



Session 3

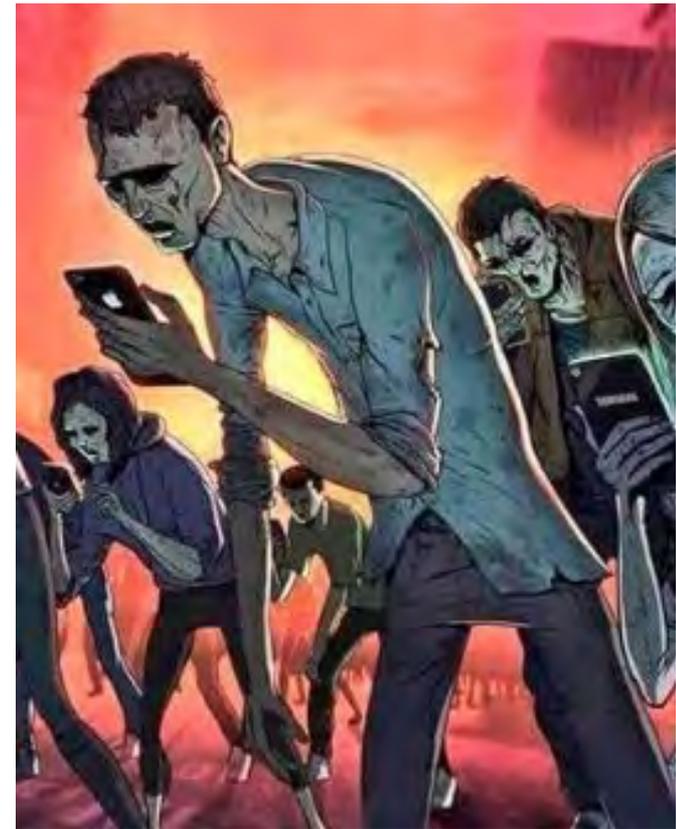
Communication

Professionalism

- CEED students undertake projects in a professional environment, and must respond accordingly
- **Every** form of communication or interaction associated with the project **must** reflect your professionalism
 - Presence
 - Presentation
 - Punctuality
 - Phone conversations
 - E-mails
 - Meetings & Technical Presentations
 - Written reports
- **It's critical to know the appropriate ways to interact in a professional environment – a good or bad interaction (or even an inappropriate lack of contact) can affect a relationship for an extended period...**

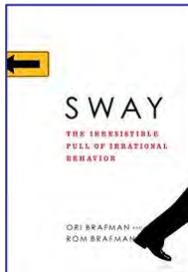
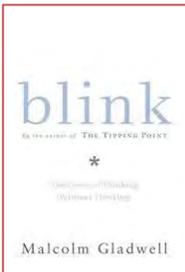
Presence and Note Taking

- It is critical to be fully “present” at all meetings
- Professional meetings are not recorded – you must take “live” notes during the meeting
- The note book is your ally – take it to all meetings, and keep it with you during any calls or research sessions
- Your phone is the enemy of presence – don’t become a phone zombie!!!!



Presentation

- First impressions are more influential than you suspect – and presentation is an important element of a recipient or counterpart’s first impression
 - Be aware of the consequences of “Diagnosis Bias” and “Value Attribution”!
- If you or your work are presented poorly, colleagues will (subconsciously) assume that your work is equally poor
 - Dress and act professionally
 - Take care in checking spelling and grammar
 - Take care in the arrangement and presentation of figures



References

- Gladwell, M, 2007, *Blink – The Power of Thinking Without Thinking*, Little Brown & Co, New York
- Brafman, O, Brafman, R, 2008, *Sway: The Irresistible Pull of Irrational Behavior*, Broadway Business, New York

Punctuality & Responsiveness

- Showing up late for an appointment of any type is disrespectful to the other participants
 - It leaves the impression that you think your time is more important than that of the other participants.
 - Your time is **never** more important than that of the CEED client, the academic supervisor, or CEED staff.
 - Take any necessary steps to ensure you arrive on time.
- Punctuality in the submission of reports and timely response to e-mails is equally important
 - Failing to meet deadlines demonstrates your unreliability
 - You must RSVP promptly to appointment requests, whether they come from the client, supervisor or CEED office
 - You should never let issues drift – deal with them as they arise.



