University of Glasgow

Academic Standards Committee – Friday 13 February 2015

Matters Arising: Undergraduate College Annual Monitoring Summaries for 2013-14: College of Medical, Veterinary & Life Sciences (ASC/2014/22.2)

Professor Neil Evans, College Quality Officer

Preponderance *versus* Grade Averaging:
An anomalous case from 2013-2014 final honours degree:

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Examinations Officer: Genetics (hons) Degree Programme
School of Life Sciences

SIX 20-credit courses count towards the final classification for the B.Sc (hons) degree in Genetics. **NO marks are carried forward from L3.**

Each 20-credit course consists of between 2-and-5 individual graded components. In the case under consideration, a total of **19 individual component grades** counted towards the overall degree classification.

The six 20-credit course grades were as follows:
A4, A5, A5, B1, B2, C1

The average overall grade (rounded twice: once at the 20-credit course level and once again at overall classification level) = **17.0**, *i.e.*, **OUTSIDE the zone of discretion.**

NOTE: Rounding is known to introduce a positive bias, particularly when even numbers of component grades are averaged and 0.5 is rounded UP. Double rounding can compound this bias. Indeed, most of our students BENEFIT mathematically from double rounding.

Unfortunately, the particular student under consideration was unlucky, and double rounding actually penalized this person:

A more mathematically robust averaging of ALL 19 individual component grades (and appropriately weighted) and rounding only ONCE at the end yields an average grade of **17.1** for this student, *i.e.*, **WITHIN the zone of discretion.**

Consideration of PREPONDERANCE is more revealing:

Grade distribution (all 19 individual component grades)

A1	**A2**	**A3**	**A4**	**A5**	B1	B2	B3	C1	C2	C3
-	**2**	**2**	**5**	**2**	**4**	**2**	**-**	**-**	**-**	**-**

D1	D2	D3	E1	E2	E3	F1	F2	F3	G1	G2
-	-	**1**	-	-	**1**	-	-	-	-	-

The student has thus achieved an A5 or above on 11/19 component grades (58%)

The student achieved a B1 or greater on 15/19 component grades (79%)

The student achieved a B2 or greater on 17/19 component grades (89%)

Even adjusting for relative weighting of the component grades yields the following:

- **52.2% of performance at A5 or above**
- **80.6% of performance at B1 or above**
- 88.9% of performance at B2 or above

Preponderance of A (and A and B1) grades places the student AMONG the very top students who achieved straight first-class, i.e., above the discretionary zone. Two catastrophic grades, one of which may have been a simple misreading of a question, seem to have precluded this student from consideration for promotion to a first.

This student is a standout case of averaging NOT reflecting her/his grade distribution because of a very skewed, non-Gaussian distribution: a skewing that is more likely to affect the top end of the classification.

This student was disadvantaged further by the method of averaging, where the double rounding dropped her/his average out of the discretionary zone.

It is extremely difficult for students to achieve a first class honours overall classification. In our experience over the last 10+ years in Genetics, preponderance is a much more convincing and robust indicator of performance than mathematical averaging: the two are generally well aligned but not always.

PROPOSAL: That preponderance be allowed as an independent selection criterion for placing a student within the zone of discretion for possible promotion to the next degree classification up *e.g,* **,** where **50% or MORE of component grades lies at or above the next grade up.**

A small number of students might benefit from such a rule change (1 from 34 this year, 1 from 32 last year in Genetics). However, these students tend to place towards the high end of the classification (2i to first): maximizing the chances that all students who deserve a first class honours award are given full and fair consideration.

Finally, low marks have a disproportional effect on grade average. As examiners, we are concerned that many staff are assigning very low grades with little or no accuracy/robustness. One very low grade can have a catastrophic consequence on grade average, but NOT on preponderance.