental Biology ANHB 3308

Summer Session, Level 3, 12 point unit

Professor Miranda Grounds
School of Anatomy & Human Biology, UWA

Dr Anke van Eekelen
Telethon Institute for Child Health Research, Subiaco, WA

Why are there five fingers on our hand?

Venue: School of Anatomy and Human Biology
The University of Western Australia

Date: January 10th - February 16th, 2007

One day conference (Friday 2 February 2007)
Final Program

Course Outline: Pattern formation, organ and tissue formation during embryonal development are the central topics to be discussed in this high impact course. How does the early embryo form? What signals and molecular mechanisms define the formation of germ layers, the positioning of cells within the organism and the differentiation of cells. One of the big questions to be answered is: Why do we have five fingers on our hand, and not six?

The topics will be presented by lectures. In depth analysis of defined research questions will be performed by the students in tutorials and in lab classes. Model organisms that will be studied include Drosophila, chick and mouse. Up-to-date methods will be used to analyse Drosophila wild type and mutant embryos, pattern formation in the chicken embryo, formation of limbs, muscle, blood vessels. What can we learn from knockout mice and transgenic animals?

Lectures: 6 weeks of lectures (54 hrs) tutorials (28hrs) and practicals (65hrs), making a total of 147 contact hours. There is also an intensive one-day conference.
A selection of Developmental Biology Texts may be found under "Closed Reserve" in the Biological Science Library or in Room 204 (top floor) of the School of Anatomy & Human Biology. PDF of available texts. A list of terminology that students MUST be familiar with prior to the course commencing is available.

Prerequisites: A background in cell and molecular biology at the 3 year level is assumed. Students should have completed at least one (or the equivalent) of: Cell and Tissue Organisation ANHB3313; Mammalian Cell Biology PHYL3300; Molecular Biology SCIE3325; Medical Genetics GENE3320.

Additional prescribed reading will be required for students with no more than: Biological Anthropology ANHB3311; Advanced Neuroscience NEUR3325; Human Reproduction ANHB3316; Human Functional Morphology ANHB3304; Comparative Neurobiology ANIM3320.

An "Expression of Interest" form is available here, or from the School office, for students considering enrolling in this unit as part of their degree, but are unable to do so until the November/December of their third academic year.

For further information contact:
Dr Anke van Eekelen
Email: ankev@ichr.uwa.edu.au
Tel: 9489 7886

Unit Co-ordinator: Professor Miranda Grounds, (PhD),
School of Anatomy & Human Biology,
The University of Western Australia,
Crawley, Western Australia, 6009
Phone: (618) 9380 3486
Fax: (618) 9380 1051
Email: mgrounds@anhb.uwa.edu.au
Website: http://school.anhb.uwa.edu.au/personalpages/grounds/

Updated: 1200 25/01/07

http://www.lab.anhb.uwa.edu.au/hb308/
## ANHB3308 Developmental Biology
### 2007 TIMETABLE

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<tr>
<th>WEEK 1</th>
<th>January 8</th>
<th>9</th>
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<tr>
<td></td>
<td>Monday</td>
<td>Tuesday</td>
<td>Wednesday</td>
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<td>Friday</td>
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<tr>
<td>LECTURE</td>
<td>9:00 - 11:00</td>
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<td>Introduction &amp; Handouts</td>
<td>Cell &amp; Molecular Biology Literature 1</td>
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<tr>
<td>Room</td>
<td>ANHB G.39</td>
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<td>M Grounds/A van Eekelen</td>
<td>Cell &amp; Molecular Biology Literature 2</td>
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<table>
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<tr>
<th>WEEK 2</th>
<th>January 15</th>
<th>16</th>
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<tr>
<td>LECTURE</td>
<td>9:00 - 11:00</td>
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<td>Evaluation of Knowledge: Drosophila Oogenesis; A-P axis formation</td>
<td>Gastrulation</td>
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<td>D Newgreen</td>
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<tr>
<td>TUTORIAL</td>
<td>12:00 - 14:00</td>
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<td>Course Overview</td>
<td>Limb Bud &amp; pattern formation</td>
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<td>A van Eekelen</td>
<td>D Newgreen</td>
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<td>B Brachvogel</td>
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<tr>
<td>PRACTICAL</td>
<td>12:00 - 17:00</td>
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<td>STAFF MEETING 14:00 – 15:00</td>
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<td>Conference Room ANHB</td>
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<td>Apoptosis 1</td>
<td>Apoptosis 2</td>
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<td>B Brachvogel</td>
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<td>WEEK 3</td>
<td>January 22</td>
<td>23</td>
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<td>LECTURE</td>
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<td>9:00 - 11:00</td>
<td>Oral Exam 1</td>
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<td>Neurulation; Neural crest cell migration</td>
<td>Neural Development</td>
<td>Mutant Models</td>
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<td>D Newgreen</td>
<td>D Newgreen</td>
<td>(Introduction to JC + conf preps)</td>
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<td>LECTURE 9:00 - 11:00</td>
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<td>Epigenetics</td>
<td>Extracellular Matrix</td>
<td>Kidney Development</td>
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<td>Genetic manipulation</td>
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Summer Conference on Molecular Mechanisms of Development
February 14-16th, 2003
The University of Western Australia, Perth, WA

This inaugural Conference is part of a new initiative in Developmental Biology. It concludes a short summer semester course in Developmental Biology run for the first time at UWA in 2003. See http://www.lab.anhb.uwa.edu.au/hb308/

This Conference was made possible by generous funding from
The University of Western Australia for an initiative in Developmental Biology
The Faculty of Life and Physical Science, UWA
The Raine Medical Research Foundation (http://www.raine.uwa.edu.au/default.cfm)

Key international speakers
Reinhard Faessler, Max Plank Institute, Martinsried, Munich, Germany
Ruth Lehmann, Skirball Institute, New York, USA
Steve Burden, Skirball Institute, New York, USA
Jonathan Raper, University of Pennsylvania, Philadelphia, USA
Barbara Demeneix, Natural History Museum, Paris, France

Conference organizers:
Miranda Grounds (School of Anatomy & Human Biology, UWA)
Rupert Hallmann (Lund University, Sweden & Visiting Professor, UWA)
Lydia Sorokin (Lund University, Sweden & Visiting Professor, UWA)
Summer Conference on Molecular Mechanisms of Development
February 15-16th, 2003
The University of Western Australia, Perth, WA

Day 1: Saturday 15th

8:50 start  Registration from 8.00am

Models of Fly and Amphibian Development
Chair: Don Bradshaw
8:50 - 9:00  Miranda Grounds Welcome and Introductory remarks.
9:00 - 9:50  Ruth Lehmann (New York) Primordial germline development in Drosophila.

10:40 - 11:10  Morning Tea

Neuronal cell-cell interactions
Chair: Lyn Beazley
11:10 - 11:35  Alan Harvey (WA) Development of rodent retinotectal connections- complex interactions in time and space.
11:35 -12:00  Jennifer Rodger (WA) EphA/Ephrin-A interactions are required for restoration of topography during optic nerve regeneration.
12:00 -12:50  Jonathan Raper (Philadelphia) Axonal guidance and modulatory axonal guidance cues.

12:50 - 2:00  Lunch

Neuronal/Neuro-muscular signalling
Chair: Joanne Britto
2:00 - 2.50  Steve Burden (New York) Signaling pathways regulating neuromuscular synapse formation.
2:50 - 3.15  Jenny Tollet (UWA) A lung full of nerves: where do they come from, where are they going and how do they get there?

3.15 - 3.45  Afternoon Tea

Neuronal/Neuro-muscular signalling
Chair: Jonathan Raper
3:45 - 4:05  Mel Ziman (WA) PAX7 regulates expression of Ephrin-A2 in the tectum.
4:05 - 4:25  Debra O’Leary (Victoria) Characterisation of the ETS gene GABPα in development.
4:25 - 4:45  Anke van Eekelen (WA) Does transcription factor SCL have a role in brain development?

4:45 – 6:00  Discussion and posters
DAY 2: Sunday 16th

9:10 start

Myogenesis
Chair: Steve Burden
9:10 - 9:30  Lydia Sorokin (Sweden) The role of the basement membrane family of proteins, the laminins, in myogenesis.

10:35 - 11:10 Morning Tea

Vasculature and Haematopoiesis
Chair: Lydia Sorokin
11:10 - 12:00 Reinhard Faessler (Germany) Integrins control the migration of haematopoietic stem cells.
12:00 - 12:30 Rupert Hallmann (Sweden) Differentiation of vascular endothelium.
12:30 - 12:50 Deirdre Coombe (WA) Carbohydrates and glycosylation in development and cancer.
12:50 - 13:10 Wallace Langdon (WA) Perturbed thymocyte signalling in Cbl mutant mice.

13.15 Final Lunch to end conference
This Conference is part of a new initiative in Developmental Biology. It is part of a short summer semester course in Developmental Biology beginning in 2003 at UWA. See http://www.lab.anhb.uwa.edu.au/hb308/

This Conference was made possible by funding from
The University of Western Australia (UWA).
The Faculty of Life and Physical Science, UWA
STINT (the Swedish Foundation for International Cooperation in Research and Higher Education)

Invited speakers

Manuel Selg University of Lund, Sweden
Michael Sixt University of Lund, Sweden
Rupert Hallmann University of Lund, Sweden
Ralph Ruebsam University of Erlangen, Germany
Sergey Parinov University of Singapore, Singapore
Patrick Tam University of Sydney, Australia
Pritinder Kaur Peter McCallum Institute, Melbourne, Australia
Vance Matthews (representing George Yeoh) UWA, Perth, Australia
Arun (Dharma) Dharmarajan UWA, Perth, Australia

Conference organisers:
Miranda Grounds (School of Anatomy & Human Biology, UWA)
Rupert Hallmann (Lund University, Sweden & Visiting Professor, UWA)
Lydia Sorokin (Lund University, Sweden & Visiting Professor, UWA)

The support and administrative assistance of
Ms Jenny Longley and Marilyn Davies are gratefully acknowledged.
Summer Conference on Molecular Mechanisms of Development

January 31st & February 1st, 2004. The University of Western Australia, Perth, WA
Held in the Room SSLR1, Social Science Building, next to the Oak lawn (see map).

