

Preparing a Scientific Presentation

Some tips and considerations

*Updated for CUPC 2026 @ McMaster University

CUPC Student Competition Presentations

- The student **oral presentations** at the CUPC will be 10 minutes for the talk + 2 minutes for questions (fitting in a 15-minute timeslot).
 - You should always check the updated presentation instructions ahead of each conference you attend.
- For **poster presentations**, you will want to think about a few different ways to present your poster, i.e., a short 2–3-minute overview, and a more detailed ~5-minute discussion for the judges.
 - You should also be prepared to answer questions.

Contents of this document

- There are four (4) sections in this document which cover the following topics:
 1. Initial considerations and the format of an oral presentation ([slide 4](#))
 2. Creating effective slides ([slide 12](#))
 3. Considerations for creating a poster ([slide 23](#))
 4. Preparing to give your presentation ([slide 33](#))
- We recommend reviewing sections 1,2 & 4 if you are giving an **oral presentation**, and sections 3 & 4 if you are presenting a **poster**.

Initial considerations and the format of an oral presentation

Know your audience

- Who is your audience?
 - What is their interest/reason for being at your talk?
 - How many people?
 - How familiar are they with your topic?
- What do they need to know to understand your key points?
 - Introduce background at the right level.
 - Do not assume everyone is an expert, but do not drastically underestimate their knowledge either.
 - It is ok to go over some things that you expect the audience to know to make sure everyone is on the same page and familiar with the terminology.
 - Be careful with acronyms (avoid) and abbreviations (explain)

Formatting a “12-minute talk”

Introduction

What does my audience need to know to understand my presentation?

- Provide the key pieces of information
 - This is where you capture or lose your audience
- Give info as to “why” is this important to the audience?
- Diagrams are better than words; bullets are great to highlight important text
- References should appear on the slide where they are used, not as a list at the end of the presentation

Formatting a “12-minute talk”

Results

What are the highlights?

- More plots and images → fewer words
- You can circle and draw on figures for emphasis
- Make sure the axes labels and legend are large and clear enough to read from a distance
 - Make new ones if necessary.

Formatting a “12-minute talk”

Conclusions

What is my take-home message?

- Summarize and highlight key findings
- Use bullets (no need for full sentences)
- Consider keeping "Conclusions" as your last slide.

Formatting a “12-minute talk”

- The following is typical for conference presentations
 - Problem statement, motivation: **1–2** slides
 - Previous work/background: **1** slide
 - Method: **1–2** slides
 - Results: **4–6** slides
 - (Future work: **1–2** slides)
 - Summary : **1** slide
- Plan **your** story arc and make the slides that make sense to tell that story
- **Note:** if you want to include an outline – a visual outline is more effective than a text list (or for a short talk, skip the outline)

General tips for scientific presentations

- Use equations sparingly – i.e., only if necessary, and spend time explaining what is important especially if they are complex
- Make sure axes and labels on figures are legible – make new labels etc. if needed
 - Do not say “ I know you can’t read this but . . .”
- Design with purpose: visuals & graphs should convey key information not just act as decoration
 - Be careful with animations – there is a fine line between a **highlight** and a gimmick
- Limit the words on the slide
 - Fewer words can be more effective – audience can spend more time focused on you and the information in the images.
- Do not try to do too much – do not overload us with details, be thoughtful and plan your story carefully to fit in the time limit.

Final slide

- Leave your audience with the final summary slide **not** a blank slide that says “Questions?”
 - This strategy lets them spend more time with your take home message
 - It also gives them something to think about as they are considering questions for you
 - If you want, you can have “Questions” appear at the bottom of the slide to show that you are finished your presentation
 - If you have an acknowledgements slide after your summary – either go back to the summary slide, or include the summary slide again after the acknowledgements

Creating Effective Slides

Fonts for Presentations

Use a sans serif font – these are easier to read when projected

- Calibri
- Arial
- Helvetica

Do not use a serif, condensed, narrow or script font

- Times New Roman
- Garamond
- **Bauhaus 93**
- *Brush Script*
- **Impact**
- Trattatello

