Final Year Projects

(also Year 3 MEng projects)

Presentation: 27th September 2016

Agenda

- Assignment of projects to bands
- Project specification
- Log books
- Preliminary Report
  - Appendices: required
  - Structure: suggested
- Common mistakes in English grammar
- Common mistakes with Graphs
- Literature review and referencing
- Finally!

Group	Research Themes	Staff Members
BAND A	SIGNAL & IMAGE PROCESSING, AVIONICS	Simon Maskell * Jason Ralph Louise Dennis Richard Sloan Roberta Piroddi Jeyan Jeyarajan
BAND B	DIGITAL & EMBEDDED SYSTEMS	Ali Al Ataby Saqib Khursheed John Marsland * Waleed Al Nuaimy Jeremy Smith
BAND C	MICROELECTRONICS	Steve Hall * Ivona Mitrovic Ian Sandall Munira Raja Kai Hoettges
BAND D	MONITORING, COMPLEX SYSTEMS, POWER & CONTROL	Lin Jiang * Yihua Hu Jim Humphries Roberto Ferrero Joe Spencer Joseph Yan

Group	Research Themes	Staff Members
BAND E	BIO/NANOENGINEERING AND RADIO FREQUENCY DEVICES	Paul Bryant Steve Taylor Harm van Zalinge Jiafeng Zhou * Simon Maher
BAND F	TECHNOLOGICAL PLASMAS	Mark Bowden James Bradley * Xin Tu James Walsh Kirsty McKay
BAND G	WIRELESS ENGINEERING, COMMUNICATIONS AND NETWORKING	Yi Huang * Alan Marshall Judy Zhu Yaochun Shen Miguel Lopez-Benitez

Project Specification

- Project specification should be completed as soon as possible.
- Specification includes sections:
  - Project Description and Methodology
  - Project Tasks and Milestones
  - Project Deliverables
- Must be completed with the agreement and signature of your project supervisor.
- Scan and upload to VITAL (either ELEC340 or ELEC440).

Log Books

- Log books are compulsory and will be marked at the Bench Inspection stage.
- You can select either a physical log book or a virtual log book – consult your supervisor who may have a preference.
- Virtual log books must be completed on VITAL so that your project supervisor can view and comment upon them.

Preliminary Report

- Appendices: required
  - 1. Scan of completed specification report form.
  - 2. Gantt chart (using MS Excel or MS Project).
  - 3. Scan of completed risk assessment form.
  - 4. Scan of completed ethical approval questionnaire.

Preliminary Report

- Structure: suggested
  - Declaration of academic integrity
  - Abstract (short summary of report – not an introduction)
  - 1. Introduction (of the report)
  - 2. Project description (introduce the project)
  - 3. Methodology (what are you going to do?)
  - 4. Project plan (refer to GANTT chart in appendix)
  - 5. Project rationale (why are you doing this?)
  - 6. Literature review
  - 7. Results (if any, could be designs)
  - 8. Conclusion (conclude the report)
  - Reference List

Preliminary Report

- The deadline
  - midnight on Friday 14th Oct.
  - Paperless submission only: a soft copy uploaded to VITAL.
- Marking
  - By supervisor
    - Risk assessment incomplete: pass/fail
    - Ethical approval incomplete: pass/fail
    - Poor use of English including grammar and/or spelling: pass/fail
  - By assessor
    - numerical mark
    - Project specification not suitable for a BEng / MEng degree project: pass/fail

Resubmission of Preliminary Report

- Resubmission
  - By Friday 18th November if either

    (a) it fails on one of the 4 pass/fail criteria given above or

    (b) the mark is less than 40% i.e. a fail.
  - The mark for a resubmission will be capped at 40% or the original mark if referred for pass/fail criteria above (whichever is greater).
  - Failure to resubmit will result in a mark of 0% for this component of the project

Resubmission of poor use of English

- Additional English Language Support
  - 4 Classes on Wednesday 2 p.m. to 3.30 p.m.
  - Starts October 26th
  - November 2nd
  - November 9th
  - November 16th
  - Starts week 5, ends week 8
  - Failure to resubmit will result in a mark of 0% for the preliminary report