Day 1. Saturday 31st January  Registration from 8.15am

Liver, Heart and Lung. Chair: Miranda Grounds
9:00 - 9:10  Miranda Grounds Welcome and Introductory remarks:
9:10 - 9:40  Vance Matthews (Perth) Liver regeneration: which cells and which cytokines are involved?
9:40 - 10:05 Kaye Stenvers (Melbourne) Defective heart and liver development in type III TGF-beta receptor-deficient embryos.
10:05 - 10:30 Tim Moss (Perth) Inflammation-induced alterations in fetal lung development

10:30 - 11:00 Morning Tea

Muscles and bones. Chair: Jason White
11:00 - 11:25 Robert White (Perth) Do Pax genes play a role in arthropod muscle regeneration?
11:25 - 11:50 Phil Runham (Perth) Epipubic bone osteogenesis and breathing related abdominal muscle activity in the bandicoot Isoodon obesulus
11:50 - 12:15 Daniel Blashki (Melbourne) Osteochondral potential of clonogenic dermal progenitors from adult mouse dermis

12:15 - 1:30 Lunch

Vasculature and basement membranes. Chair: Lydia Sorokin
1:30 - 2:00 Rupert Hallmann (Lund, Sweden) Local, tissue-specific differentiation of blood vessel endothelium
2:00 - 2:30 Manuel Selg (Lund, Sweden) The embryoid body as a model system for lymphangiogenesis
2:30 - 3:00 Pritinder Kaur (Melbourne) The role of dermal cells and LAM-10/11 in promoting epidermal tissue formation

3:00-3:30 Afternoon Tea

T cell differentiation and apoptosis. Chair: Manuel Selg
3:30 - 4:00 Michael Sixt (Lund, Sweden) The role of antigen transport in thymic T-Cell education
4:00 - 4:30 David Izon (Perth) T cell development in a post-Notch world
4:30 - 5:00 Arun Dharmarajan (Perth) Apoptosis: From Signalling Pathways to Therapeutic Tools
DAY 2. Sunday 1st February

**Patterning. Chair: Rupert Hallmann**

9:00 - 9:40  **Patrick Tam** (Sydney)  The journey through the landscape of morphogenesis: Lineage allocation and tissue patterning
9:40 - 10:10  **Ralph Ruebsam** (Erlangen, Germany). On the origins of embryonic polarity in Drosophila
10:10 - 10:50  **Sergey Parinov** (Singapore) Patterns of gene expression in live zebrafish embryo revealed by an enhancer trap transposable element

10:50 – 11:20  *Morning Tea and sandwiches*

**Neuroscience. Chair: Jacqueline Phillips**

11:20 - 11:50  **Piroska Rakoczy** (Perth)  The magic marrow: from stromal cells into photoreceptors
11:50 – 12:20  **Joanne Britto** (Perth)  Defining the role of neuregulin-2 in the nervous system using a knockout mouse model.
12:20 – 12:50  **Anke van Eekelen** (Perth)  Factor scl and brain development studied by conditional gene knockout analysis
12:50 – 1:20  **Marc Ruitenberg** (Perth)  CNS regeneration: guided by development?

**Concluding remarks**

*End of conference*
AUSTRALIAN NEUROSCIENCE SOCIETY
25th Annual “Silver Jubilee” Meeting

Perth Convention Exhibition Centre
30th January – 2nd February, 2005

Wednesday 2nd February 2005-12-14

Oral Session 10

Developmental Biology: Neuronal Migration, Differentiation and Signalling

Chairs: Dr Cathy Leamey, University of Sydney, NSW
A/Prof Helen Cooper, University of Queensland, QLD

Location: Meeting Room 2

11:15 ORAL-10-01
Heterogeneity of astrocytes in the central nervous system
Sarafian, R.Y., Huang, W.B., Weible, M.W. and Chan-Ling, T. (Australia)

11:30 ORAL-10-02
Directional cell migration in the development of the enteric nervous system
Newgreen, D.F., Mariani, M. and Young, H.M. (Australia)

11:45 ORAL-10-03
Interneuron layering in the mouse neocortex is sensitive to the Reelin signalling pathway
Hammond, V.E. So, E.Y.-W., Valcanis, H. and Tan, S.-S. (Australia)

12:00 ORAL-10-04
The netrin receptor neogenin is involved in neural tube formation during early development in the xenopus embryo
Kee, N., Wilson, N. and Cooper, H. (Australia)

12:15 ORAL-10-05
Embryonic expression of SCL is required for normal brain development
Bradley, C.K., Takano, E., Harvey, A.R., Begley, C.G. and van Eekelen, J.A.M. (Australia and USA)

12:30 ORAL-10-06
Characterization of stem cells in the dorsal root ganglion of the adult rat

12:45 ORAL-10-07
A biologically active neuregulin-3 cytoplasmic domain
Tiao, J.Y. and Busfield, S.J. (Australia)

13:00 ORAL010-08
Diversity in NGF signal transduction is generated by the co-expression of neurotrophin receptors
Murray, S.A., Wong, A.Y.W., and Kilpatrick, T.J. (Australia)
**Summer Conference on Molecular Mechanisms in Development**

The University of Western Australia, PERTH, Western Australia

Friday 10th February, 2006

Venue: Social Science Lecture Room 1, UWA Campus

8:15 – 8:50  Pre conference refreshment

8:50 - 9:00  Opening by Professor Miranda Grounds

**Session I**

Chair: Miranda Grounds

9:00 – 10:00  Plenary lecture: Philip Ingham
University of Singapore/ Sheffield University, UK
“Genetic analysis of myogenesis in the zebrafish”

10:00 – 10:30  Anke van Eekelen
Telethon Institute for Child Health Research, WA
“The essential hematopoietic transcription factor ScI is also critical for neuronal development”

10:30 – 11:00  Morning tea

**Session II**

Chair: Rupert Halmann

11:00 – 11:25  Deborah Sloboda
King Edward Memorial Hospital, Perth, WA
“Intrauterine influences on the developing hypothalamic-pituitary-adrenal (HPA) axis: impact on postnatal health”

11:25 – 11:50  Jason White
University of Melbourne, VIC
“Asymmetrical development of extreme muscle hypertrophy: the callipyge phenomenon”

11:50 – 12:15  Jacqueline Phillips
Murdoch University, Perth, WA
“NMDA receptor expression in motoneuron populations susceptible and resistant to amyotrophic lateral sclerosis”
12:15 – 12.40  "Lydia Sorokin
Münster University, Germany
"The role of the basement membrane in leukocyte extravasation into the brain in murine experimental autoimmune encephalomyelitis"

12.40 – 1.40  Lunch

Session III
Chair: Phil Ingham

1:40 – 2:10  Rupert Hallmann
Münster University, Germany
"The glycocalyx in leukocyte endothelial cell interaction"

2:10 – 2:35  Nick Hudson
CSIRO Livestock Industries, QLD/ University of Queensland
"Metabolic depression in an Australian desert frog arresting development in 'the Outback'"

2:35 – 3:00  Robert Friis
Department of Clinical Research, University of Bern, Switzerland
"The Wnt pathway, epithelial-mesenchymal transition, cell migration and cell survival"

Closing Remarks by Professor Miranda Grounds

After conference coffee at Matilda Bay Tearooms
Appendix 5: Building a Program in Developmental Biology at UWA

The University of Western Australia (UWA) is ripe for implementation of a program in Developmental Biology. Recent advances in the identification of genes which underpin early embryonic development and signal the later morphogenesis of many tissue and organ systems have moved Developmental Genetics to the forefront of biomedical science. We already have in place in the Schools of Biomedical, Biomolecular and Chemical Sciences (BBCS) and Anatomy and Human Biology (A&HB) many of the research and teaching components related to two of the most exciting aspects of the resurgent Developmental Biology – Molecular Epigenetics and Evolutionary Morphogenesis/Regeneration (‘Evo-Devo-Rego’) - with links to many others through collaborations with other Schools and institutions.

What is needed in order to bring these elements together and realise such an initiative is a clearly identifiable focus of academic leadership in the core areas. The UWA academics already researching and teaching in the areas related to Developmental Biology are not in a position to devote the time, energy or resources to the setting up of a new programme with the initial dedicated intensity required for a successful launch. Furthermore, while their work is all highly relevant to the area, their international recognition is not, as yet associated with the ‘new’ Developmental Biologies.

The time periods, in the order of decades, over which successful programmes were previously developed in universities are no longer really available in an economic climate which requires almost immediate demonstration of capacity to generate income. It is no longer feasible to support a new programme at a loss over decades while its mass and reputation grow with academic generational development. It is absolutely essential to start with a set-up already close to critical sustainable mass and in a position to attract additional researchers to generate publications and grant income within five years. Furthermore, workers in newly emerging fields are critically dependent upon interactions with co-workers in their field to stay in touch with new developments.

It is therefore proposed that the launch of a Developmental Biology programme at UWA should begin with appointments to (at least) two senior positions at the heart of the new Developmental Biology – a molecular Epigeneticist and an Evolutionary Morphogeneticist in broad terms; these people should be active researchers of repute, preferably in a position to bring with them the core of a working research programme in the form of graduate students, postdocs and grants. It should be made clear to the appointees that they are explicitly charged with the responsibility of setting up a viable and sustainable research and teaching programme in Developmental Biology, building upon collaborations with one another and with the broad range of related human and other resources already in place at UWA.

Additional documents
(b) Figure 1 indicating interactions with existing related research groups at UWA.
(c) Background to a new teaching program with Figure 2 summarising existing related undergraduate teaching at UWA.
(d) Case for establishing a Chair in Molecular Genetics (Epigenetics).
(e) Case for establishing a Chair in Evolutionary Developmental Biology.
Visualisation of Potential Interactions between Chairs in areas of Epigenetics and Evolutionary Morphogenesis and with Existing Research Groups at the University of Western Australia
Undergraduate Teaching Programme in Developmental Biology

While initial critical mass to establish a viable Developmental Biology Program might at first best be achieved by starting with a core of researchers, including postgraduate students and postdocs attracted in from outside this university, it can only become sustainable over the long term by a steady feed of students from our own programmes. The best way of achieving such a directed progression of graduates is through a programme clearly named for its destination, that is, through the setting up of a BSc (Developmental Biology).

Many of the units already offered through various BSc programmes at UWA are suitable for inclusion in such a programme, either because they directly address morphogenesis and development and tissue repair, because they address the underlying genetics and molecular biological mechanisms, or because they address applications of the nexus between genetics and development. These units are set out in the diagram below. The table which follows fits them into the structure of a BSc programme, addressing issues of prerequisites (or recommended prior studies) and timing.

What is missing from the diagram, and our offerings are the core units of a Developmental Biology programme. While aspects of morphogenesis make an appearance in a wide range of units, according to the needs of those units for explanation of phenomena of the adult organism, this university no longer offers a basic second year unit in embryology which allows a student to gain a clear picture of the overall development of an organism. Nor does it offer a comparative embryology unit, or one which deals with the role of developmental variation in the genesis of novel adult forms and the forces which may shape change in developmental processes. It does offer units which examine some of the molecular mechanisms by which these morphogenetic events are influenced, but none that explicitly link them to the external environment and the whole living organism.