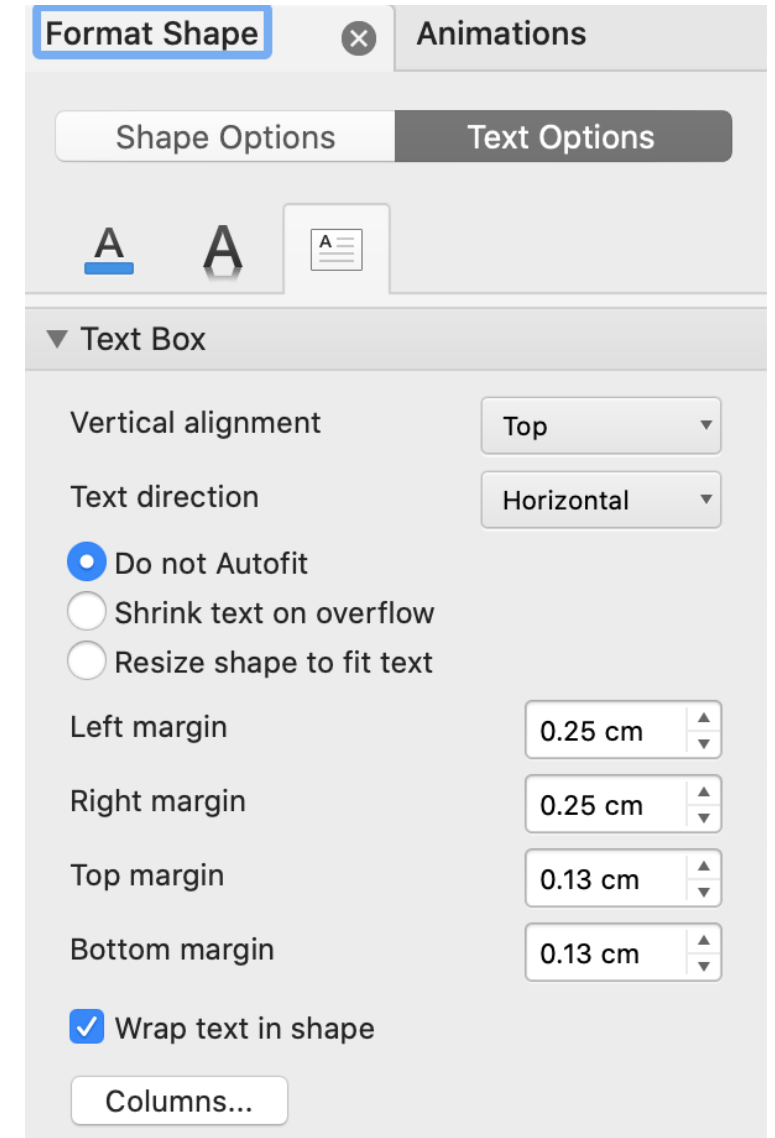
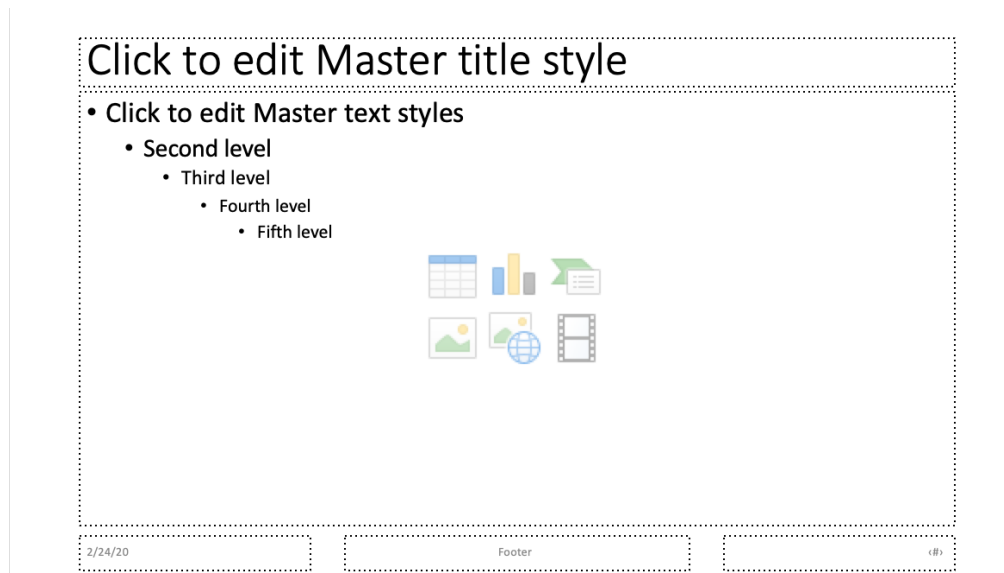
Note: fonts should be in the range of

18 pt - **36 pt**

References can be 14 pt

Format the Master Slide

- View → Slide Master
- Adjust the default font sizes, colours, and content placeholders to effectively use space
 - Include slide numbers – helpful for audience questions
- You can turn off the “Autofit” function for font sizes
- Use at least single spacing or even 1.1



