My Views on the BE and ME Project Marking Scheme

I mark the projects according to our marking schemes. This is important to note as it means we operate a very transparent system. We do not pull marks out of the air we do not rely on gut instinct or general impressions. We do not mark on a curve or any such things. It is all quite tightly regulated. This means it is important to look at how marks are allocated and work accordingly. I have often come across students who having done great practical work in their project feel aggrieved when they do not get the marks they felt their work merited. Producing good practical working output in your project is an important aspect of the module and there are marks awarded for this throughout, however communicating what you have done through your report is a large determinant in your overall mark and a bad write-up will really have a large negative impact on your mark no matter how much work you have done and how well your device/software/algorithm works.

So how do you maximise your marks? I will speak for myself here but I use the marking sheet as given. These consist of the following categories; Presentation and structure, understanding of problem domain, technical content, novelty and innovation. Each of these in turn is made up of a number of elements. I allocate marks according to these elements although it is not a crank-turning operation. I use my many years assessing student theses to inform my decision making and to arrive at judgements regarding the quality of these elements and even others as presented in the thesis under review.

So lets examine these categories in turn.

Presentation and Structure

The elements are: Presentation: Spelling, Grammar, Layout; Good diagrams; Correct use of headings, figure captions, equation numbering; Clarity of expression
Structure: contents page, report summary, correct use of sections (Intro, main chapters, Conclusion); Correct use of references
General readability and flow of report. Logical presentation of material

So here I am looking for all the basics of a good report. Lets look at Figures. I like to see good quality diagrams for example. I prefer if students create the figures themselves rather than badly scanned images from elsewhere. If they are using a figure from elsewhere I like to see that any text already embedded in the image is removed in Paintbrush or something so that the student can float new Word text over it. This aids in readability and gives you appropriately sized readable text. Always have captions on your figures. Your captions should explain the figure as best as possible and not just be a glib title.

References use plenty of these. You should references to support your arguments. A typical ME thesis could have anything from 50-100 references. It does depend on the topic of course. If you are using web references always include the date these were last accessed.

Grammar, clarity of expression, general readability, flow and readability comes under good writing. It is difficult to be prescriptive about this but generally I know good writing when I see it. It comes with practise. If you have not had much practise
writing you may need many drafts. Even if you are a practised writer please make a number of drafts.

DO NOT SEND ME DRAFT 1. It is better if you and your project buddies read each other’s drafts for feedback first. You can catch silly things that way. Send me a draft that corresponds to something very good if you can. It is a better use of my time and yours.

So are there any rules for good writing? Well there are many. But a good (and concise) starting point is at the following link,

http://www.uwlax.edu/biology/communication/Recipe.html

You should then check related links such as this one,

http://www.uwlax.edu/biology/communication/DirtyDozen.html

Of the above, there is one idea in particular I recommend and that is making a document outline. Plan your chapters, plan your sections and finally plan your paragraphs. If you take this route you will have a top level map of your document which indicates very clearly how topics and ideas flow together. A well written report (unlike a novel or thriller) should not be surprising, each paragraph should suggest the next, each section the next heading and each chapter should suggest the next one.

You should also write the abstract and conclusions last.

Finally always run your document through a spellchecker. You should also take time to read your draft out aloud. Reading it aloud is a foolproof way of catching mistakes. Try it.

Understanding of Problem Domain

The elements are: Is there evidence of good technical understanding of the issues involved and techniques used in the project (e.g. as given in intro/ background chapter or literature review)?

This is an important section. First of all from my interactions with you through the year I should know whether or not you understand the problem domain or not HOWEVER I must base this mark on the evidence presented in the report. I have to switch off my memory of what I know about you. It is all about how you communicate your understanding of the problem domain in the report.

So I personally like to see an intro and background that contextualises your work in terms of what has been published by others, most usually through peer-reviewed sources such as academic journals and conferences. For some software projects which involve a lot of coding and concepts which are only discussed on the web then I am happy with web resources but do be careful. For example if someone was to talk about HTML5 I would not like to see articles from Wikipedia when the student could have got the information ultimately from the true source which is of course World Wide Web Consortium http://dev.w3.org/html5/spec/Overview.html
So do not use a web link if it is not the ultimate source of the information you are building your argument upon. Consequently it is rarely acceptable to use Wikipedia for a serious scholarly document. Demonstration of your understanding of the problem domain can be well demonstrated through a logical presentation of the material for starters. So for example when talking about Brain Computer Interfaces a starting point for discussion might be alternative computer input devices and then one might move to a taxonomy of such devices based on the origin of the signal used to drive the device and then move on logically to the ultimate human computer interface which is of course control by thought. You would then describe solutions to the problem of controlling a computer by thought have been approached by others with some sort of critique of what's good, what's bad and most importantly what the shortcomings are. At this stage you have justified your problem in the eyes of the reader and it is up to you then to sell the reader your solution with a solid explanation of how the whole thing is going to work, filling in background material if you judge it necessary.

It's very hard to bluff this section. If you do not know your stuff it shows. Plagiarism here stands out like a sore thumb so whole sale copying from sources never works. If you truly understand something it is easiest done in your own words. Many of your references will be associated with sections describing your understanding of the problem domain. Unfortunately even if you do know your stuff you can still make a mess of demonstrating it in written form. Again planning of your thoughts in the form of ideas described paragraph by paragraph is key.

**Technical Content**

The elements are: *Was significant progress made in the project?*

*Evidence of engineering skills – design, rigour, problem solving etc.?*

There are a lot of marks for this section. I know you have all worked really hard on the project however did you make good progress? You need to convince the assessors that you did. Remember there are TWO markers. The second marker was not at our meetings hearing about your battles with circuits, your 2 weeks work down a blind alley that you did not use, the problems with parts, the code base that would not compile, etc. I am aware and sympathetic to these struggles but the second marker will have no idea and will judge it simply from the text. You need to convince him/her that you progresses as well as anyone could be expected to. You will find your project notebooks invaluable here as you look through them again to figure out how you spent all those months. You should spell out what you did, what problems you encountered and most importantly how you solved these problems. Demonstrations of your rigour and problem solving ability. So for coders maybe describe your software engineering approach, your unit testing, your use of version control, your exception handling, the use of a profiler, debugger etc. For circuit builders, did you use a simulation? Did you build on breadboard, then stripboard, then PCB? How did you test the circuit? How did you measure – and this is an important part of engineering – how did you measure performance? When you encountered problems how did you work around or through them?

**Novelty and innovation**

The elements are: *Level of difficulty/challenge of the work done? Evidence of exceptional ability, innovative thinking, novelty?*
Publishable / patentable?
(Indicate the novelty in the work for which marks are being awarded)

It is very difficult to get substantial marks under this category as exceptional work needs to have been done here. We are talking about patentable work or publishable work of high quality. For example if you discover a new method for image compression which outperforms some well known standard then you are certainly going to score well here. If your project was to follow a known design and this is what you achieved then it is unlikely you will score here unless the task was truly Herculean. Most projects will not score well under this category but make a good case in your thesis for your innovation and novel thinking and who knows.

So these are my thoughts for now.

Good luck
Tomas