While it may well be that in the long term a range of developmental biology units are developed (eg relating to plants, humans and other animals), it would seem that the establishment of a distinctly recognisable Programme in Developmental Biology would require at the outset a dedicated, obligatory core unit at each of second and third year which sets the framework for the detailed and specialised units already available to be applied to the programme. Such units should also have the advantage of giving students enrolled in the Programme a sense of identity with it, leading to aspirations to progress to study at the research level in the area.
Undergraduate Units Relevant to a Developmental Biology Program already in Place at UWA
# BSc (Developmental Biology) Potential Structure

## LEVEL 1: FOUNDATION PACKAGE 2e: Units to the value of 48 points as follows:

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<th>Semester 1 (all 6 points)</th>
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<td><strong>Up to 4 units from this box</strong></td>
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<tr>
<td>BIOL1130 Core concepts in Biology</td>
<td>BIOL1131 Plant &amp; Animal Biology</td>
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<td>ANHB1101 Human Biology I</td>
<td>SCIE1106 Molecular Biology of the Cell</td>
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### One of the pairs
- CHEM1101 Inorganic and Physical Chemistry + CHEM1102 Organic Chemistry
- CHEM1103 Biological Organic Chemistry + CHEM1104 Biological Inorganic & Physical Chemistry
- CHEM1105 Introductory Chemistry + CHEM1106 Biological Chemistry

### One of the pairs (**Note new unit numbers & content from 2007**)
- MATH1010 Calculus & Linear Algebra + MATH1020 Calculus, Stats & Probability
- MATH1165 Calculus & Modelling + STAT1160 Statistics A
- MATH1040 Calculus B + STAT1123 Statistics B

*And up to two level 1 units chosen in consultation with a Faculty advisor*

## LEVEL 2

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<td>ANHB 2212 Human Structure &amp; development</td>
<td>NEW CORE UNIT (Morphogenesis)</td>
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<tr>
<td>GENE2204 Principles of Genetics</td>
<td>GENE 2230 Molecular Genetics</td>
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<tr>
<td>SCIE2225 Molecular Biology</td>
<td>SCIE2203 Bioinformatics (Available)</td>
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<td>BIOC2201 Biochemistry of the Cell</td>
<td>BIOC2202 Biochemical Regulation of Cell Function</td>
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<td>CHEM2210 Structural Determination and Physical Chemistry</td>
<td>CHEM2221 Biological &amp; Medical Chemistry</td>
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<tr>
<td>ANIM2204 Vertebrate Zoology</td>
<td>ANIM2206 Vertebrate Adaptations</td>
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<td>ANHB2216 Human Reproductive Biology</td>
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<tr>
<td>GENE3330 Molecular Genetics &amp; Genomics</td>
<td>SCIE3325 Molecular Biology</td>
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<td>ANHB3308 Developmental Biology (S3)</td>
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<tr>
<td>PHYL3300 Mammalian Cell Biology</td>
<td>GENE3320 Medical Genetics</td>
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<td>BIOC3352 Cell &amp; Metabolic Biochemistry</td>
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<td>ANHB3313 Cell &amp; Tissue Organisation</td>
<td>ANHB3316 Human Reproduction (6 points)</td>
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<td>ANIM3302 Genetics &amp; Evolution (6 points)</td>
<td>ANIM3313 Marsupial Biology (6 points)</td>
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<td>GENE3310 Genetics &amp; Plant Breeding (6 points)</td>
<td>GENE3304 Molecular Genetics in Managed &amp; Natural Systems (6 points)</td>
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<td>GENE3303 Genetics &amp; Animal Breeding (?SEM)</td>
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School of Anatomy & Human Biology
The case for establishing a Chair in Developmental Genetics (Epigenetics) in the School of Biomedical, Biomolecular and Chemical Sciences at the University of Western Australia

Recent advances in the application of model systems to identify genes which underpin early embryonic development and signal the later morphogenesis of many tissue and organ systems have moved Developmental Genetics to the forefront of biomedical research. The surge of interest in using stem cells to treat human disease and to enhance tissue repair, and the growing understanding of the implications of what has been learned of the specification and maturation of the immune system, provide some examples of how Developmental Genetics impacts on biomedicine.

With the study of the role of genetics in the development of complex systems there has emerged an appreciation of the role of epigenetics. This relates to heritable changes in gene function that occur without a change in the sequence of nuclear DNA and includes the study of how environmental factors which affect a parent can result in changes in gene expression in offspring. For instance, foetal development in humans is profoundly influenced by epigenetic "imprinting", where the physiology of the offspring is dictated by the mother. The implications of such epigenetic phenomena are currently exciting stakeholders in the fields of medicine, veterinary science and agriculture worldwide.

One object of the study of epigenetics is elucidation of the mechanisms by which gene regulatory information that is not defined in DNA sequences is transmitted from one generation of cells to the next. Current interest is focused on modifications of the proteins (histones) that surround the DNA as major drivers of epigenetic regulation of gene expression. In this respect there are strong and essential links between epigenetics and the fields of structural biology and proteomics. The promotion of Developmental Genetics and, in particular, Epigenetics by establishing a named Chair in the area will complement and enhance existing research in the School of Biomedical, Biomolecular and Chemical Sciences (BBCS) as well as strengthen links across Disciplines and with other Schools in multiple Faculties.

The research and teaching profile of the School of BBCS identifies strengths in the areas of structural biology, cell signalling, stem cell biology, tissue repair, molecular biology, gene regulation, human and animal physiology, plant biochemistry and plant genomics. It is clear that staff in all of these areas would benefit from the location of a focus of expertise in Developmental Genetics and Epigenetics, within the School. Such an appointment would maximize opportunities for collaborations with a number of well-established research groups within the School and for shared use of equipment and infrastructure housed within the Molecular & Chemical Sciences and adjacent Physiology buildings. Core facilities in these areas include the comprehensive structure determination suite, mass spectrometry equipment and expertise and facilities for cell and whole animal studies. Given the existing discipline mix, a case can be made for the Chair to be appointed in an area with relevance to Biomedicine, but with a basic research orientation. The ideal appointee could have an interest in Epigenetic phenomena in an animal model system, such as Zebrafish, mouse or C.elegans.

Teaching in several Schools in the Faculty of Life and Physical Sciences could benefit substantially from the appointment of a modern epigeneticist with expertise in the continuing growth areas at this university of genetics, molecular biology and cell biology. In particular, an appointment in Developmental Genetics will complete a comprehensive teaching program in Genetics within the School of BBCS. Many of the tools used by an epigeneticist, including genomics, proteomics, transcriptomics, and forward and reverse genetics screening, are now central to contemporary genetics. Exposure of our students to these technologies will significantly enhance the learning experience in genetics.

In summary, a Chair in Developmental Genetics (Epigenetics) will have profound and positive long-term repercussions for both research and teaching capacities with the Discipline of Biochemistry and Molecular Biology in the School of BBCS, the Faculty and wider University.
The case for establishing a Chair in **Evolutionary Developmental Biology**

in the Faculty of Life and Physical Sciences

at the University of Western Australia

Developmental Biology has become a pivot research area, integrating and feeding a variety of other biological research fields. The re-emergence of Developmental Biology as a powerful discipline has resulted from new concepts and methods from molecular and cellular biology: these enable investigation of completely new aspects of Developmental Biology including the genetic inscription of developmental processes and translation of molecular processes into molecular morphogenesis of the cell, tissues, organs and, ultimately the whole organism. In turn, new concepts from Developmental Biology are now informing other areas of biological research including, tissue repair and engineering, stem cells, differentiation, epigenetics, the origin and control of cancer and the biology of aging, affecting all parts of the body including the nervous system, reproductive, immune and musculo-skeletal system.

Developmental Biology addresses not only the time frame of the development of the individual organism, but also that of evolutionary development of species. Issues of “why and how” certain genes, gene expression cascades and body plans have emerged and been successful, and others not, can now be approached by comparing molecular morphogenesis of living organisms of known phylogenetic relationship and applying evolutionary concepts to the analysis.

Within the Faculty of Life & Physical Sciences (FLAPS), the School of Anatomy & Human Biology (A&HB) is already involved in many aspects of human evolution, comparative anatomy, tissue repair, cancer biology, cell biology, genetics, immunology, reproductive biology, neuroscience and tissue engineering through its teaching and research programmes. Establishing a Chair of Evolutionary Developmental Biology would take advantage of what is already available in the School and the wider Faculty, but also link the different areas together, integrating and complementing them by employing the specific concepts of Evolutionary Developmental Biology.

The School of A&HB is well equipped for teaching and research in a variety of aspects of human development, including genes, cells, organ systems, whole organism biology, behaviour and population and evolutionary biology. The laboratory-based research infrastructure includes molecular and cellular biology laboratories, histology and microscopy equipment, advanced imaging, cell culture and small animal facilities. Any small animal model (whether eutherian mammal, marsupial, reptile, fish or invertebrate) would fit well into the School. An academic leader in the area of Evolutionary Developmental Biology, as well as participating in teaching within the School and enriching existing units, would make their own contributions to the program in Developmental Biology through specific units in the second, third and fourth (Honours) years of science teaching.

A focus for Evolutionary Developmental Biology within the School of A&HB and FLAPS would enhance collaborations with others working in closely related areas of teaching and research, especially involving genetics, molecular and cellular biology, biomedical and animal science. In summary, a Chair in Evolutionary Developmental Biology would enhance and extend existing teaching and research, to provide extraordinary benefits to the School of A&HB, the Faculty and the new initiative of Developmental Biology within the wider University.
The case for establishing a Chair in Physiological Genomics in the School of Biomedical, Biomolecular and Chemical Sciences at the University of Western Australia

A senior position in Physiological Genomics is part of a major initiative which promotes new cross disciplinary research within the Schools of Biomedical, Biomolecular and Chemical Sciences (BBCS) and Anatomy & Human Biology (A&HB), and the wider research community. The initiative comprises a cluster of 3 chairs, or senior positions, to be appointed to candidates with international credentials in developmental biology, cell biology, genomics (including gene-environment interactions) and physiological phenotypes in health and disease. An overarching theme is Developmental Biology.

The contribution by a physiologist will be crucial to the proper execution of this initiative as physiology is concerned with explaining the feedback processes that maintain the integration of various organ systems comprising the whole animal. This includes perturbations exerted during development, the environment, mutations and the transition from normal to abnormal processes. Physiological genomics links the genotype to physiological processes at all levels of organisation – from cell to whole body - and it is applied to many areas of physiology, environmental physiology and pathophysiology. Physiology will play a central role in the Developmental Biology initiative with the appointment of a “rising star” in a field of biomedical science with a strong focus on cell and organ function in relation to the upstream mechanisms at the genome. The position will thus provide a perspective that spans across a greater breadth of the overall program.