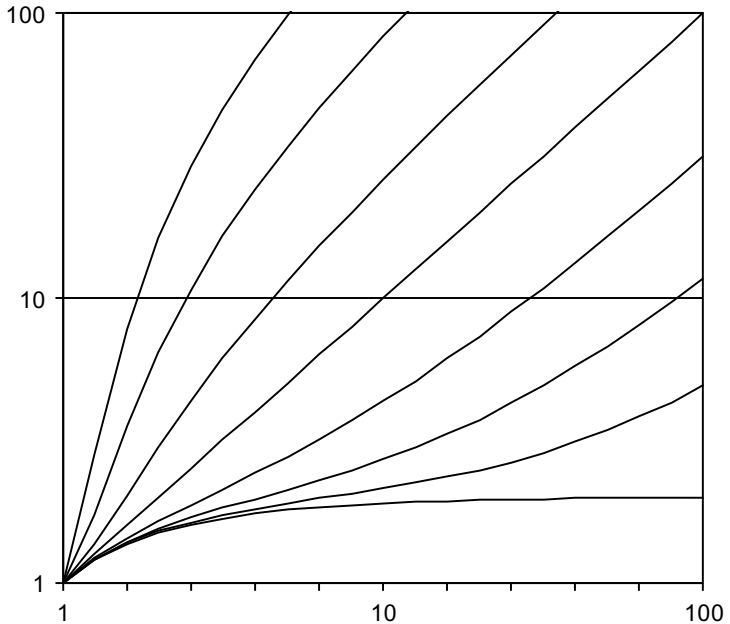
Use of English: common mistakes

- Spelling
  - including autocorrect giving the wrong word
- Singular / plural
- Definite and indefinite article: ‘the’ or ‘a’.
  - ‘**The** project was previously undertaken by a Mechanical Engineering student.’ Definite article, ‘the’. Only one.
  - ‘**A** project must be completed by all final year engineering students.’ Indefinite article, ‘a’. One of many.
- Verb endings
  - ‘The project requires an allocated lab bench position.’
  - ‘All projects require a completed risk assessment form.’

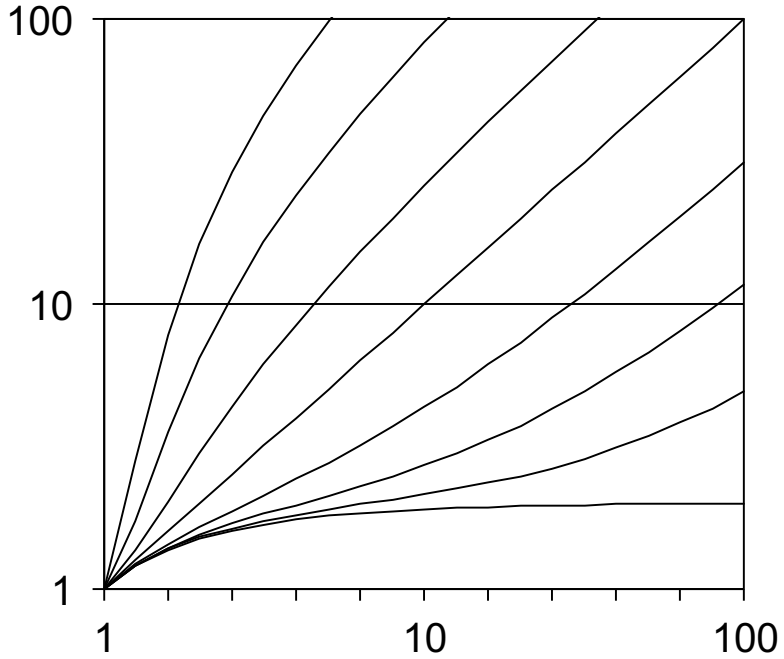
Use of English: more advanced

- In academic report writing:
  - Avoid first person (both singular and plural)
    - try not to use ‘I’, ‘We’, ‘my’, ‘our’, ‘mine’…..
    - ‘I will measure the voltage gain of the op-amp.’ Avoid
    - ‘The voltage gain of the op-amp will be measured.’ Better
  - Use passive voice
    - Active voice describes a sentence where the subject performs the action stated by the verb. In the passive voice, the subject is acted upon by the verb.
    - ‘An oscilloscope displays the modulated signal.’ (Active)
    - ‘The modulated signal is displayed by an oscilloscope.’ (Passive)