RSVP

Attitude

- CEED students are expected to adopt a professional attitude in the execution of their projects
 - This means doing things until they are done properly, rather than doing “just enough”.
 - Every interaction during a CEED project can affect your professional reputation – Perth is an outrageously small town (professionally).
 - You will have the opportunity to present your work to not only your client, but representatives of a wide range of companies at the CEED seminar
- **Remember – in a professional project, you are not being judged by marks. You are being judged by results.**

Exercise – Communication

- List the key points of the discussion presented in the last 4 slides
- List the actions that you will take in your project based on this discussion
- You have 5 minutes to compile the list – at the end of the 5 minutes we will compare the lists.

Managing Communication

- Keep meeting minutes
 - Always book the next "meeting" from the current “meeting”
 - Minute only decisions and actions
- Put all agreements in writing (usually, e-mail or an e-mailed memo will do)
- Keep notes
- Keep all parties well informed - no-one should feel “out of the loop”
- Maintain regular contact with all parties
 - “Out of sight, out of mind” is not entirely true – people notice when they’re not hearing from people they expect to hear from. And often they don’t like the silence.

Effective Communication

- Improving the effectiveness of your communication will;
 - Reduce frustration on all sides
 - Improve chances of mutual understanding
- Know which form of communication to use
 - Students are prone to relying on e-mail when they should call or meet face-to-face

Always remember – in phone and e-mail exchanges, your counterpart can't see you. You MUST take extra care to leave a good impression.

Phone Communication

- Consider the situation of others
 - Be prepared for your contact to be busy
- Control the progression of communication
 - If a contact is busy, set a time for a follow up or return call
- Leave useful voicemail messages
 - Always leave your contact number
- Do not nag via voicemail
 - Leave ONE message
- Your own voicemail greeting must be informative and professional



E-mail

- Professional e-mails should be written as if they are letters
 - Grammar and spelling must be correct
 - Do not be overly familiar
 - Do not lapse into colloquialisms or “txtspk”
- Always be mindful that e-mails can be circulated to unintended recipients
- **Take extra care when wording e-mails**
 - It is **very** easy to leave the wrong impression via a poorly worded e-mail
 - Students are often guilty of poorly worded e-mails to supervisors, staff or mentors
 - Always check – what sort of attitude does your e-mail convey? It’s easy to come across as arrogant or rude

Presentations, Talks and Seminars

CEED Seminar (September)

- You will prepare a short (six page) paper
- You will deliver a 20 minute presentation (15 minute talk, 5 minutes for questions)
 - Students starting at mid-year will be invited to return to deliver a presentation.
- You will also participate in event planning and operations.