An important benefit of the initiative is to draw together existing physiological research activity in BBCS and in A&HB, which currently focus on cell signalling, neuroscience, nutrition and cell and systems physiology, development and disease. Virtually all areas of research expertise in the Discipline Physiology are compatible with the overall thrust of the initiative, and can both contribute to and benefit from new appointments discussed above.

An essential part of the initiative is for the establishment of collaborative research where intellectual and physical resources are pooled creating a centre of academic activity. Initially this will be driven by research, but the aim is to develop a strong teaching-research nexus based on developmental science. The disciplines contributing to the program already have relevant undergraduate units which will be strengthened by the activities of the group and which will also provide a source of postgraduate students. The physiological genomics position will provide strength and application to level 2 and 3 Physiology units which include membrane biophysics and signalling, cell physiology and integrative systems physiology.
The University of Western Australia

Academic Appointments in Developmental Biology
at the University of Western Australia

The University of Western Australia is a strong, research intensive university with one of the highest undergraduate entrance qualifications in Australia. Developmental Biology is of increasing importance to teaching and research at UWA, and the Faculty of Life and Physical Sciences is to make at least one fulltime academic appointment in this area. The first will be a Professor (or Associate Professor) in Developmental Biology. The School of Anatomy & Human Biology and the School of Biomedical, Biomolecular and Chemical Sciences, along with collaborating laboratories in the Institute for Medical Research (WAIMR), have vigorous research cultures in the biology and biomedical disciplines that are well supported by peer-reviewed national and international grants. These activities attract high-quality Honours and Postgraduate students.

The high level appointments in Developmental Biology are intended to provide strong teaching and research leadership in the field, one that is of rapidly growing importance to biological research at the University and in the State. The professorial appointment will ideally have a strong focus on Genetics (Epigenetics) or Evolutionary Developmental Biology: these areas include the genetic inscription of developmental processes and translation of molecular processes into molecular morphogenesis of the cell, tissues, organs and, ultimately the whole organism. The appointee will be expected to have a demonstrated ability to lead and participate in collaborative research programs and associated teaching.

The new Molecular and Chemical Sciences building at UWA provides one of the most modern biomedical and biomolecular laboratories in Australia (see Nature 2005;436:332)

The appointment will co-ordinate the undergraduate and postgraduate teaching of Developmental Biology in the University, and will be expected to develop new courses and specialised degree programs in this and related fields. Schools within the Faculty of Life and Physical Sciences laboratories are located in the University’s new $65M Molecular and Chemical Sciences building which houses 200 staff in the disciplines of Chemistry, Biochemistry and Molecular Biology and also in specialised laboratories within the School of Anatomy & Human Biology that has complimentary strong anatomical, histological and cell biology expertise. Research undertaken in the disciplines supporting the appointments include innovative programs in Comparative and evolutionary Anatomy, Reproductive biology, Neuroscience and skeletal muscle research, Cancer biology, Genetics, Molecular and Cell Biology, Proteomics, Metabolomics, Bioinformatics, Structural Biology and Plant biology, all conducted by internationally renowned scientists.

Applicants may seek further information from the UWA staff members Professor Brendan Waddell, Professor Miranda Grounds, Professor George Yeoh, Professor Geoff Stewart
Applications are invited for the tenured position of Professor of Developmental Biology

APPLICATION INFORMATION

Applications are invited for a tenured appointment in Developmental biology at level E (Professor). Applicants must have an outstanding research and grant-funding record, as well as demonstrated excellence in undergraduate and postgraduate teaching of courses in the field. The appointment, to be made at a level appropriate to qualifications and experience, will reflect the need for strong leadership in Developmental Biology research with a demonstrable capacity to collaborate with existing related research activities in the State and to conduct world-class independent research in the field.

For further information regarding the position please contact the Head of School of

CLOSING DATE: TBA

The University of Western Australia offers an attractive benefits package including fares to Perth for appointee and dependants along with a removals allowance, generous superannuation and leave provisions. These and other benefits will be specified in the offer of employment.

APPLICATION DETAILS: For copies of the selection criteria please access the website http://jobs.uwa.edu.au/. Written applications quoting the reference number, personal contact details, qualifications and experience, a teaching portfolio along with contact detail of three referees should be sent to Director, Human Resources, The University of Western Australia, 35 Stirling Highway, Crawley WA 6009 by the closing date.
Applications are invited for the tenured position of
Professor of Structural Biology

APPLICATION INFORMATION

Applications are invited for a tenured appointment in structural biology at level E (Professor). Applicants must have an outstanding research and grant-funding record, as well as demonstrated excellence in undergraduate and postgraduate teaching of courses in the field. The appointment, to be made at a level appropriate to qualifications and experience, will reflect the need for strong leadership in structural biology research with diffraction methods, with a demonstrable capacity to collaborate with existing related research activities in the State and to conduct world-class independent research in the field. A level C (Senior Lecturer) appointment in structural biology is planned once this post has been filled.

For further information regarding the position please contact the Head of School of Biomedical, Biomolecular and Chemical Sciences, Professor Geoffrey Stewart on 61 8 6488 7351 / head@bcs.uwa.edu.au.

CLOSING DATE: TBA

The University of Western Australia offers an attractive benefits package including fares to Perth for appointee and dependants along with a removals allowance, generous superannuation and leave provisions. These and other benefits will be specified in the offer of employment.

APPLICATION DETAILS: For copies of the selection criteria please access the website http://jobs.uwa.edu.au/. Written applications quoting the reference number, personal contact details, qualifications and experience, a teaching portfolio along with contact detail of three referees should be sent to Director, Human Resources, The University of Western Australia, 35 Stirling Highway, Crawley WA 6009 by the closing date.
Appendix 6: MENTORING IN HUMAN FUNCTIONAL ANATOMY

Introduction and outline

This initiative involved having the Human Functional Morphology 304 students acting as demonstrators and tutors during the laboratory classes for Human Functional Anatomy 213.

The HFM 304 students spent 4 hours each week dissecting the human body. They also received lectures in spinal anatomy. In addition to these activities they had a two hour session where they had a preview of the second year laboratory class for that week and they spent another two hours in the second year laboratory class acting as demonstrators and tutors.

The second years receive two lectures and a 2 hour lab class each week. During those lab classes there are 80 minutes of unstructured time where they use the specimens and teaching materials to work their way through the activities in their laboratory manual. During this time the third year students are available in the lab and their role is to interact informally with the 2nd years, answering questions and demonstrating the anatomical specimens available in the lab.

During the last 25 minutes of the laboratory session the second year students gather in their tutorial groups under the control of a pair of third-year tutors. With 140 students in the 2nd year group and about 30 in the 3rd year group, this meant that the tutorials could be quite small – about 9 students and the tutors pairs were designed to even out the abilities of the tutors and to provide them with support, in what to some maybe a quite stressful activity. Activities during this period include a roll-call to promote attendance, and other activities to encourage students to keep up to date with their studies and to focus on and further develop aspects of the topic. This period also gives the opportunity for continuous assessment activities.

The semester is 13 weeks long and the first tutorial is for the group the meet and to discover where they will meet each week, also a tutorial group rep is elected. The last lab of the semester is quite informal and there is not tut meeting.

Vivas.

Five of these tutorials during the semester are vivas, where each tutor asks each student a triplet of questions about the practical aspects of the course. This usually involves reference to specimens and the identification of material referred to the laboratory manual. Triplets of questions were arranged so that the first questions was easy and have encouragement to the 2nd years, the 2nd and 3rd questions got progressively harder so that most people could answer the 2nd but less could answer the third, this provided a basis for assessing the progress of students without demoralising them as tutors were instructed to make sure everyone could correctly answer the first question and that no-one should fail their viva. Each contributed 3% towards the final mark for the unit.

Tutorials.

The other tutorial sessions were actual tutorials where two or three separate topics were covered. In the first tutorial session the 3rd years presented a topic each using 1 page tutorial handouts that was prepared by the unit coordinator. Subsequent tutorials were presented by the second years who were expected to prepare a tutorial handout of similar detail and size to the ones they had received in the first tutorial session. The 2nd years were assessed on their tutorial presentation and the tutorial handout that they prepared, and this contributed 10% towards their final mark. The third year students had to assess the performance of the tutorial presenters on the following criteria:

1. That the presenter engaged and interacted with the group and didn’t just read from a sheet
2. That the presenter prepared a tutorial that clarified the topic and presented the material in a useful way
3. That the tutorial handout was clear and correct.

Third year assessment of lab performance

One week was set aside for the 3rd year student to present a tutorial of their own. These were assessed on the same criteria as the 2nd year tutorials. External examiners were brought in to listen to their presentations, and assess their performance. The same external examiners were also invited in during a viva week to assess the 3rd years performance on the following criteria:

1. That ask the triplets of questions in a non-intimidating way.
2. That the questions were graduated and fair among the students in the group.
3. That the viva is educational for the whole group, not just the student who is being quizzed.
The assessment of the tutorials that the third year student presented contributed 10% towards their final mark. Ten percent was also given for the performance of the vivas, with 5% being the examiners assessment and 1% given for attending and doing each viva.

It is expected that this initiative would benefit the 2nd years in a number of ways
1. That they would learn the lab material better and in a week-by-week manner rather than cramming at the end. The evaluation of this criterion is based on the performance in the final laboratory exam compared with the previous year.
2. That they would learn more by having close contact in their small tutorial group with a pair of tutors who could help them learn. This should be reflected in the results of both the practical and theory exams and the general satisfaction with the unit as reflected in SPOT surveys
3. That the students would benefit from extra demonstrators on the dissecting room floor
4. That they would do better in their final theory and practical exams
5. That they would enjoy the course more and this would be reflected in their responses to the SPOT survey.
6. What else?

It is expected that the 3rd years would benefit from their involvement with the 2nd years in the following ways:
1. That they would enjoy the experience and gain in confidence
2. That they would deepen and broaden their anatomical understanding by their efforts in preparing and teaching in the lab classes
3. What else?