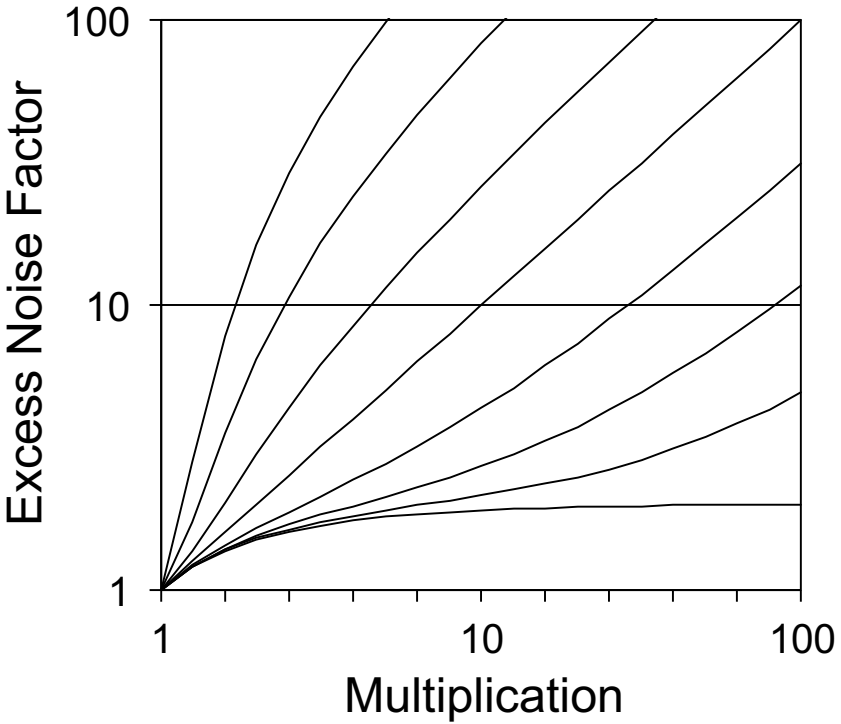
Graphs – common mistakes



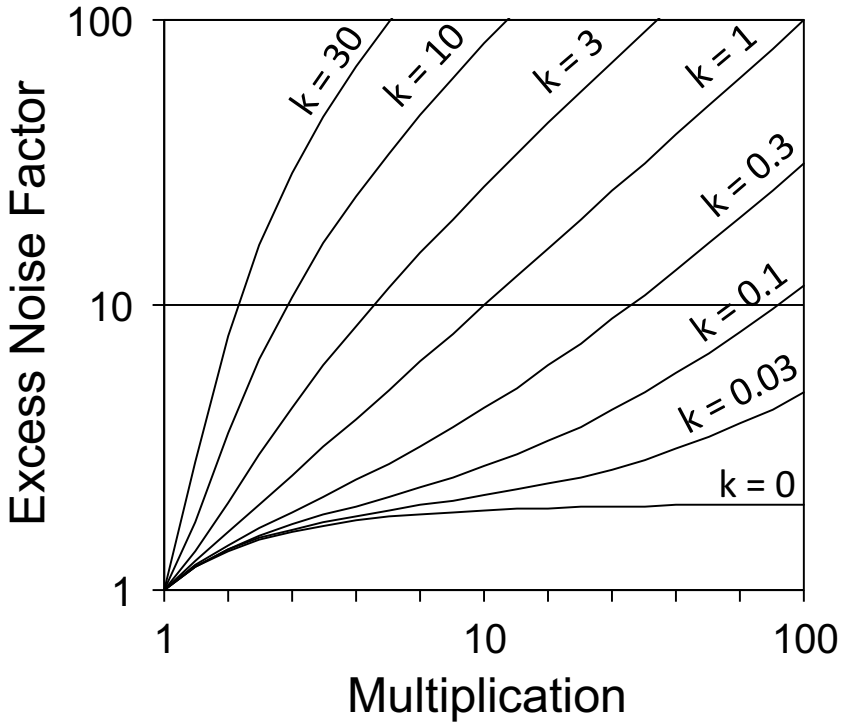
Axes scale values – make font size big enough to read