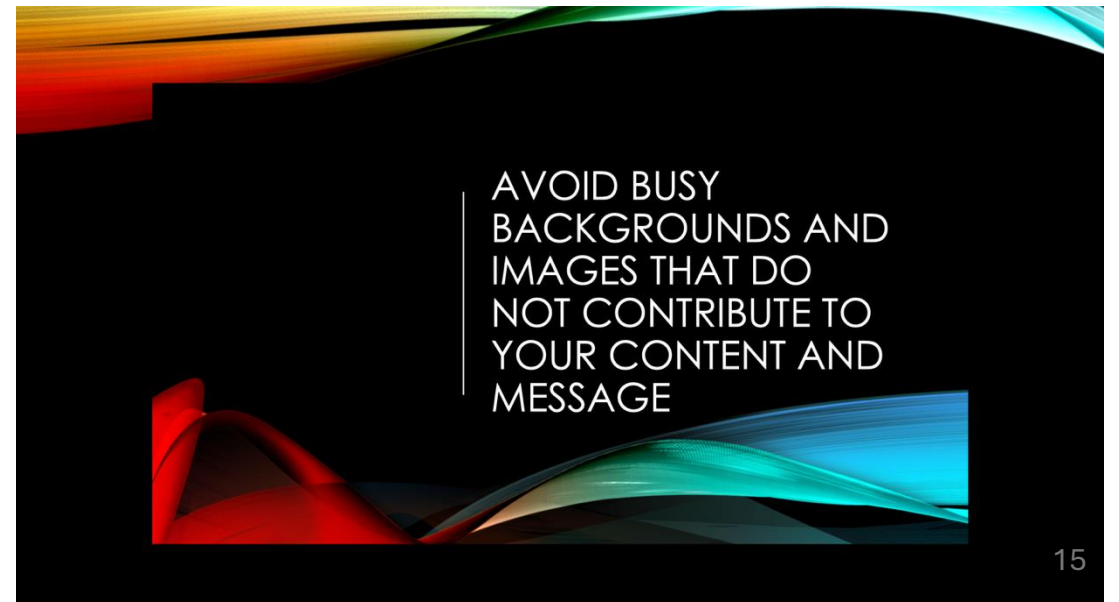
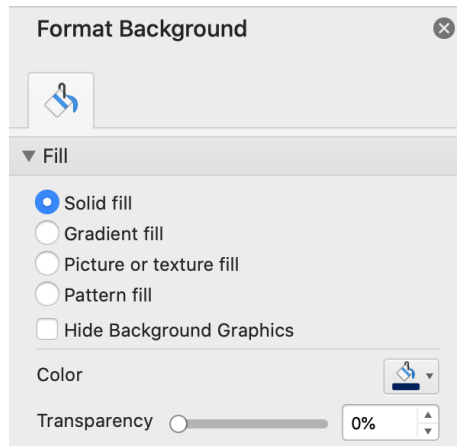
Keep it simple and clean

- Dark fonts on light background are clean, visible, and easy to read

- Conversely, light font on a dark background can also be effective

- In both cases: high contrast is key

- Choose your background colour:
Design → Format Background



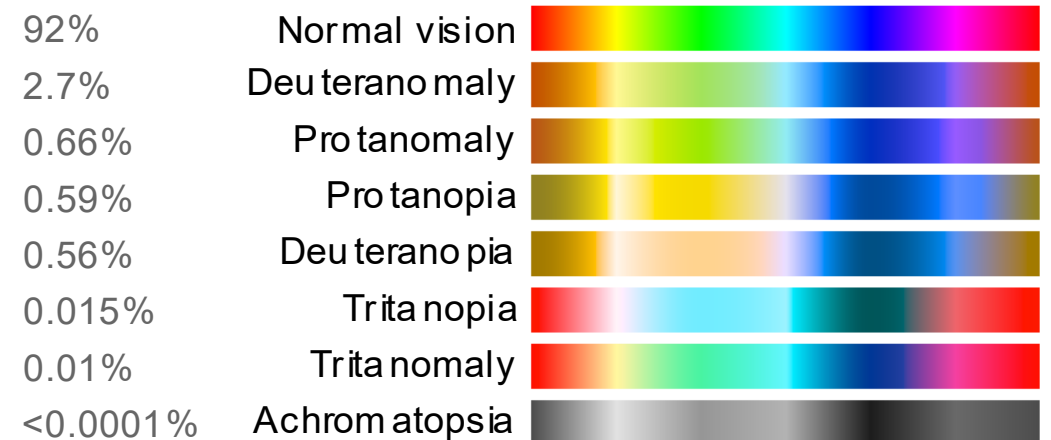
Colour combinations to avoid

- Projectors change the way that colours appear
 - Some bright colours become neon
 - Pastel colours blend, fade and often disappear
- Never use red on green or blue, blue/green on red, or colours without significant contrast (e.g., yellow and orange, green and cyan)
- Make sure that your presentation is accessible – consider colour-blindness, astigmatism, neurodiversity,...