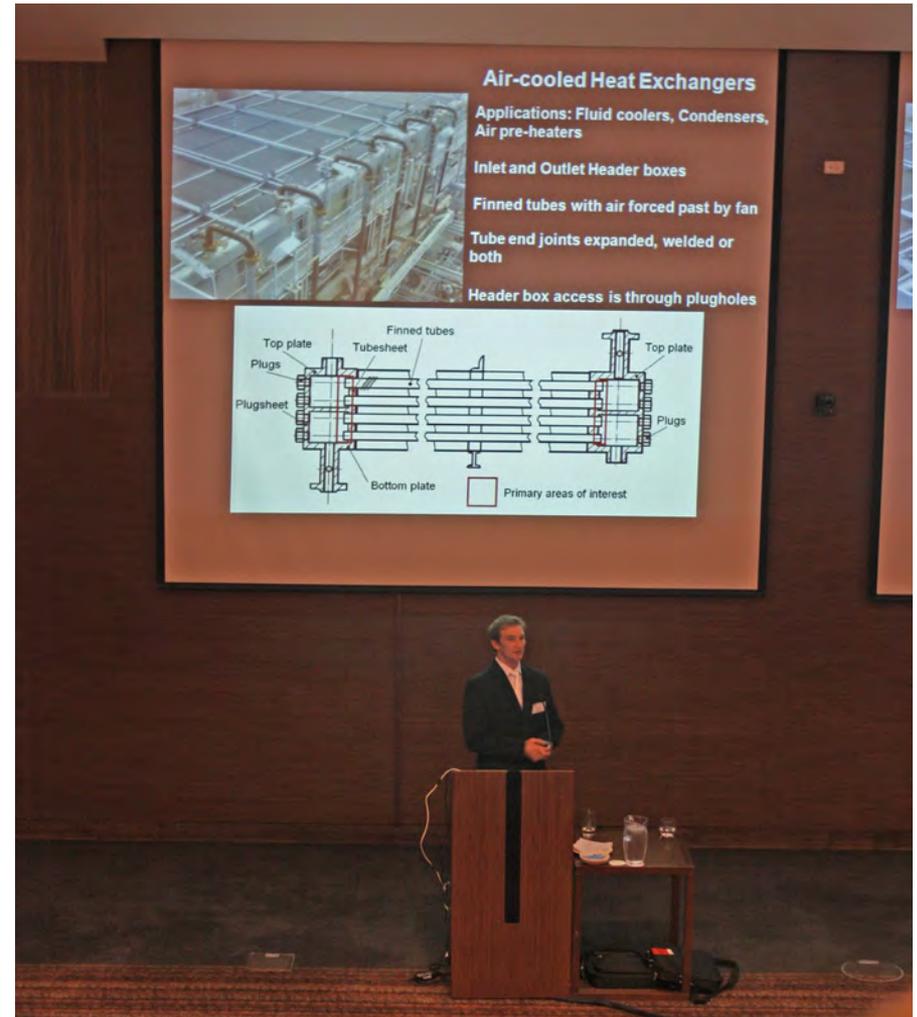


Most students are also invited to give presentations at their Client's premises

Preparation is the key to good presentations.

Delivery and Personal Presence

- Speaking Volume
- Speaking Rate
- Mannerisms
- Eye Contact
- Activity and Engagement



Professionalism

- Avoiding Redundancy
- Professional Expression
- Professional Dress
- Meeting Time Limits



Confidence!

Confidence derives from preparation.

Slide Content

Initial Slides

- The first 3 slides must establish;
 - **What** the project is about, and what your objectives are
 - **Why** the project is important
 - **How** you are going to achieve your objectives (in a general sense)
- **If the audience doesn't know what the talk is about after the first 3 slides, then you have lost them**
- Slides that list the order of the sections of your presentation are **worthless!!!**.
- It is essential to use high impact graphics in your initial explanatory slides – help the audience visualise the issue and its importance.

Slide Presentation

- Spelling and (gross) grammatical errors are unforgiveable.
- All graphs and images must be appropriately labelled
 - Axis titles, legends, units
- You must use appropriate (professional) language on your slides, as well as in your verbal expression
- Your slide content should reflect the expected level of shared knowledge with the audience
 - You **MUST** tailor your presentations to the audience.

Technical Content

- It is essential that all technical content presented be accurate; any obvious errors will lower the audience's opinion of your work, and diminish its potential impact.

Question Time

- Prepare in advance – think about the questions you would ask, and prepare answers for those
 - What were the limits of your model or experiment? Why did you settle on particular assumptions? Which choices were arbitrary? Which aspects of your hypothesis are open to challenge?
- Listen to questions carefully.
- Don't rush – take a moment to think about your answer.
- Don't take questions personally
- Don't be defensive
- Accept that the questioner may be raising a valid point.
- You don't always have to have an answer – but you should have an idea of how to get the answer.

Font Size

- All text and image labels must be visible from the back of the room.
- Rule of thumb – never use less than 16 point font, and try to stay at 20 point and above for important text.
 - This is 20 point (Calibri)
 - This is 16 point
 - This is 12 point
- Note that these limits can vary for different types of font
- Be sure to use crisp, clear fonts;
 - Georgia (this presentation), Times, Arial, Helvetica, Geneva

Background and Colours

- Be careful when selecting backgrounds and slide formats
 - “Busy” slide templates can restrict space and obscure information
 - Don’t let background colours overwhelm the key information
- Ensure that Background and font colours are compatible
 - Dark on light or light on dark are the rule – “sort of dark on sort of light” or vice versa is a silly mistake