Results

213 results 2004 compared with 2005

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>MCQ paper 40 questions</td>
<td>29.4 (6.4)</td>
<td>28.1 (7.7)</td>
</tr>
<tr>
<td>Lab test (out of 125)</td>
<td>73.6 (19.1)</td>
<td>78.2 (19.9)</td>
</tr>
<tr>
<td>SAQ (percentage)</td>
<td>65.86</td>
<td>66.4</td>
</tr>
<tr>
<td>Overall semester mark</td>
<td>66.01 (12.99)</td>
<td>65.72 (11.86)</td>
</tr>
</tbody>
</table>

213 SPOT reports 2004 versus 2005
Means for question categories

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. About the lecturing…</td>
<td>3.94</td>
<td>3.62</td>
</tr>
<tr>
<td>2. About the unit…</td>
<td>3.42</td>
<td>3.67</td>
</tr>
<tr>
<td>3. About the practicals</td>
<td>3.65</td>
<td>3.63</td>
</tr>
</tbody>
</table>

213 SPOT questions 2005 relating to the mentoring program
The vivas have encouraged me to learn the lab material week by week 3.84
Preparing and participating in the tutorials has been a valuable activity 3.79
The system of 3rd year student tutors working in pairs has worked well 3.35
The 3rd year students have been effective demonstrators in the lab classes 2.98

213 SPOT comments
- Most liked the vivas and continuous assessment
- Most liked the 3rd year involvement.
- However many thought the 3rd year demonstrators were not adequately prepared

213 Comments in staff/student meeting
- Some were not happy with the performance of the 3rd years as demonstrators in the unstructured lab sessions (not well prepared, and not interacting well).
Appendix 6

Mentoring

213 SURF reports 2004 versus 2005

<table>
<thead>
<tr>
<th>Q1</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.4</td>
<td>3.0</td>
</tr>
<tr>
<td>2</td>
<td>2.6</td>
<td>3.1</td>
</tr>
<tr>
<td>3</td>
<td>2.9</td>
<td>3.2</td>
</tr>
<tr>
<td>4</td>
<td>2.4</td>
<td>3.1</td>
</tr>
<tr>
<td>5</td>
<td>2.5</td>
<td>3.0</td>
</tr>
<tr>
<td>6</td>
<td>2.6</td>
<td>3.2</td>
</tr>
</tbody>
</table>

304 SPOT reports 2005

Means for question categories

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>About the lecturing…</td>
<td>4.13</td>
</tr>
<tr>
<td>5</td>
<td>About the unit…</td>
<td>3.75</td>
</tr>
<tr>
<td>6</td>
<td>About the practicals…</td>
<td>3.64</td>
</tr>
</tbody>
</table>

304 SPOT questions 2005 relating to the mentoring program

<table>
<thead>
<tr>
<th>Question</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being in the 213 labs has been a worthwhile experience</td>
<td>3.79</td>
</tr>
<tr>
<td>I have been stimulated to keep up to date with the basic anatomy topics</td>
<td>4.00</td>
</tr>
<tr>
<td>Preparing for tutorials and vivas has helped me clarify my ideas</td>
<td>3.70</td>
</tr>
<tr>
<td>I have gained insights into the learning process</td>
<td>3.83</td>
</tr>
<tr>
<td>I have received adequate preparation for the for the 213 lab classes</td>
<td>3.27</td>
</tr>
</tbody>
</table>

304 SPOT comments

- Those who didn’t like it said:
  - Boring, Intimidating
  - Too much work
  - I’m not knowledgeable enough.
  - Not fair on the 2nd years.
  - We should get paid!
- Those who liked it said:
  - Strengthened my knowledge, Loved teaching, Reinforced what I know, educational and fun,
  - Good ‘cos I learned through preparation,
  - Needed the incentive of marks.

304 SURF reports 2004 versus 2005

<table>
<thead>
<tr>
<th>Q1</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.4</td>
<td>2.8</td>
</tr>
<tr>
<td>2</td>
<td>3.5</td>
<td>3.0</td>
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<tr>
<td>3</td>
<td>3.4</td>
<td>3.2</td>
</tr>
<tr>
<td>4</td>
<td>3.2</td>
<td>2.8</td>
</tr>
<tr>
<td>5</td>
<td>3.6</td>
<td>3.1</td>
</tr>
<tr>
<td>6</td>
<td>3.8</td>
<td>3.2</td>
</tr>
</tbody>
</table>

I (N Milne) was concerned that some students would refuse to participate and I was prepared to offer alternative activities – no-one did

There were initial complaints about the forced pairings, mostly from better students who felt that their partner would not pull their weight – But these issues evaporated after the first two weeks
Mutual learning: Can third years tutor second years to the benefit of both parties?

Associate Professor Nick Miller
School of Anatomy and Human Biology
University of Western Australia.

**Human Functional Anatomy**
ANIB 2213
- 6 point unit—covering the macroscopic aspects of the body, head and neck.
- Enrolment: about 120
- Contact time:
  - 2 hour lecture
  - 2 hour laboratory
- The lab/lit time includes:
  - 30 minutes of supervised time in the dissection room with each student, educational specimens and access to dissection lab.
  - 2.5 minutes ofotted time.

**Human Functional Morphology**
ANIB 3304
- 17 point unit—covering the anatomy of the whole body, studied through dissection.
- Enrolment: about 30
- Contact time:
  - 2 hours of lecture/tutorial on spinal anatomy
  - 2 hours of practical
  - 2 hours laboratory
  - 2 hours tutorial
- The 2 hours lecture/tutorial time and the 2 hour lab support the components that are the subject of this lab/tutorial.

**Reasons**
- My practical reasons
  - It coordinates two human anatomy units in second year.
  - Staffing availability, quality and cost constraints make it hard to provide ongoing continuous assessment for the large 3rd year unit.
- Educational reasons
  - Anatomy is content rich and there is a need to reinforce a lot of basic material for both the 2nd and the 3rd year students.
  - This scheme develops generic skills
  - Staffing is greater, preparing lectures, preparing notes.
  - Student engagement with their own learning
  - Shift away from teacher centered learning

**THE PLAN**
- The 3304 students will act as:
  - Demonstrators in the 2213 laboratories.
  - Tutors in the 2213 tutorials which are held in the last 30 minutes of the lab class. These tutorials take three forms:
    - 2 hour led tutorials
    - Student led tutorials
    - Online—where the 3304 tutors tested the 2213 students on their practical knowledge.
Appendix 6: Mentoring

3rd Year Preparation
- On the afternoon before the 2213 labs the 2004 students had a two hour session where they prepared for teaching the following day. They:
  - Familiarised themselves with the actual tutorial of the 2213 lab.
  - Received training in delivering a tutorial.
  - Received training in running a viva and preparing viva questions.
  - Received training in assessing a tutorial.

Tutor Pairs
- In order to ensure that the members of 2213 tutorial groups were not disadvantaged, the 2004 students were assigned into pairs operating in the performance in the second year unit (2213).
  - The HC students were paired with the lowest achievers from the previous year.
  - The HC students were paired with the pass students.
  - The C students were placed together.

This cycle:
- Reinforced the knowledge base of tutor pairs.
- Gave the student tutor extra support in the tutorial situation.
- Felt rewarded when the students achieved the desirable internal mentoring outcome between the tutor pairs.

Second Year Student Assessment
- The 2nd year students were involved in the clotheholics assessment of members of their tutorial group:
  - Each 2nd year student prepared and delivered a 10-minute lecture accompanied by a one-page handout.
  - The tutorial preparation and the handout were assessed by the tutor pair (37.5% = 100%).
  - Each 2nd year student was assessed by their chosen tutor during the lecture at (37.5% = 100%)
- These assessments, and the 2nd year tutorial marks, were overseen by myself and a credit tutor.

Third Year Student Assessment
- The 3rd year students each delivered two tutorials to their 2nd year group (5+5=10%).
- The 3rd year students were assessed on their performance running vivas (5+5=10%).
- These assessments were carried out by using experienced tutors who came in and listened to a sample of vivas and tutorials.

Other Third Year Assessment Related to the 2nd Year Course
- The third years were required to produce two posters which addressed some aspect of the 2nd year course (10% each).
- They also had to produce one multiple choice question based on a second year learning outcome, together with a statement of what aspects of the 2213 course that MCQ tested.

Criteria for success...
- It was hoped:
  - That the second year students
    - Would show an improvement in their exam results on the module.
    - Would get higher SPQI and SURF scores than the previous year.
    - Would make positive assessments informally, in staff-student meetings and in SACTs.
  - The third year students
    - Would apply the experience and gain in knowledge and confidence, and this would be reflected in the various feedback instruments.
  - The scheme would get positive feedback from academic peers.
**Mentoring Appendix 6**

### Quantitative results... 2nd year

- **Exam results**
  - Written Exam
  - Practical Exam
  - Overall %

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written</td>
<td>53.4</td>
<td>52.1</td>
</tr>
<tr>
<td>Practical</td>
<td>25.6</td>
<td>25.2</td>
</tr>
<tr>
<td>Overall</td>
<td>66.0</td>
<td>65.7</td>
</tr>
</tbody>
</table>

- **SURF**
  - Comment: What else could be done?

### Quantitative results... 3rd year

- **SPQI**
  - Mean of question categories

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the learning</td>
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<td>About the unit</td>
<td>3.75</td>
</tr>
<tr>
<td>About the practical</td>
<td>4.64</td>
</tr>
</tbody>
</table>

### Feedback Comments - 2nd year

- Comments in SPQI
  - What liked the most and what could be improved.
  - Most liked the 2nd year involvement.

- Comments in staff/student meeting
  - Some were not happy with the performance of the 3rd year demonstrators in the practical sessions.

### Quantitative results... 3rd year

- **SPQI**
  - Mean of question categories

<table>
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<tr>
<th></th>
<th>2005</th>
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</tr>
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<td>About the unit</td>
<td>4.00</td>
</tr>
<tr>
<td>About the practical</td>
<td>3.70</td>
</tr>
</tbody>
</table>

### Feedback Comments - 3rd year

- Comments in SPQI
  - "The involvement in SPQI will be worth while again" — Issue 2.5.8
  - Those who did the best were:
    - Those demonstrating "too much work done, not beneficial enough. Next year we should get people with knowledge.
    - Those with past experience.

- Comments in staff/student meeting
  - "Involvement has been worthwhile and rewarding experience, has made us learn more about other areas of work."
Appendix 6

Mentoring

Peer Feedback
- Experienced staff who came in to assess the 3rd year performance in tuts and vivas were all very impressed.
- All staff who casually came into the teaching space were impressed with the atmosphere and the "positive buzz" in the classes.

Summary
- 2nd years
  - Had slightly improved lab exam results.
  - Showed no change in other exam results or spats overall.
  - SURF results noticeably improved.
  - Generally positive comments but some dissatisfaction with performance of 3rd years in labs (demonstrating).
- 3rd years
  - Generally good responses to 2005 SPOTS.
  - Slight decline in lab SPOTS scores (but still OK).
  - Very positive comments overall — they definitely enjoyed the interaction with 2nd year students.

The Future
- This exercise is definitely worth repeating.
- Some third year students were not good at demonstrating and were not prepared.
  - In 2005 SPOTS, ANH1304 students had not passed ANH1203.
  - ANH1203 is now a prerequisite for ANH1304.
  - Preparation and performance of 3rd year needs to be made accessible.
  - Introduction of regular visits for the 3rd years.
  - Points for performance in lab classes.
- This year the 3rd years will all have been 2nd years last year — and will have a better appreciation of what is required of them in the labs.