BLUE on RED appears blurry

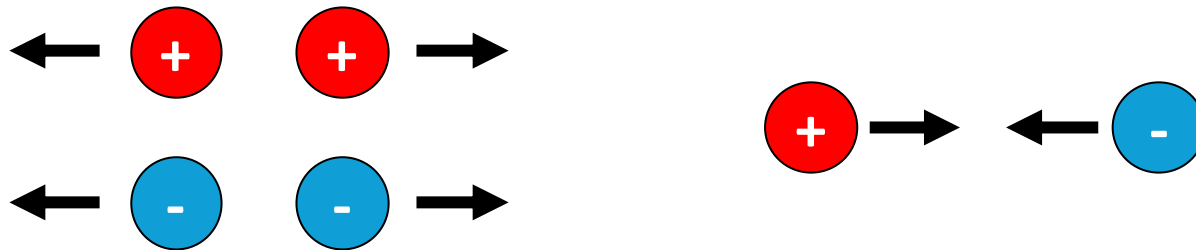
YELLOW on WHITE is hard to read

RED on BLUE appears blurry



Make colour meaningful

- In text: use colour for emphasis
 - But do so sparingly
- In figures: be consistent
 - The audience expects colours mean something
 - Keep the same scheme throughout to help audience make links and understand your content



Positive charges are **red**
Negative charges are **blue**

Notice that colour is **not** the only distinguishing feature, the **+** and **-** symbols are used as well

Use space effectively

- Put a meaningful statement in the title space (left justify it like regular text)
 - This could be the only text on your slide
 - Everything else should support/explain the statement
 - Avoid a single hanging word on one line
- You can use multiple content boxes to maximize space
 - Remember to line things up and to make the slide visually appealing Do not crowd your text and figures
 - Adjust line spacing to give your text breathing room and make it easier to read

When we consider the rotational equilibrium of a rigid body, we can treat the gravitational force as if it were a single force applied at the centre of mass.

Single spacing

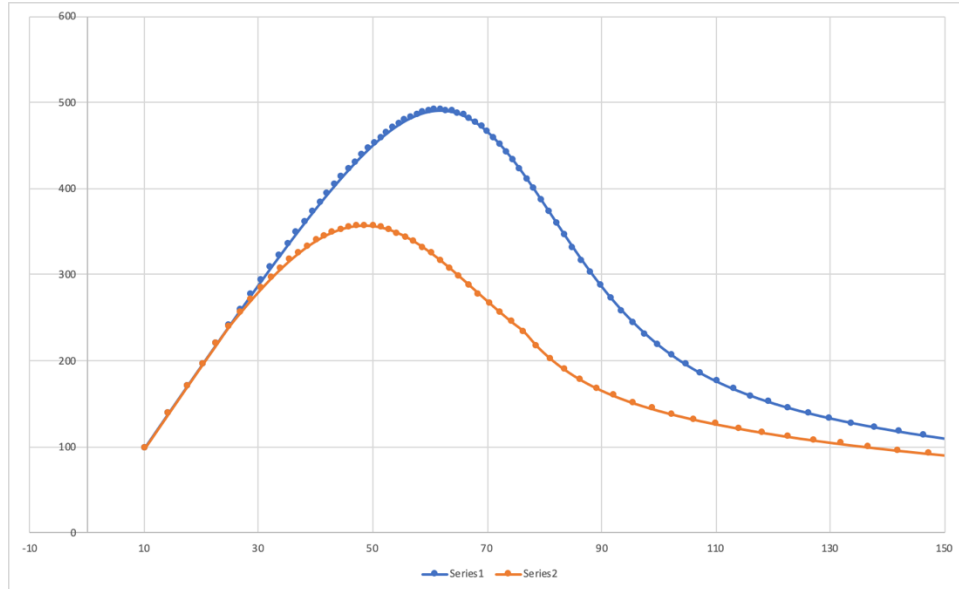
vs

When we consider the rotational equilibrium of a rigid body, we can treat the gravitational force as if it were a single force applied at the centre of mass.