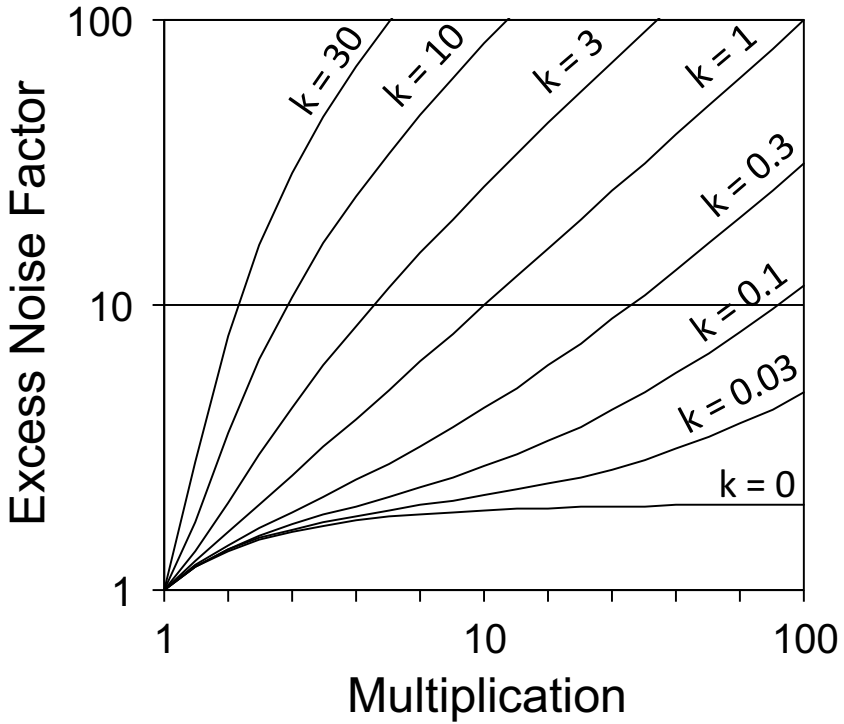
Label both axes



Label all curves (if more than one)

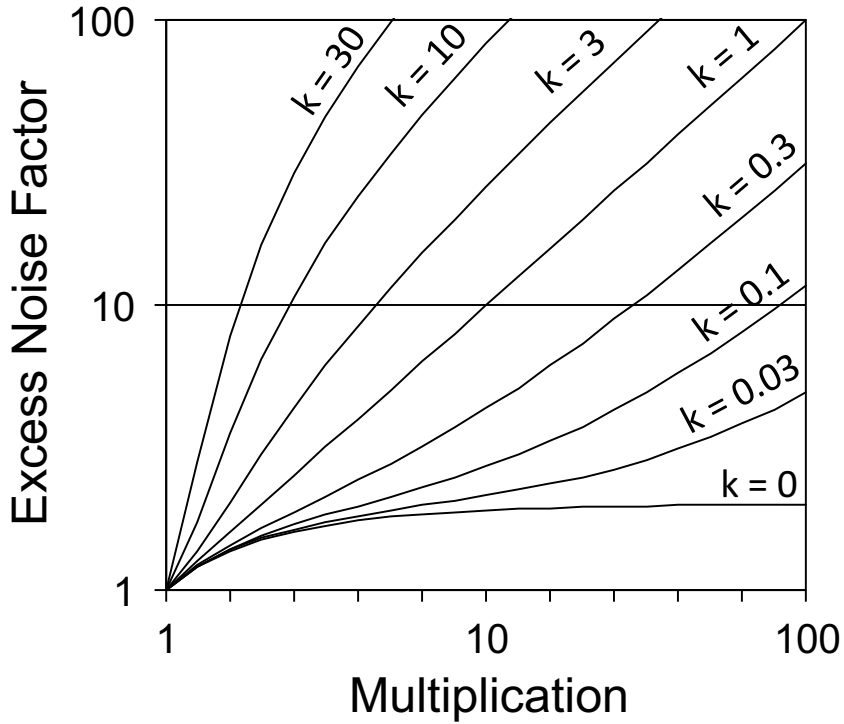


Title: Excess noise factor versus avalanche multiplication from McIntyre's theory



What is k?