Good

Good

No Good

Stupid

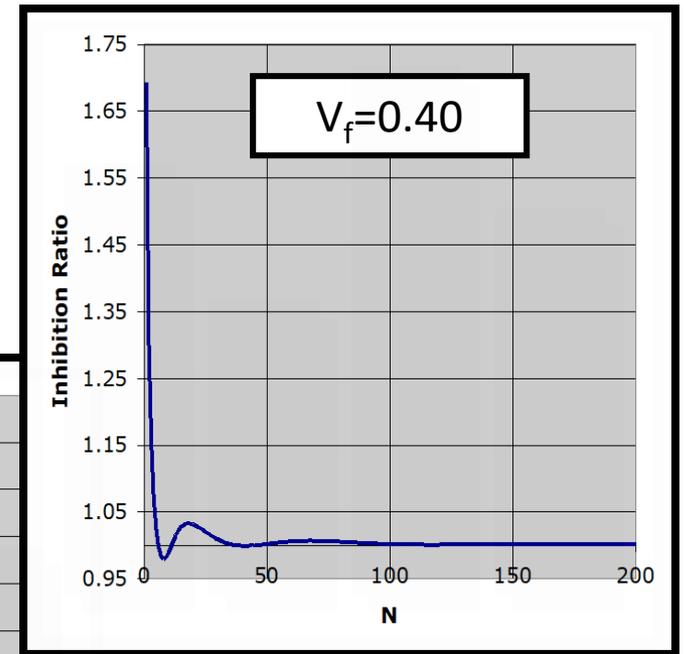
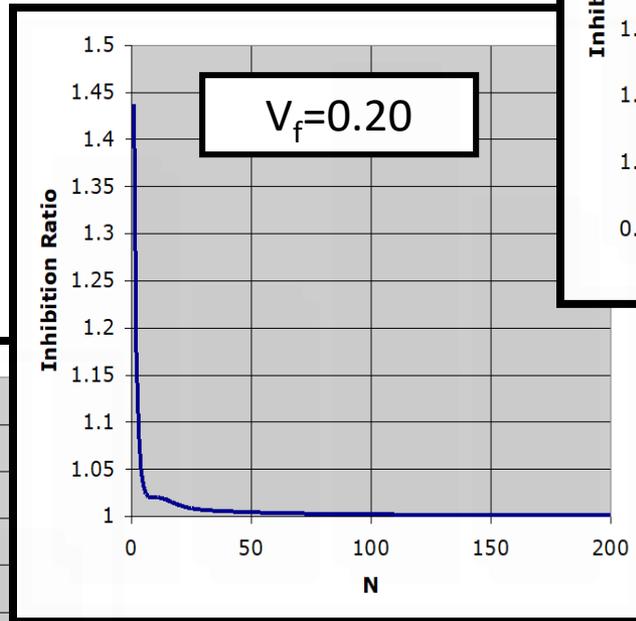
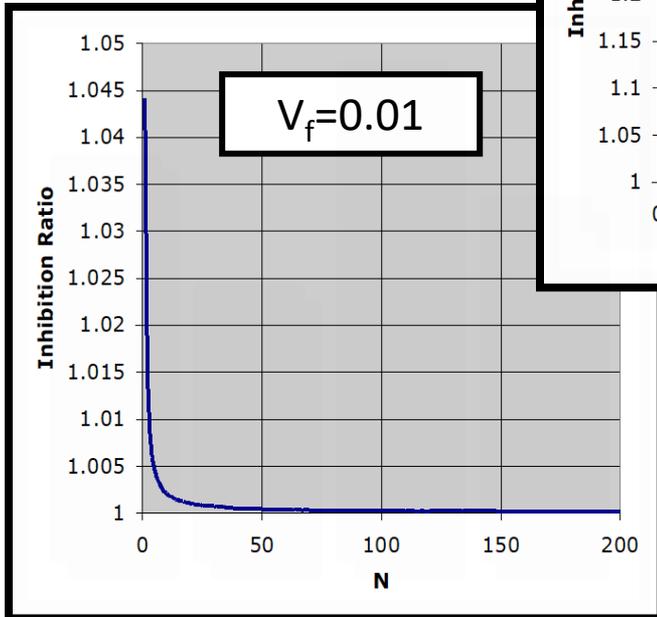
- Make sure that the background colours are compatible with graphs and images too.

