Mathematics honours research project rubric, 2011

adapted by Tony Roberts

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This rubric has three levels: Criteria, Components, and Aims.

1 Exposition 1/3

Structure and organisation

- Written at an appropriate level for an honours student in your area.

- Good structure (includes title, abstract, tables of contents, introduction, conclusion, references).

- Good format (appropriate margins, headings, etc.)

- Information is well organized with well constructed paragraphs, chapters, a clear overall structure, and separate ideas discussed in separate paragraphs.

Grammar and spelling

- Correct grammar and spelling (according to Australian English). In addition, mathematics should be included in such a way that it conforms to grammatical conventions (should not start a sentence with a symbol, formulae terminated by full stops or commas where needed, etc.).

- Use of tenses is consistent.

Precision

- Structure of the document is natural and easily read.

- Arguments are clear, well ordered, logical and supported by evidence (citations, data, ...).

- Terms and acronyms are defined before use, and abbreviations are explained.

- Any tables, figures and graphs are used appropriately, legible, and are well captioned, and explained in the text.

| Use of diagrams, graphs, tables, data | • Any data used, or experiments conducted are precisely described (sufficient for replication of results). |

| Use of references, latex | • Appropriate attribution is made for all ideas, i.e., there is no plagiarism (unreferenced quotations, and other misrepresentations of the origin or intellectual content). |

- Data and code are only included in the main part of thesis if this is improves the flow or understanding.

- References, tables and figures are all cited in the text.

- No obvious Latex errors such as undefined references or equation numbers.

- Theorems, propositions etc. are numbered consistently, equations are numbered appropriately.

2 Content 1/3

| Accuracy of material | • All mathematics is correct. |

- Assumptions are stated.

| Coverage of the relevant literature | • Information presented relates to topic of study. |

- There are no gaps in the investigation.

- References and citations are used to expand on the information present in single documents.

- Work is well motivated.

Student's initiative in investigating the problem under study • Objectives and aims are clearly stated.

- Relationships between different parts are explained.

- Ideas are developed and related.

- Conclusions and inferences are sound.

Value of contribution in relation to the objectives of the study • Area of study is reviewed appropriately.

- Thesis makes contributions (as clearly indicated in introduction) with reference to the goal of the study.

3   Evidence of understanding 1/3

Clarity
- Statements are clear, accurate and logical.
- Explanations, derivations and proofs are clear and logical.
- No inappropriate or excessive paraphrasing.
- Missing steps in arguments/proofs of reviewed papers are filled in or explained.

Demonstration
- Open problems and potential for future work are indicated or identified.
- Critical discussion of results, including explanation of advantages and disadvantages/limitations of techniques are given.
- Examples are used to illustrate ideas.
- Unstated assumptions of reviewed papers are highlighted.
- Ideas presented in the thesis are implemented, simulated, or otherwise instantiated.
- Thesis connects ideas from multiple areas (though still relevant to topic of study).
- Notation is made consistent across an area, i.e., related conditions, assumptions and/or results are expressed in a uniform framework.
- Results or proofs are replicated via alternative means.

4   Comments

This is not a checklist. Not all terms are relevant to all theses. Most points about presentations are relevant to all theses (but for instance not all theses will contain figures or tables). However, evidence of understanding is non-exhaustive list of possible ways that a student can demonstrate understanding, and no thesis is likely to involve all of these.