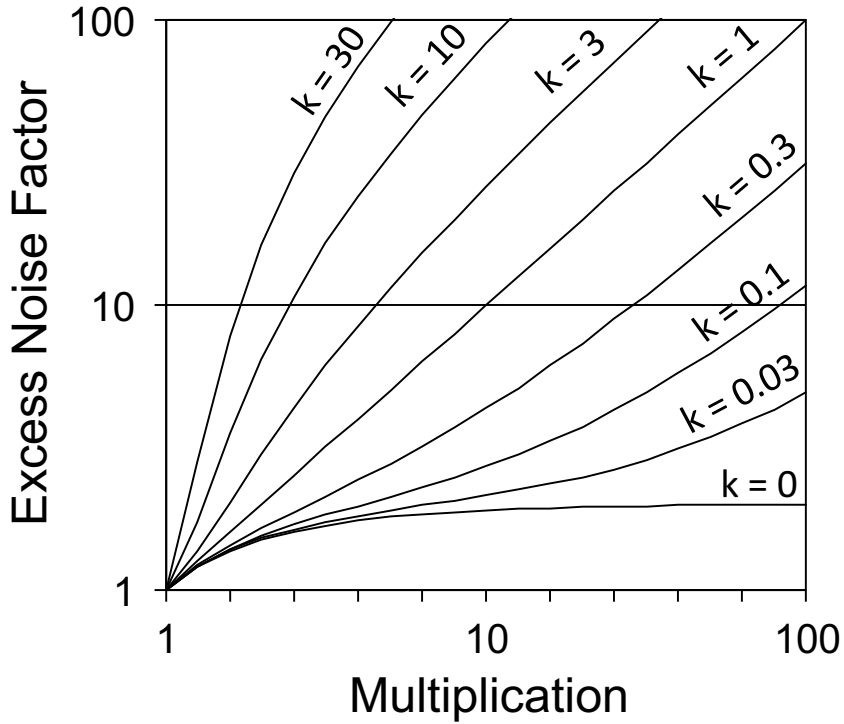
Excess noise factor versus multiplication from McIntyre's theory



k is the ratio of impact ionization co-efficients for holes & electrons

Not your work? include reference

Excess noise factor versus multiplication from McIntyre's theory

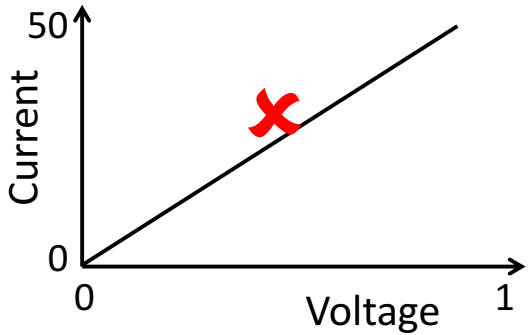


k is the ratio of impact ionization co-efficients for holes & electrons

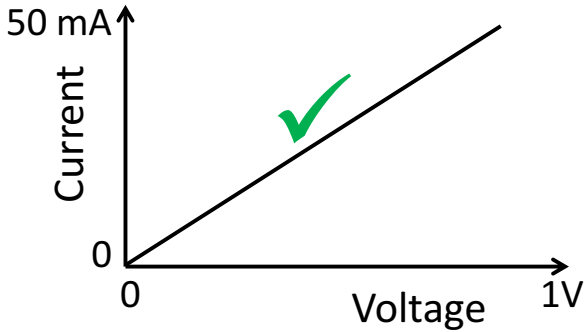
Reference: R. J. McIntyre, IEEE Transactions on Electron Devices, vol. ED-13, p.164-168, Jan. 1966