Mutual Learning: Can third years tutor second years to the benefit of both parties?

THANK YOU

Initial reactions of the third year students
- I was concerned that some students would refuse to participate and I was prepared to offer alternative activities — no one did.
- There were initial complaints about the forced pairings, mostly from better students who felt that their partner would not pull their weight — but these issues evaporated after the first two weeks.

School of Anatomy & Human Biology

A6-7
## Appendix 7: Budgeting

### Table A7:1

<table>
<thead>
<tr>
<th>No. Students</th>
<th>EFTSU</th>
<th>Academic staff hours</th>
<th>Support staff hours</th>
<th>P/Time staff hours</th>
<th>P/Time cost</th>
<th>Academic Staff hrs</th>
<th>Support Staff hrs</th>
<th>P/Time Staff hrs</th>
<th>P/Time Staff cost</th>
<th>Academic Staff @ $42</th>
<th>Support Staff @ $30</th>
<th>Academic+Support +Part-time @ total EFTSU</th>
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Figure A7:1

Teaching Income

Future year projection

Medicine

Dentistry

Science

Grand Total

Appendix 7
School of Anatomy & Human Biology

0.00
500,000.00
1,000,000.00
1,500,000.00
2,000,000.00
2,500,000.00
3,000,000.00
$1,500,000.00
$2,000,000.00
$2,500,000.00
$3,000,000.00
Figure A7:2
Appendix 7

School of Anatomy & Human Biology

Figure A7:3

Dental Teaching Income

Future year projection

$0.00

$10,000.00

$20,000.00

$30,000.00

$40,000.00

$50,000.00

$60,000.00

$70,000.00

2005 2006 2007 2008 2009 2010

Y2

Y1
Figure A7:4

Medical Teaching Income

Future years projection

2005 2006 2007 2008 2009 2010

$0.00 $100,000.00 $200,000.00 $300,000.00 $400,000.00 $500,000.00 $600,000.00 $700,000.00 $800,000.00

GEP Y2 Y1
Appendix 8: Policy Documents

GUIDELINES ON PLAGIARISM

Plagiarism is "the taking and using as one's own of the thoughts, writings or inventions of another". These thoughts or writings could be, for example, from a book or the internet or from the work of another student.

Like the scientific process, assessment of students at university relies upon the integrity of the participants. The Department expects that any piece of work submitted by a student for assessment will be essentially their own work, and that the contributions of others to that work will be appropriately acknowledged. In essence, all students are expected to write their own essays and assignments, just as they are expected to sit the exams themselves.

Students should generally avoid verbatim copying of published work, even when the work is cited. They are strongly encouraged to express their knowledge and thoughts in their own words, rather than those of others, because this greatly assists the learning process. However, it is acknowledged that in some circumstances it is desirable to quote directly from a published work.

Plagiarism is a very serious offence that carries substantial penalties. If a student is found to have committed plagiarism, the student may receive a failing grade for the work in question and the Department may recommend the matter be dealt with under University Statute 17 (Misconduct). The student may be excluded from the unit.

These guidelines are not intended, in any sense, to discourage students from discussing their views with other students, staff or others outside the university. Indeed this is strongly encouraged as it is one of the very best ways of learning.

Any student who does not fully understand these guidelines or who experiences difficulties in following them should consult their tutor or unit coordinator.
PROCESS FOR INVESTIGATING/HANDLING PLAGIARISM

GUIDELINES FOR STAFF

1 Plagiarism must be thoroughly explained to all students at the beginning of each unit. The Department has a handout which also must be distributed at first point of contact.

Students should be encouraged to consult their unit coordinator if they do not fully understand what plagiarism means or have difficulty following the rules.

Around the time when students are preparing assignments, give clear examples of what is acceptable or not in your unit. For example, group discussions regarding essay ideas are not plagiarism, but separate and individual write-ups of the ideas must be presented. No part of the essay must be the same as another student’s.

2 If plagiarism is suspected, the student/s should be interviewed in an informal atmosphere, as plagiarism is unintentional in many, probably most, cases. The circumstances should be interpreted with compassion and due care for the student. At the same time, it must be made absolutely clear that in some cases plagiarism is a serious offence.

Always have another staff member present during such interviews plus a copy of the offending material with the relevant parts highlighted.

Some examples of situations:

♦ Failing to make clear the origins of quotations and sources, or just regurgitating bits of text book/article may be examples of true ignorance and therefore may not need a penalty. You might extend an invitation to resubmit the work.

♦ Copying another person’s work (even with permission) is more straightforwardly an act the student should have known was wrong. It therefore needs, if not a penalty, the elimination of a possible advantage. This can be handled, for example, by:
  (a) inviting re-submission
  (b) give one mark, but split it between the people involved where the original is not determinable and there has been collusion
  (c) giving “0” (where the original work is determinable)

3 Should it be judged by the unit coordinator that the plagiarism was a deliberate and considered attempt to gain advantage, the case should be forwarded to the Department’s Teaching & Learning Committee for consideration. This Committee will consider the case and if plagiarism is considered to have occurred, can apply a penalty ranging from:
  (a) a failing grade for the work in question
  (b) a failing or reduced grade for the whole unit
  (c) the Department recommending the matter be dealt with under University Statute 17 (Misconduct) [i.e. referred to the Faculty Office]
  (d) the student being excluded from the unit [Faculty Office]
  (e) in very serious cases, the student being excluded from the University [Registrar via the Faculty Office].

RATIFIED AT DEPARTMENTAL TEACHING MEETING 8 OCTOBER, 1999
SCHOOL OF ANATOMY & HUMAN BIOLOGY

ASSESSMENT POLICY

PHILOSOPHY & GUIDELINES FOR STAFF

These are the principles which guide assessment practices in the Department of Anatomy and Human Biology

1) Assessment should be fair
   a) Practical measures to ensure either the uniform confidentiality or the uniform availability of questions must be in place
   b) Departmental guidelines for dealing with suspected cases of plagiarism or other forms of cheating are to be followed (see separate documents)
   c) Due allowance for special circumstances is to be granted in accordance with formal requests from Faculty. Both the unadjusted grade and the nature of the allowance are to be recorded.
   d) An even or appropriately balanced coverage of material in the course should be represented across the set of assessment events for each course
   e) Examination questions should be confined to material covered in the course (this may include material presented in lectures, in the set textbook, in readings set for tutorials, in laboratory manuals etc)

2) Assessment procedures should be transparent
   a) Full details of the elements of assessment are to included in course manuals for each unit.
   b) Changes to the pattern of assessment published in course manuals can only be made with the agreement of all of the students affected. Agreement to changes should be sought formally, not assumed.
   c) The general format of examinations should be known to students in advance through at least one of
      i) Past examination papers being made available through the Library (website)
      ii) Changes in format from previous years advised in lectures and in handouts/ on websites
      iii) The distribution by handout/ on websites of sample examination papers with actual cover pages and examples of questions of the general form contained in the real paper.
   d) Marking criteria should be made known to students

3) Accountability in assessment should be demonstrated
   a) Full responsibility for the safekeeping of all material submitted for assessment lies with course controllers.
      i) Records are to be kept of the movements of all materials submitted for assessment. Course controllers must keep lists of papers distributed to all markers, and confirm the return of each.
      ii) Where penalties apply for late submission of work for assessment arrangements must be in place for recording the time of receipt of submitted work. If work is not submitted directly to the course controller a secure (locked) receptacle must be provided for its collection.
      iii) Assessed material is to be returned directly to the student concerned, with due regard for the confidentiality of marks. Direct evidence of permission to collect material by proxy should be sought. Papers bearing marks and comments should not be left for collection in open containers accessible to other staff or students.
      iv) Examination papers are to be kept in a secure location for 6 months from the relevant examination period.
      v) All material to do with assessment which is not returned to the student concerned must be disposed of as confidential waste at the end of its period of use or obligatory secure storage (this includes lists of marks/ grades).
      vi) Marks for each unit are to be ratified by the Departmental Board of Examiners before being made available to the Faculty. Information presented to the Departmental Board of Examiners should include
         vii) The class list to be forwarded to Faculty with marks and grades for each student
         viii) Details of the distribution of marks and grades recommended, including a brief explanation of unusual distributions
         ix) Details of any scaling procedures used. If scaling procedures have been used comparisons of raw and scaled distributions should be provided.
         x) Details of allowances made on account of requests from Faculty for Special Consideration.
   b) Appeals/ marking
i) Staff should be familiar with the procedures for appeals against assessment published in the Interfaculty Handbook.

ii) Requests for checking of marks or remarking should be received with grace and without hint of intimidation.

iii) Arrangements should be made at the time of initial examination for independent cross marking in the case of the granting of a remarking.

iv) A sample of scripts from across the range of grades initially awarded should be provided to the cross marker along with the scripts of the appeal case. The appeal case should not be identified to the cross-marker.

v) It should be made clear to students requesting a remark of their papers that they are obliged to accept the cross-marker’s grade, even if it is lower than that initially awarded.

4) Assessment should be formative as well as summative
   a) Assessment should not be based entirely upon a single end of unit test/examination
   b) Assessment tasks should span a range of modes (eg MCQ, essay, short answer, recognition practical test, presentation, project, computer test, journal)
   c) Assignments or tests set in the course of the unit are to be returned, marked, to the student in time to allow remedial action if necessary (within 3 weeks of submission in the case of major assignments, according to Faculty requirements)
   d) Where possible marked work should include guidance to improvement by way of one of
      i) Comments
      ii) Analysis of sectional and categorical marks
      iii) Discussion in tutorials
      iv) Model answers
      v) Marking guides

5) Timing of Assessment
   a) Unit coordinators should communicate through the Teaching and Learning Committee to avoid coincidence of due dates of major assessment tasks.

   b) Formal in-class assessment tasks worth more than 10% of the total marks for a unit are to be held during the set examination periods, in accordance with University policy.

   c) Formal in-class assessment tasks may only be held during scheduled class times during semester, in accordance with University policy.

END

Accepted Teaching Meeting 22 September 2000
SCHOOL OF ANATOMY & HUMAN BIOLOGY

ASSESSMENT POLICY
GUIDELINES FOR STUDENTS

- Both formative (feedback, training) and summative (testing) elements will be included.
- Assessment will be progressive — x% of the marks for the course can be earned (and known) before entry into the final exam.
- All works submitted for assessment during the semester will be returned in due time and with sufficient annotation to provide guidance for the next piece of work to be submitted.
- Penalties will be applied to work that is submitted beyond the set deadlines, unless a formal request for extension of the time limits, accompanied by appropriate documentation, has been made and granted. Penalties will not be of such magnitude to discourage eventual submission of the work. Timely feedback, as set out in the previous paragraph, is not guaranteed for work submitted beyond the due deadlines, even when an extension has been granted.
- As great a diversity of modes of assessment as possible will be included (examples relevant to unit).
- Assessment will be directed at developing the generic skills of analytical thinking, self-expression, clear argument and good writing, as well as towards recall of information presented in the course.
- Independence of thought and opinion will be rewarded. No disadvantage will be incurred for presenting opinions or propositions which are in disagreement with those presented in the course, so long as they are argued with the same rigour and supported with the same quality of evidence those presented.
- Due allowance for special needs will be given.
- Collaboration in the development of essays and tutorial papers is encouraged, but all pieces of work submitted must be entirely the work of the student(s) submitting them. Plagiarism will be penalised (see Departmental Policy on Plagiarism).
- Due care will be taken for the safety and security of all work submitted for assessment.