Image Size

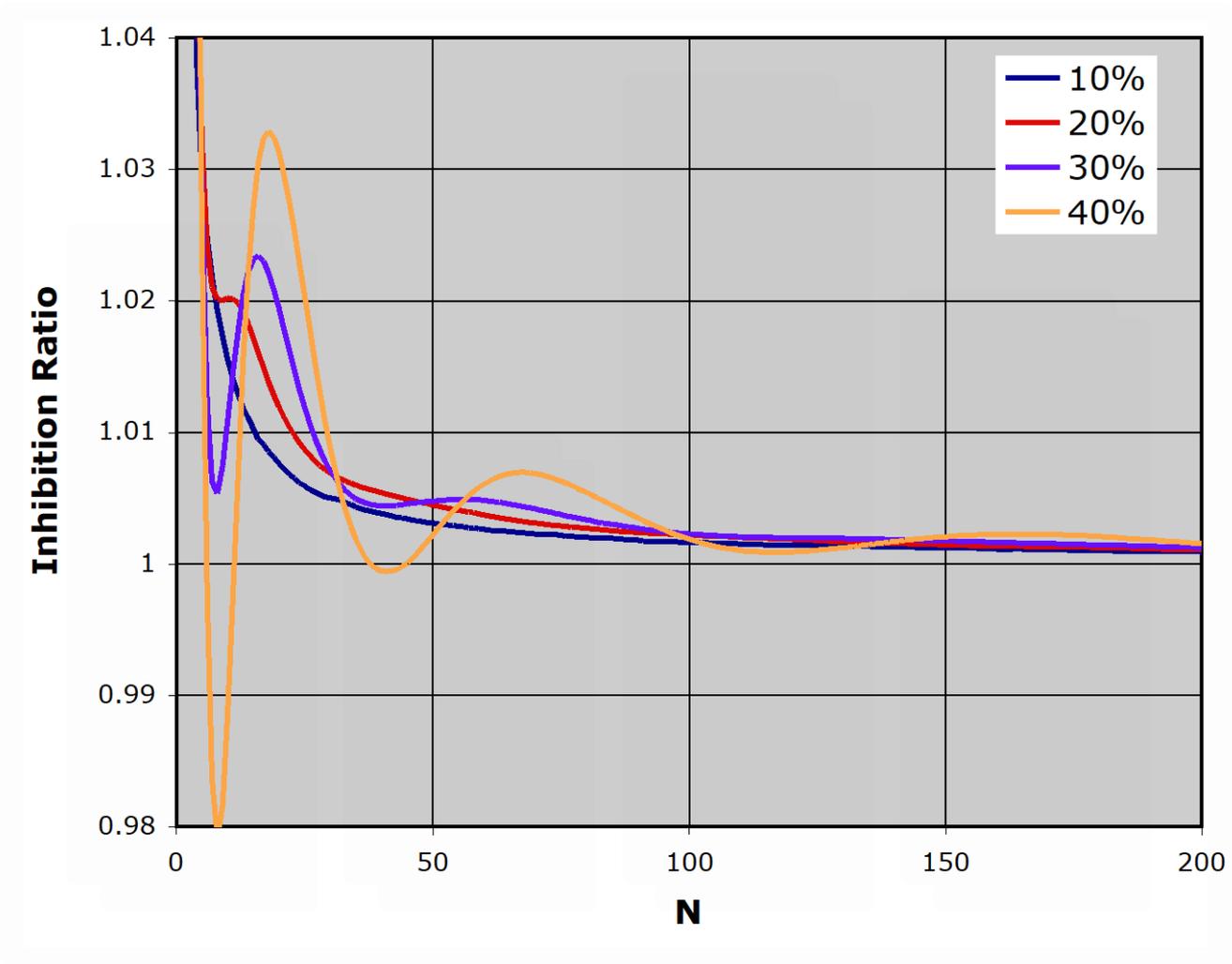
- Make sure that all image features, symbols and labels are visible at the back of the room
 - Lines and text are often “thinned” by the projector – so lines that look good on your screen may not show up well when projected.
 - Color definition can also be lost in projection – it can be hard to tell Blacks from Dark Blues, etc
- Use judgement in deciding whether to squeeze multiple images or graphs onto a single slide
 - Is the point you are trying to make still clear with the smaller images?
 - Do you really need to compare the images – or is the point still clearly made with larger images on separate graphs?

Inhibition Ratio ρ_n

Three-dimensional ERS arrays of Monodisperse Spheres



Effect of short range order on Inhibition Ratio; *Three-dimensional ERS monodisperse particle arrays*





Session 4

Managing Your Research Project

Project Execution



"DO OR DO NOT. THERE IS NO TRY"

80% is NOT Good Enough!

