

Vertical
Alignment
of
Grade
Descriptors

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Outline

- ▶ The problem
- ▶ The solution?
- ▶ Another related thing
- ▶ Summary



The problem

- ▶ 'Extended writing'
 - ▶ Lab notebooks / reports
 - ▶ Project reports



The problem

- ▶ **Characteristics**

- ▶ Few in number
- ▶ Many markers
- ▶ Much 'religious dogma'

“little to no
standardisation over
different
experiments/markers”

“Brief tutors who mark things on what makes a good or bad report because they all have different ideas, which can make it hard to improve from one report to the next.”



The problem

- ▶ What are we looking for?
 - ▶ Do we even know?
 - ▶ How can the students find out?

“You were pulled up on things which you were told to do in the intro talks. You were told to include things which you were told not to include in the intro talks.”

“there is no method to actually determine if the work you're handing in is what the markers are actually looking for”

“Not clear what you want out of a lab report”



The problem

- ▶ Student feedback comment on third year labs

“The jump from 2nd year to this course is massive. If you are a first-class laboratory student in 2nd year you will be getting third-class marks for this course. It takes multiple lab sessions to understand what is expected. From this point on, it is possible to get high marks but unfortunately, your mark for the course is mostly established by this point.”

- ▶ 37% of student feedback comments cited confusion or inconsistency of marking criteria
-



The solution?

- ▶ Vertical alignment of grade descriptors



The solution?

'Typical Performance'

Grade B

Detailed descriptor of typical characteristics

Better

Worse

Grade A3

Discriminating
characteristics

Grade C

Discriminating
characteristics

Grade A2

Discriminating
characteristics

Grade D

Discriminating
characteristics

Grade A1

Discriminating
characteristics

Failing Grades

Discriminating
characteristics



Third year lab grade descriptors

'Typical Performance'

Laboratory Notebooks - Grade Descriptors

B 60-69 Very Good [2(i)]

Necessary Background & Theory: Clear summary of objectives, context, background and theory of experimental project. Citation of sources of information and reference data; inclusion of all necessary information.

Methods & Algorithms: Clear and complete description of experimental method in sufficient detail to enable reproduction of experiment at a later date.

Results & Analysis: Clear and complete presentation of experimental datasets, analysis and derived quantities with example fully detailed working to enable review at a later date. Evidence of contemporary data plots and analysis.

Discussions & Conclusions: Notes demonstrating development of critical, quantitative discussion of experimental project discussing assumptions, approximations, analysis methods, results, random and systematic errors, error minimisation, equipment limitations, conclusions etc

Organisation & Structure: Clear, contemporary and complete record of experimental project with all of the information necessary to produce a written report. Structured notebook with index, page numbering, dated/timed entries, titles/sub-titles aiding straightforward retrieval of information.



Third year lab grade descriptors

Better

A3 70-79 Excellent [First]

Excellent notebook which displays some elements that go beyond what is expected. Satisfies the basic criteria outlined above (B) and additionally

- records some additional research into the topic
- records development of some original or creative experimental methods or insights
- records critical assessment of methods, analysis and results beyond what is usual
- outline project plans; progress reviews; plans for, and results of,
- systematic investigation of experimental or technical problems (if required)

Worse

C 50-59 Good [2(ii)]

Good notebook which satisfies most of the basic criteria outlined above (B) but has some deficiencies

- objectives, context, background or theory some lack of clarity
 - some information or sources of information are unclear
 - some lack of clarity or detail for experimental method
 - some lack of clarity or detail for data analysis
 - limited record of critical assessment of experiment
 - record of experiment incomplete in some respects
 - some lack of structure and organisation sufficient to hinder understanding
-



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Second year lab grade descriptors

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Organisation & Structure: Clear, contemporary and complete record of experimental project with all of the information necessary to produce a written report. Structured notebook with index, page numbering, dated/timed entries, titles/sub-titles aiding straightforward retrieval of information.