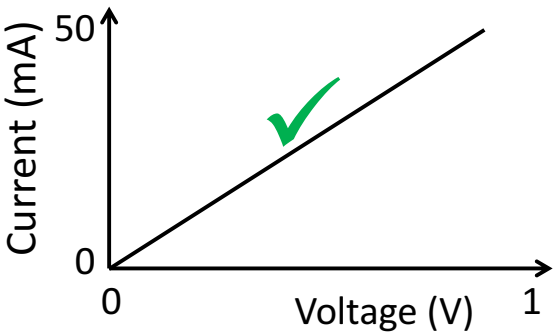
Use appropriate units

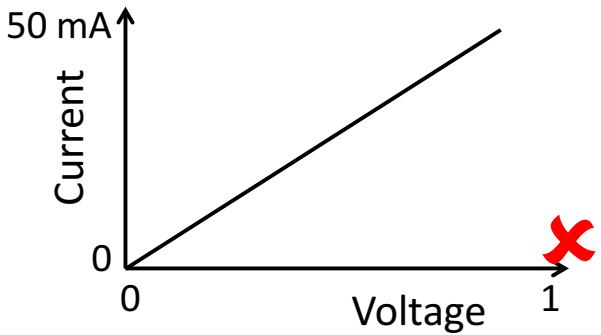
IV characteristic of a 20kΩ resistor



IV characteristic of a 20kΩ resistor







Literature Review

- All projects should include a literature review although some projects e.g. related to academic research, may have many more referenced academic papers than others.
- Use the library web pages to access a database to search.
- Good databases for Electrical and Electronic Engineering are ‘Web of Science’ and ‘Compendex’.
- Never pay to download. Using your University account, you should be able to download for free.
- Live demonstration…..

Reference list (using IEEE standard)

Reference List (include section headings)

Books

[1] R. Tressell, "*The Ragged Trousered Philanthropists*". London, UK: Penguin Books, 2004, ISBN 9780141187693

Periodicals and academic journals articles

[2] J. S. Marsland, "On the effect of ionization dead spaces on avalanche multiplication and noise for uniform electric fields", *J. Appl. Phys.* vol. 67, no.4, pp. 1929 – 1933, Feb. 1990, DOI: 10.1063/1.345596

Conference articles (if any)

[3] J. S. Marsland, "Resonance effects on gain and noise in avalanche photodiodes", in *2nd Int. Conf. on Optical and Optoelectronic Properties of Materials and Applications*, London, England, 2007, pp. 514 – 518, DOI: 10.1007/s10854-008-9714-1

Reference list (using IEEE standard)

Reference List (include section headings)

Patents, Standards, Theses, Unpublished (if any)

[4] J. Bardeen, W. Shockley, W. Brattain, “Three-electrode circuit element utilizing semiconductive materials”, US Patent 2524033 A, October 3, 1950.

[5] J. S. Marsland, "Experimental and theoretical ionization coefficients in semiconductors", PhD dissertation, Dept. Electronic & Elec. Eng., Univ. of Sheffield, Sheffield, UK, 1988.

Online material

[6] The University of Liverpool. (2015/16) *CoPA appendix L: Academic Integrity Policy* [online]. Available: https://www.liv.ac.uk/media/livacuk/tqsd/code-of-practice-on-assessment/appendix_L_cop_assess.pdf (accessed 26th September 2016)

[7] D. Graffox. (2009 Sept.) *IEEE Citation Reference* [online]. Available: http://www.ieee.org/documents/ieeecitationref.pdf (accessed 26th September 2016)

Finally!

- ELEC340 and ELEC440 are 30 credit modules
- They count for 25% of the marks for your year of study
- 30 credits = 300 hours = 15 hours per week for 20 weeks
- Timetabled hours from 11 to 5 on a Tuesday: less than the minimum required
- 4th floor lab is available throughout the week, not just a Tuesday
- Enjoy your project