- The biggest difference between a classroom environment and the real world is that you are judged by results instead of marks.
- In the classroom, 80% gets you an A; in practice, something that is 80% right will 100% not work.
- In practice, turning in work with errors (or projects that don't work) makes you look careless and lowers others' confidence in you.

Marks are ultimately meaningless. You will only be deemed successful if you deliver something that works!

**It's your
project!**

It's your project!

- **You** must take “ownership” of the project for it to be successful.
 - You will receive support from your supervisor, the client, the CEED office, school staff, and your fellow students,

BUT

You're the person primarily responsible for the success or failure of the project.

- **You** must take the initiative to keep the project moving in the absence of immediate deadlines or external pressure.
- If you get moving on your project earlier, you will have more opportunity explore your project. The more you explore, the better your project will turn out.

Project Activities

- Project activities NEVER go smoothly
 - Anything that you leave to the last minute WILL get delayed when you can least afford it.
 - Sometimes things that are beyond your control will go wrong (this is why we do risk management).
- Get your research going as early as possible;
 - This will give you the chance to overcome difficulties
 - You may identify ways to enhance your project (remember– you are effectively in competition for resources).
- Use the holiday breaks– don't let your project stall during teaching breaks.
 - Workshops, libraries and labs are quieter over the break – it can be easier to get things done.
 - More importantly, you don't have other classes in the break.

Site Testing & Sample Collection

- Projects involving site testing or sample collection face particular challenges.
 - You will have to fit your testing in with operational and maintenance schedules
 - Several parties may be involved in setting up and executing the program – and they will each have their own priorities
 - The program may involve multiple organisations (client, contractor, community); and all of their schedules will need to align to enable the program to proceed
- **So – you must start as early as possible to plan and organise the test/sampling programs**
- **Be aware that the timing will be difficult to control – so plan accordingly in your project timeline**

Be Pro-active!

- Resolve issues as soon as they arise.
 - Procrastination is fatal in a one year project
 - Problems will not become easier to fix next week (in fact – there will be less time available to address any issues).
- Don't assume that your supervisor or mentor will be available on your timetable – so get material to them early.
 - They are busy; you may be one of many students or employees that they are supervising, and they may have other job responsibilities to attend to.
 - You have to give your supervisor and mentor time to review and respond thoughtfully to submissions.
- Clients and Supervisors respond to your enthusiasm.
 - If you're interested and getting things done, they will take more interest in your work and contribute more.

Meetings

- You should set and maintain a regular meeting schedule with your supervisor and client mentor
 - Weekly supervisor meetings would be preferred; fortnightly would be the minimum frequency.
 - Meetings with the client mentor may be less frequent, depending on the mentor's commitments.
- Set goals to be achieved between meetings
 - At each meeting, you discuss with your supervisor and mentor the work done since the last meeting
 - Set down what will be done by the next meeting.
- Seek regular feedback from your supervisor and mentor
 - Ask them to assess your plans and findings.
 - Ask for comments on any documents or presentations.

Project Timeline

- Make sure you set out definite deadlines for individual tasks.
 - Identify regular milestones that will help mark your progress, especially in longer or more complex tasks
- **Stick to your deadlines!**
 - Don't let weekly pressures (or the absence of imminent project submissions) reset your priorities.
 - Make time for your project every week – it's the most important unit you're undertaking over the next year.
- Keep your Gantt chart updated as the project evolves
 - Take particular care to identify tasks on the critical path, and keep them on schedule.

Manage Yourself

It's critical to manage your own state of mind and commitments during the project

- Use your Gantt chart – it's important to see the progress that you're making
- Keep a growth mindset – expect there to be setbacks. Each setback is a lesson, and can be overcome or adjusted for.
- Be careful about overcommitting yourself outside your studies – Uni is demanding!
- The CEED office is here to provide support – check in with us if you need advice on managing issues in your project (your supervisor is there to provide support too!)

Remember – nothing ever goes perfectly. Dealing with issues in a project is absolutely normal.

Report Preparation

Why Prepare a Report?