Grading:

*In general*

- Grading is not norm-referenced. Should it be justified by the work submitted, 100% of students in the course could be awarded High Distinctions (or Fails).

The following points were suggestions for consideration by unit coordinators. It was felt by the meeting, however, that each unit coordinator should complete this section of the policy according to the needs/operation of the unit concerned.

- In order to get a Pass mark (50%) it is necessary to actually answer the question which is set, showing a basic understanding of the issue at the centre of it and providing appropriate examples as an illustration.
- However good an answer is provided on a topic vaguely related to the question, but not actually answering it, the highest mark achievable is 45%.
- Credit (65%) will be awarded for an answer which includes ideas or examples provided in the lectures or texts and demonstrates a sound understanding of the material.
- A Distinction (70%-79%) will be awarded for work which answers the set question, is logically argued, reasonably written and includes evidence either of independent thought or of the application of independent points of view gained from extra reading.

- A High Distinction (80%-100%) will be awarded for work which included all of the elements necessary to obtain a distinction and which demonstrates excellence in presentation.

END
Laboratory class and tutorial attendance

Current practice, sanctions and methods of encouragement employed by unit coordinators

First year
HB 101 & 102. Labs/Tuts are compulsory, a roll is taken each week. Students missing two or more classes without valid excuses can be excluded from continuous assessment tasks that take place in the laboratory (eg 4 lab quizzes worth 2% each, in-class essay worth 5%).

Second year
HSD212
In HSD212 lab attendance at each sub-session (DR, Histology and Tutorial) was marked. The system turned out to be not 100% effective mainly because there were many students who, due to clashes elsewhere, attended the Lab/Tutorial sessions piecemeal.

Moreover, despite this measure, there is no policy statement that attendance is compulsory. Any kind of compulsion ought to be linked with a disincentive, as some units do. Disincentive could be in the form of penalty marks or disqualification from sitting the final exam. This also needs a practicable enforcement mechanism. Again, I think the School needs to formulate some policy on this subject.

I never was a pessimist in all these years of teaching, but the current second year science group doing 213 (212 in Sem 1) makes me wonder if compulsion for physical presence is of any use!

HFA213
Roll call during tutorial at end of lab session, but no sanctions on nonattendees.

HCT214
Labs are flexible in terms of when students do them – and whether they do them in the School or at home, but normally they choose to do it at the scheduled time 3-5.45pm on Monday when I am there to facilitate their learning tasks. No records are kept of attendance but website access (and regularity) can be traced.

BA215 - no labs
215 has no labs but has tutorials. Attendance is taken at tutorials and 15% of the assessment is comprised on participation/tutorials. This includes participation in discussion and leading of tutorials and submission of written commentaries on readings to be discussed in tutorials. This resulted (in my tutorials) of attendance above 92% over the term.

HB 216/281
A roll is taken each week and the lab book is marked in class on a weekly basis (effectively a sighting - given a grade of 2= complete; 1= incomplete or significant errors; 0= nothing). As students need to have finished their work by the following week, they tend to stay. Students absent without valid excuse cannot get their book marked (total value 6%). Attendance at labs is very good but this is not the case with Lectures!!

910.217 - a small lab test is only given out 30 mins from the end of each lab session. This is collected in the next week and missing papers noted.

Third year
HFM304
No measures taken to encourage attendance and no sanctions on nonattendees

DB308
HB308 is a high impact 6 week course with interactive training during lectures and practical classes. The knowledge is summarized each week in oral exams. These exams account for 36% of the total points available. It is impossible for a student to get good marks in these exams without attending class. Furthermore, additional 15% of the total points are given for performance in class and tutorials. I consider this sufficient to have some leverage on students not attending class.
HR312
There are no formal labs for 312 and I do not know how Neville is going to do it next year for 316.

BA311
No measures taken to encourage attendance and no sanctions on nonattendees

C&TO313
There are tests that get marks. Nothing more strict than this but think attendance is good as is so integral to their course.

AN325
No problems – full attendance except for clashes

**Medicine**
SB NS100 - all students have dots on their badges that match with their tut groups. Tutor can note absences. I would like to take a register but neither we or the techs have enough time.

LF NS201
No measures taken to encourage attendance and no sanctions on non-attendees

PMcM NS 201 Labs : I have a role list which I give to a tutor on one of the stations and she ticks them off when they pass through that station. I also have a photographic record and occasionally notice someone is not there but this is difficult. I am thinking of trying to improve this because of the issue of numbers for next year in second year med. I would be keen on some sort of swipe card system. Tuts are graded and marks deducted for non-attendance.
Dear Professor Stewart

RE: GUIDELINES ON LITERACY

Herewith this Department’s response regarding student literacy.

Expectations

It is our expectation that our graduates should have developed the ability to structure their listening and reading so as to discriminate core ideas from illustrative information, to synthesise information from a diversity of sources to develop a personal framework of ideas, and to critically evaluate new input in the light of this framework.

We expect that they will have developed the ability to express themselves clearly in the idiom appropriate to the task at hand.

In the case of written work for which there has been preparation time we expect the use of Standard English sentence structure and spelling to the level provided by common spellcheckers. We aim for the development of some feeling for the basic elements of English grammar, such as agreement of tense and number, but cannot honestly say that we expect it.

Simple clarity of expression, by whatever means, including the use of well-labelled diagrams, tables and point-form summaries, is expected of written work produced under examination conditions.

By the time they graduate our students are expected to be able to give clear, well-timed and interesting verbal presentations. They are, therefore, expected to be able to recognise and use the appropriate conversational modes of address, which engage an audience, and to be competent in the use of modern electronic means of audiovisual presentation.

Whatever the context, we expect our graduates to be able to construct a focussed and coherent argument or, at the least, a sensible line of reasoning unobscured by irrelevant content.

We expect our students to be able to use the conventions of scientific writing, including the formulation of hypotheses, detailing of methodology, presentation and discussion of results and referencing.
Place of Literacy in the Curriculum

Literacy is addressed at each of the levels at which we teach, though not directly in each unit, as very few of our students enrol in just one unit at any year level.

In our first year unit, despite the difficulties arising from the large size of the class (approximately 500) and the relative shortage of staff, largely formative essay-writing exercises are held early in each semester. Relatively few marks are allocated to these exercises, but tutors are instructed to maximise feedback comments and corrections. Students in obvious difficulties with these exercises are referred to Student Support. Essay-style and short answer questions are also included in examinations in this unit, despite the workload generated. One lecture-demonstration is devoted to a presentation by Student Services on note taking.

Literacy is addressed directly in the two second year units prerequisite for our commonest majors. In one unit this is done by way of fortnightly tutorial papers where marks are allocated on the basis of participation, but feedback is directed to issues of presentation, expression, argument and referencing. The other requires the regular submission of laboratory books. Both units include essays and essay-style examination questions in their assessment procedures.

The two third year units, which most students include in majors from this department, are also the focus of literacy development exercises at third year level. Part of each unit is devoted specifically to the development of generic scientific skills, including critical evaluation of the scientific literature, conference- and general public-style presentations, use of electronic media and the preparation of resumes and applications. Both also include several in context group mini-projects and presentations and long essays. In one unit repeated submission and refinement of essays in the light of feedback is permitted.

Honours students undergo an orientation programme, which covers, amongst other topics, the preparation and presentation of theses. Honours students are also required to prepare an essay on a topic completely outside of their field of research, mainly to demonstrate to them the general applicability of the skills they have acquired.

Assessment

Assessment of the effectiveness of our measures to develop literacy is confined to examination of the written work we set students. Little value could be seen in the general instrument for assessing literacy distributed by the Faculty in 1997, as it seemed to be directed more towards evaluating familiarity with formal grammatical 'rules' than the skills of effective reading and listening and clear expression in which we are primarily interested.

Yours sincerely

LINCOLN H SCHMITT
Head of Department

JAN MEYER
Chair,
Departmental Teaching & Learning Committee
SOME POINTS TO BE ADDRESSED IN A PROTOCOL FOR INTERNSHIP APPLICATIONS

A call is circulated to the postgraduate group calling for expressions of interest to be lodged with the Academic holding the Internship Portfolio.

Supervisors should be consulted to ascertain the applicant’s ability to cope with an internship as well as a PhD.

If the supervisor agrees to the EOI being developed into an application, the students should advise which units they are interested in teaching in.

The agreement of the coordinator of the unit(s) concerned should be obtained. The coordinator should also be involved in the planning of the programme of teaching for the intern.

All concerned should be reminded that the University requires a report at the end of the internship.

Other:

To expand the teaching experience of successful interns, they are invited by the Head of School to attend Teaching Meetings, BOE meetings and Staff/Student meetings.

They are to be advised they are welcome to attend Academic Staff meetings as observers.

Formal mentors should be established for each intern – School, peer, supervisor.
SCHOOL POLICY ON ACCESS TO TEACHING AND RESEARCH LABORATORIES

Entrants to teaching and research laboratories in this School must abide by the following:

**Minimum dress**

- a lab coat
- suitable, enclosed footwear
- photographic identification displayed (e.g. campus card)

*If any of these requirements are not complied with, the person/s concerned may be asked to leave the laboratory.*

Any member of the School’s staff has the authority to refuse admittance to any laboratory area or request a person to leave a laboratory.

Lab coats must NOT be worn outside a laboratory environment.

This policy is to enable the School to ensure compliance with occupational health and safety regulations and the WA Health Department’s Anatomy Licence regulations.

RATIFIED AT EXECUTIVE COMMITTEE MEETING, 25 OCTOBER 2001
The University of Western Australia

SCHOOL OF ANATOMY & HUMAN BIOLOGY

SCHOOL POLICY FOR ACCESS TO THE DISSECTING ROOM

Preamble

The Anatomy Act states that:

“All persons entering the Dissecting Room must have an anatomy licence. People allowed into the DR must have a bone fide educational (teaching or research) reason for needing access.”