First year lab grade descriptors

Grade	Typical Characteristics
A0	No improvement could be envisaged.
A1	Write-up is of particularly outstanding quality.
A2	Write-up is of consistently high quality.
A3	Experiment is complete; Write-up is fully clear and easy to follow; Data tables are clear and well constructed throughout; All measured values have estimated errors with clear justification; Error analysis is clear and correct throughout; Graphs are well constructed throughout, with error bars and appropriate best fit lines; Conclusions are complete, with quantitative evaluation of findings.
B	Experiment is almost complete; Write-up is mostly clear and easy to follow; Data tables are almost all clear and well constructed; Almost all measured values have estimated errors with some justification; Error analysis is mostly correct; Graphs are well constructed throughout, with error bars but best fit lines are poor; Conclusions are complete, with descriptive evaluation of findings.
C	Experiment is mostly complete; Write-up is confusing in places; Data tables are mostly well constructed; Most measured values have estimated errors with some justification; Some substantial problems with error analysis; Graphs are well constructed but lack error bars; Conclusions are limited, with some commentary on findings.
D	Experiment is at least half complete; Write-up is largely confusing; Data tables are unclear and poorly constructed; Some measured values have estimated errors with minimal justification; Error analysis is minimal and/or incorrect; Graphs are poorly constructed; Conclusions are minimal.
E	Experimental content is minimal; Write-up is very unclear; Data tables are very unclear or absent; Hardly any measured values have estimated errors; No attempt at error analysis; Graphs are absent; Conclusions are absent.
F	Write-up is seriously deficient.
G	Write-up is of very poor quality throughout.
H	Write-up is of extremely poor quality throughout.
O	Write-up is effectively absent.

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Common characteristics

Laboratory Notebooks - Grade Descriptors

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The solution?

- ▶ In use for 4 years
 - ▶ Has now propagated through to all year groups
- ▶ Occasional student complaints persist
- ▶ However:
 - ▶ Has gone from the pre-eminent issue to a relatively infrequent point
 - ▶ Remaining problems tend to be with individual markers rather than a systemic problem
 - ▶ Marker training is a distinct but related issue...



Another related thing

- ▶ **Project Marking Tool**
 - ▶ Same philosophy applied to Honours years projects



▸ 1. Description of project motivation and context

A Senior Honours Project report should set out clearly (usually in the Introduction) the main motivation behind the research question that is investigated, setting the project within the context of the field of research and explaining how the project aims work towards addressing outstanding challenges within the particular field of research.

B	<i>Typical performance:</i> The report sets out the main themes in the field of research and shows some appreciation of the key questions in the area and how the specific aims of the project relate to them in a way that can be understood by a physicist within a different field of expertise.	
Better		Worse
A3	The report presents a strong motivation for the specific aims of the project and makes clear the broader scientific progress that would be achieved if these aims are realised.	C Some relationship between the project work and a broader scientific enquiry is evident, but is presented in a tenuous, superficial or overly technical manner.
A2	The rationale for the research project is conveyed in a concise and accessible way with reference to the state of the art in the field of research.	D The relevance of the project work to a stated broader scientific enquiry is obscure to a non-expert reader, for example, due to essential background knowledge being assumed or questionable logic in the exposition.
A1	The report provides compelling evidence that the project's aims, if realised, would advance the field of study in a significant and highly original way.	E-H <i>Fail:</i> No credible connection is made between the project and the wider scientific field.

▸ 2. Literature review and references

▸ 3. Description of the project work conducted

▸ 4. Assessment of results, discussion and conclusions

▸ 5. Structure, presentation and readability

▸ Overall Project Report Grade and Comments (unweighted average: C)



View Assessments

Under your role for this project, you will see your contribution and marking progress for each assessment - one of Not Started, Draft or Submitted - with your current grading for the assessment.

- **Mark** - start or continue to mark an assessment. You can go back to mark an assessment that's in draft - picking up where you left off.
- **View** - once you've submitted a mark for the assessment - rather than just Draft - you'll be able to view the assessment only. Please email the course administrator ([Paula Wilkie](#)) if you submit by accident.

Once you and the other marker have marked and submitted all assessments you'll be able to see a summary and view individual assessments - including those for the other marker. You'll also see an indication of whether there is grade agreement (within 1 grade point) for each relevant assessment.

Supervisor (You)		2nd Marker		Grade Agreement?
Assessment	Supervisor Progress	Assessment	2nd Marker Progress	
Project Performance (35.0%)	✔ Submitted - Grade: B/C View	Project Performance (0.0%)	Not contributing	-
Project Report (27.5%)	✔ Submitted - Grade: C View	Project Report (27.5%)	✔ Submitted - Grade: C/D View	✔
Project Poster (5.0%)	✔ Submitted - Grade: C/D View	Project Poster (5.0%)	✔ Submitted - Grade: D View	✔



Perceptions

“having the criteria open up one at a time means that it is easier to align your marks with the grade descriptors than before”

“courses have adapted their workflow to match that of the tool, which leads to greater consistency of practice between courses”

“frees up this effort for other tasks, and furthermore one can enforce that appropriate marking and moderation protocols are followed by all pairs of markers”

“It is all good”



Summary

- ▶ Vertical integration of grade descriptors
 - ▶ Structured
 - ▶ Consistent
 - ▶ Foregrounded
- ▶ Clearer and more transparent for students
- ▶ Easier for staff
- ▶ Potentially a 'quick win'