- **To communicate your project's motivations, objectives, methods and findings to others**
- Obviously, your report will be marked, but you will find that if you focus on *effective* communication, the mark will take care of itself
- When making decisions on whether your report is effective, place yourself in the reader's shoes;
 - Would someone reading this text understand what you are thinking?
 - Does this figure or graph convey the information that you wish to convey to the reader effectively?
- **The reader is NOT a mind-reader; all they have to work with is what you provide in the report**

Report Audience

- When preparing any report, you must take into account the expertise and motivations of the target audience
- For your report, the audience will include
 - Staff at your client enterprise; these staff may have extensive experience, but may not be familiar with specialized techniques
 - Management staff at client enterprises; these individuals may or may not have specific expertise
 - Recruiting officers at potential employers; these individuals may or may not have specific expertise
 - Academic Staff in your school; experienced researchers and teachers
 - Future students; experience similar to your own

Audience Motivations

- Implementing your recommendations, or evaluating your recommendations for implementation.
- Deciding whether to support continuing research on the subject
- Following up or extending your research
- Determining whether to hire you
- Determining where you should be assigned in an organisation
- Comparing your research with research done elsewhere

And.....

- Marking

Project Summary

- In some respects, the most important element of any report
- For busy readers, the summary may be the only thing they read – it will ALWAYS be the first thing they read
- The summary must capture the reader's attention – so take care in preparing it.
- The summary must provide a clear, concise description of
 - The reasons for undertaking the project
 - The project objectives
 - The methods by which the objectives will be achieved
 - Key conclusions and recommendations (highlighting costs of implementation and benefits, advances in the state of the art, novel capabilities or features of a new design, as appropriate)
- The summary should usually be limited to 250 words (always less than one page)

Introduction and Project Objectives

- The introduction sets out:
 - The nature of the issue being addressed
 - The importance of the issue
 - The past history in the area and the current state of the art
 - The objectives, and the reasons for pursuing those objectives.
- Context is important: why is the project important to the field, client or community? How does the project advance the state of the art?
- What benefits accrue from the achievement of the objectives?
- A brief description of the structure and contents of the report may be included, but is not essential (most reports follow reasonably conventional structures, and contents are provided).

Literature Review

- The literature review may be blended into the introduction or presented as a separate chapter.
- The purpose of the literature review is to establish the state of the art in the area that you are working in.
 - For investigative research, this will mean reviewing the academic literature.
 - For design projects, this will mean identifying current approaches to solving the problem of interest (or similar problems)
 - For industrial projects, this will entail reviewing standards and current operating practices.
- **Remember – it's important to REVIEW the literature critically. It's not a literature "survey".**

Process

- *The guiding principle for this section is that it should provide any information that would be necessary for someone to repeat your work.*
- The nature of this section will depend on the project
 - Experimental Method
 - Model Formulation
 - Design Approach
 - Data Collection
- Providing detailed information is critical
 - Your findings are meaningless if the reader cannot tell how you obtained them.
 - Figures are essential.
 - Design criteria **MUST** be defined for design projects

Results & Discussion

- *The guiding principle for this section is that it should describe what has been done, and demonstrate how well the findings are understood.*
- Focus on presenting “analysed” results
 - Raw data may be provided in appendices
 - Use graphs and tables as appropriate
- For design studies, the final design, and its performance of the design will represent “results”.
- Take care to evaluate how well your presentation communicates the results to the reader
 - Graphic comparisons are particularly powerful
 - When comparing results, select a form that keeps the items being compared on a single page

Results & Discussion (cont.)

- The purpose of the discussion is to place your results in context.
 - Compare the findings with any original expectations.
 - Compare the findings with the pre-existing state of the art.
 - Compare the proposed approach with alternatives.
 - Discuss the limitations of the current project.
- It is important to assess the limitations of a technique, in order to properly apply results.
- Arbitrary choices should be identified, and alternative approaches should be considered in the discussion.
- *Remember – all statements and arguments in your report must be supported, either by your results, or information available in the literature.*

Every statement and conclusion in a professional report must be supported by accepted literature or your results and deductions

Conclusions and Future Work

- Conclusions should state concisely the most important findings of the project.
 - Assess whether or not the objective of the project have been achieved.
 - Identify any future work arising from the project (unresolved issues, or steps for implementation).
- While the conclusions will generally be brief, care should be taken in writing this section.
 - Remember, it will be the last thing that the audience reads, so it will be the last thing on their mind before they make a decision on the future of your project (in professional practice), or on your grade (right now)!
- **Last impressions are important too!**

Your reports must stand on their own as documents!