Our School has had a fairly liberal interpretation of the Act, in line with our willingness to be accessible to community groups, schools and others with an interest in human anatomy. Accordingly, in addition to providing facilities for studies in postgraduate medicine and dentistry, we have allowed groups of students to be taught anatomy, including: various first aid courses (e.g. SAS, Muja Power Station), surface anatomy for massage, schools of natural health and beauty therapy, art classes. Individuals doing research have also been given access, including: mechanical engineering honours and postgraduate students, a PhD student studying the Buddhist perspective on the body with the School of European languages, and of course various artists and sculptors who have at times worked for the School and who also make models and prepare casts of bones for our teaching purposes. All these people have an anatomy licence and a bone fide educational reason for requiring access to the Dissecting Room.

In order to ensure that artists using the anatomy laboratory do so with sensitivity, it is recommended that, in addition to the other protocols in the policy, they be required to liaise with the School’s artistic adviser.

People wishing to view skeletons, models and bottled specimens may enter the Anatomy and Human Biology museum (G.04) and do not require an anatomy licence.

Access Policy

This policy is intended to cover both individuals and groups from within and outside the University, requesting access to the Dissecting Room facilities for educational (teaching and research) purposes.

1. Requests should be made in writing to the Head of School. The request should indicate:
   a) The educational reason for the requested access.
   b) The nature of the material to be examined.
   c) The duration of the intended visit.
   d) The planned date(s).
   e) Whether any negotiations have been made with a Schoolal staff member.
   f) In the case of students external to the School, the written request should be made by their supervisors.

2. The Head of School refers the request to an academic staff member of the Dissecting Room Committee, who considers the education merits of the request, and a general staff member of the Dissecting Room Committee who decides whether the request is practical and gives advice on the timing and costs associated with the planned visit. In the case of artists where it is especially important that they understand the sensitivity of the subject matter (no photographs or death masks are allowed) it is required that they liaise with the School’s resident artistic adviser.

Requests which are practical and reasonable will be approved and the Administrative Manager and Head of School will be notified accordingly.
3. If a fee is to be charged, the Administrative Manager will reply to the request. Otherwise further negotiations will be conducted between the relevant staff and the individual or body requesting the access.

4. All persons accessing the Dissecting Room must have an anatomy licence and abide by the Dissecting Room rules.

12 May 1997

*RATIFIED BY ACADEMIC STAFF 9/6/97*
PROTOCOL FOR THE USE OF HUMAN AND ANIMAL MATERIAL IN TEACHING LABORATORIES

Although the simultaneous use of both human and animal material may be required in comparative anatomy courses, surgical skills laboratories (ctec) and 3rd year science dissecting courses, this School does not allow the concurrent use of human and non-human material in the same laboratory classroom. If human and non-human materials are both required in the same teaching class, the animal and human material for these classes are used in separate locations.

Non-human material can be used in the same laboratory class with human museum material (museum bottles, plastinated specimens, models and skeletal material) but sensitivity must be shown.

In surgical and dissection courses, where the dissection of both animal and human material is required, the material will be dissected in separate classrooms or at different times in the program. Between these times in the program, the tables are thoroughly washed and decontaminated.

Due to the nature of the School of Anatomy & Human Biology’s large refrigerated storage facilities, both animal and human material need to be stored in the same refrigerator, but are stored in individual containers or bags, ensuring non-contamination.

Animal material may be disposed of through the School’s biohazard waste, but not with human material.

These protocols must be adhered to in the strictest fashion at all times.
SCHOOL OF ANATOMY & HUMAN BIOLOGY

POLICY ON POSTGRADUATE STUDENT SEMINARS

It was suggested by the School Postgraduate Student Committee that a “Rites of Passage” seminar be introduced for submitting PhD students, enabling the School to congratulate and farewell these students in a befitting manner.

It was also suggested that a certificate marking the occasion be prepared and presented to the student at the seminar, together with a cheque for $100.00.

RATIFIED BY ACADEMIC STAFF IN FEBRUARY, 1995
STAFF ATTENDANCE AT ACADEMIC STAFF MEETINGS

The Executive Committee’s recommendation that all staff be eligible to attend Academic Staff meetings with speaking rights but no voting rights was agreed to.

RATIFIED BY ACADEMIC STAFF 2000
SCHOOL OF ANATOMY & HUMAN BIOLOGY

UNDERGRADUATE SUMMER VACATION RESEARCH SCHOLARSHIPS

GENERAL GUIDELINES & CONDITIONS OF AWARD

OBJECTIVES

To be available to students who

- intend majoring in Anatomy & Human Biology and would thereby qualify to undertake Honours in this;
- are enrolled in another appropriate Science major stream which would qualify them to undertake Honours or postgraduate work in this;
- are medical students intending to enrol in a Bachelor of Medical Science;
- show potential for postgraduate research.

These Summer Vacation Scholarships are intended to introduce students to a given field of research and/or study and are not intended as vacation employment. These awards are distinct from the casual employment of students during the summer vacation on work such as that normally undertaken by research assistants or laboratory technicians.

FUNDING

Each scholarship will be for $1,500, with the School contributing $500 and the supervisor $1,000. In normal circumstances, a supervisor is to have only one student each summer except with special permission from the Head of School or Executive Committee. However, if an academic has the ability to establish additional summer vacation scholarships independent of School contribution, this limit would not apply.

PROCEDURES

The scholarships will be administered through the School of Anatomy & Human Biology, with the funding also being arranged by the School.

The scholarships will be advertised within the School of Anatomy & Human Biology, including the School’s website.

The project assigned to the student must be connected with work currently being undertaken in the School.

In the first instance, students should approach a potential supervisor. Nominations are to be made on the appropriate form by the member of academic staff intending to supervise the student.

Adequate supervision and guidance for the period of the award must be guaranteed by the academic making the nomination.

Nominations for awards must include details of the nature of the work to be undertaken, the duration of the award, the facilities available and the name of the intended supervisor. Nomination forms can be obtained from the School’s administrative office. Applications will be assessed by the Executive Committee of the School.
Applicants and supervisors will be advised in writing regarding the application’s status following assessment.

**TENURE**

Scholarships to be of 6-10 weeks’ duration.

The period of tenure not to extend beyond the summer vacation period.

**PAYMENT**

Awards to be paid as a lump sum following completion of the project and submission of a project report by the recipient of the scholarship within 7 days of project completion. (This regulation may be varied in cases of hardship.) Claims must be accompanied by a certification from the project supervisor confirming performance in accordance with the project application.

The Executive Dean may terminate a scholarship at any time if the scholar’s ill health seriously interferes with the project, or if the work or conduct of the scholar is deemed to be unsatisfactory or the scholar fails to fulfil any other requirements specified in the letter of offer.

**TAXATION**

The School will lodge a request with the University’s Financial Services for them to apply to the Australian Taxation Office for an exemption from taxation for summer vacation scholarships where it can be demonstrated that the project forms part of the curriculum for the course of study.

**AUSTUDY**

Unless otherwise specified, scholarship benefits are regarded as income in determining the level of AUSTUDY benefits and may cause an AUSTUDY grantee’s total income to exceed the current means test level.

**REGULATIONS**

Unless specified in the letter of offer, scholarship holders shall not be required to undertake fieldwork away from the University.

Scholars shall be subject to the Statutes and Regulations of The University of Western Australia.
The University of Western Australia

SCHOOL OF ANATOMY & HUMAN BIOLOGY

Undergraduate Summer Vacation Research Scholarships

The School of Anatomy & Human Biology invites applications from undergraduates enrolled at The University of Western Australia who

- intend majoring in Anatomy & Human Biology and would thereby qualify to undertake Honours in this;
- are enrolled in another appropriate Science major stream which would qualify them to undertake Honours or postgraduate work in this;
- are medical or science students intending to enrol in a Bachelor of Medical Science;
- show potential for postgraduate research.

The Scholarship is valued at $1,500 for the duration of the project, to be carried out over a minimum of six weeks and a maximum of ten weeks. The award will be paid as a lump sum at the completion of the project and submission of a project report. (This regulation may be varied in cases of hardship.) Payment claims must be accompanied by a certification from the project supervisor confirming performance in accordance with the project application.

Applicants are required to gain the acceptance of an appropriately qualified supervisor and the approval of the School in which the work will be undertaken prior to their application being submitted.

Scholars must be nominated by the academic member of staff intending to supervise the project.

Application forms are available from the School’s administrative office and should be forwarded to the Head of School.

Applicants will be informed in writing regarding the status of their applications.

Applications Close on October 31 each year
or as decided from time to time.
The University of Western Australia

SCHOOL OF ANATOMY & HUMAN BIOLOGY

UNDERGRADUATE SUMMER VACATION SCHOLARSHIP

GUIDELINES AND NOMINATION DETAILS

1. NOMINATION OF A STUDENT AS A RECIPIENT OF A SUMMER VACATION SCHOLARSHIP IN THE SCHOOL OF ANATOMY & HUMAN BIOLOGY

To be completed by proposed academic supervisor

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<th>STUDENT NAME:</th>
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<td>STUDENT NUMBER:</td>
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<td>CURRENT DEGREE:</td>
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<td>YEAR OF STUDY:</td>
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<td>NAME OF ACADEMIC SUPERVISOR:</td>
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<td>PROPOSED COMMENCEMENT DATE:</td>
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<td>DURATION OF PROJECT:</td>
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<td>SUMMARY OF PROPOSED PROJECT:</td>
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ARE THE FACILITIES AND SUPERVISION AVAILABLE ADEQUATE FOR THIS PROJECT?

☐ Yes
☐ No
2. **ELIGIBILITY FOR SCHOLARSHIP**

To be available to undergraduates of The University of Western Australia who

- intend majoring in Anatomy & Human Biology and would thereby qualify to undertake Honours in this;
- are enrolled in another appropriate Science major stream which would qualify them to undertake Honours or postgraduate work in this;
- are medical students intending to enrol in a Bachelor of Medical Science;
- show potential for postgraduate research.

3. **VALUE OF SCHOLARSHIP AND DURATION OF AWARD**

The scholarship will be to the value of AUD$1,500 and will be paid as a lump sum following completion of the project and submission of a project report by the recipient of the scholarship within 7 days of completion. (This payment regulation may be varied in the case of hardship). Duration to be a minimum of six weeks and a maximum of ten weeks.

4. **TAXATION**

In order to qualify for tax exemption under the Income Tax Assessment Act, the Head of School or Unit must demonstrate that the project forms part of the curriculum for the course of study.

Will the Summer Vacation Scholarship qualify for exemption from taxation?

☐ NO

☐ YES

Specify: ............................................................................................................................

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SIGNED: ................................................................. ........................................
Head of School Date

SIGNED: ................................................................. ........................................
Supervisor Date

APPROVED: ................................................................. ........................................
Executive Dean Date

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*Please return to:*

Head of School of Anatomy & Human Biology