- Remember that your reports may have a life within the client organisation that extends far beyond your participation in the project
 - The report must make sense even when you're not around to explain it.
 - The methodology and recommendations in particular must be clear to people who were not original participants.
 - You never know who may end up seeing your report – they are often circulated widely, including to senior personnel within the client enterprise.
- Any additional deliverables (such as manuals) must be prepared with the intended audience in mind

Be Concise!

- Your unit may specify a word limit; and while there is no limit on CEED final reports, no-one wants to read something that is unnecessarily long!
 - Review your text critically – eliminate anything that adds nothing for the reader
 - Review your style – eliminate unnecessary wording.
 - Review your results presentation
 - Don't include a graph and a table if both show the same thing.
 - Rather than repeated graphs, could the results be compared on a single graph?

Reports are judged on their content and the impact of their content, not their weight!

Project Administration

CEED Administration Office

Office Days/Hours

- 9am to 2pm Monday, Tuesday, Thursday and Friday;
- Closed – Wednesday;
- Important to email or make an appointment (2020 will involve a lot of leave absences).

Location

- Monadelphous Integrated Learning Centre, 1st Floor, through red door 1100A, room 157.

Contact Details

- Phone: 6488 3130 or 0432 408 788
- Email: ceed@uwa.edu.au
- Website: <http://ceed.wa.edu.au/>
 - The CEED Administration office should be your first contact for questions regarding the CEED Program.
 - cc ceed@uwa.edu.au when emailing Jeremy Leggoe.

Project Administration

Document Naming Format

Correspondence sent to CEED

- dd.mm.yy Project No. Name Short description:
06.12.19 20-001 Amanda Bolt December Monthly Report;
06.12.19 20-001 Amanda Bolt V1 Draft Project Brief.

Project Expenses

Authorisation to Incur Project Expenses

- Form must be fully executed by Mentor, Supervisor and the CEED Office before expenses are incurred;
- Fully executed form must be sent to ceed@uwa.edu.au at time expenses are incurred – not at the end of the project;

Project Administration

Project Expenses cont.

- UWA Workshop/Lab Use
 - Take into consideration when budgeting for Workshop/Lab the cost of disposing of unused materials, testing specimens etc at the end of the project;
 - Keep a record of Workshop/Lab usage, check this against statements;
 - Obtain regular statements from Workshop/Lab. If amount exceeds agreed estimated amount in Project Brief a new Authorisation to Incur Expenses must be completed.
- Monthly Reports
 - Ensure Project Expenses incurred by UWA are included on Monthly reports, and receipts provided where necessary.

Project Administration

Final Year Unit Academic Assessments

- You must meet all the deadlines for your final year project unit;
- Do not submit Academic Assessments to LMS, due to the confidentiality of CEED projects please only email to ceedfyp-ecm@uwa.edu.au and cc ceed@uwa.edu.au

Monthly Reports

- Due on 1st of the Month. If for some reason your can't meet that deadline please let Administration know;
- Include as much detail as possible as Administration review these;

Appointments

- CEED Administration look after Jeremy's calendar, therefore they are the first point of contact for appointments with Jeremy;
- Confirm your attendance to meetings/events set by CEED as soon as possible;

Project Administration

Deliverables

- Ensure all documents are named with the least amount of characters as possible;
- Make an appointment with CEED Administration when you are ready to submit to the CEED office. Please do not drop in as staff may not be in.

Please feel free to contact Administration at anytime during your project.

The Mission of the CEED Program

- ◆ To provide students with the opportunity to undertake research projects dealing with real industry issues.
- ◆ To provide students with experience in a professional environment, preparing them for the transition to graduate roles.
- ◆ To develop the professional skills of our students, and prepare them for working under the constraints and conditions experienced in professional environments.
- ◆ To engage industry with universities, demonstrating the benefits of applied research, laying the foundation for deeper engagement – while delivering value through the project
- ◆ To engage academic staff with industry, sharing their expertise and exposing them to current industry priorities.



32 Years of CEED



- The concept originated at RMIT, and with federal government support CEED was founded at UWA (and several other universities) in 1989.
- With the withdrawal of government funding, CEED at UWA became self sufficient.
- The program was founded in Mechanical Engineering, expanding over time to accommodate any discipline.
- By the end of 2022 we will have completed nearly 650 CEED projects at UWA.
- At present we typically complete 15-25 projects each year, representing (industry funded) research expenditures of \approx \$300,000 - \$500,000 per annum
- In several companies, CEED is aligned with vacation and graduate hiring programs