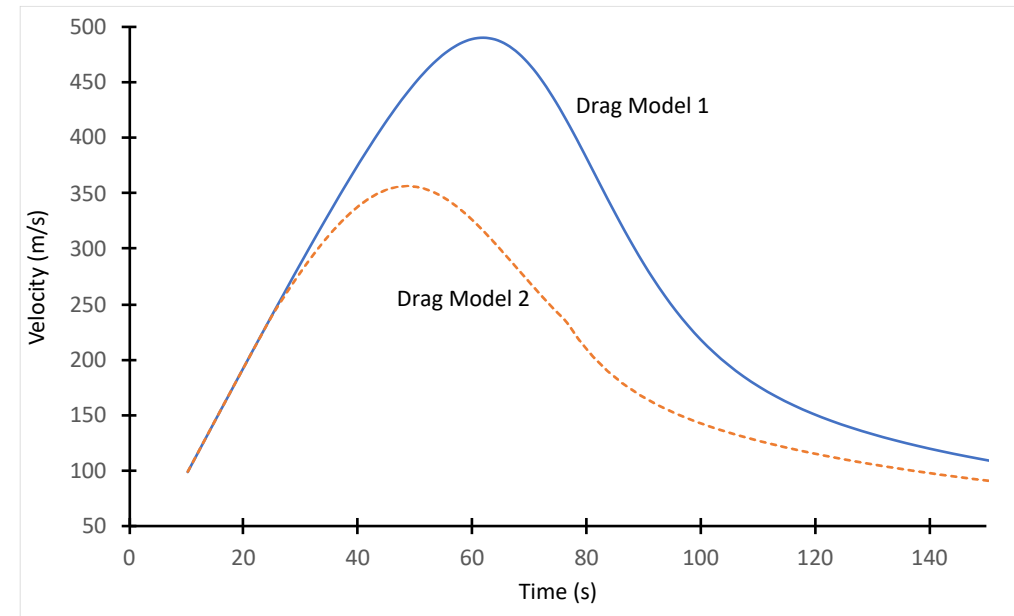
1.2 spacing

Figures

- Should be clear, legible – make new legends/axis labels if needed
- Save in .png format to preserve clarity (.jpg can become very fuzzy)
- You can use arrows, circles, boxes etc. to highlight important features
- Good practice: use different symbols or different line types not just colour to differentiate different data sets



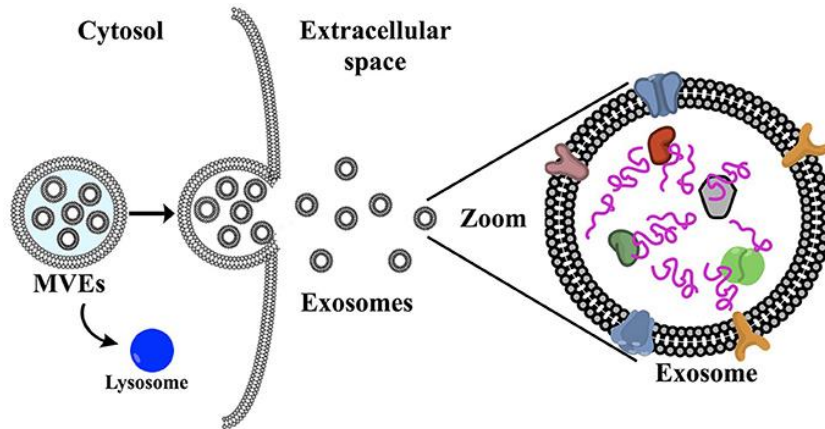
Poor Formatting



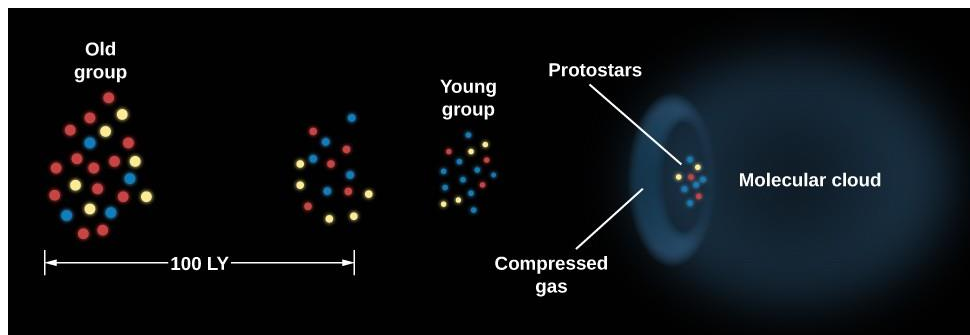
Better Formatting

Be creative

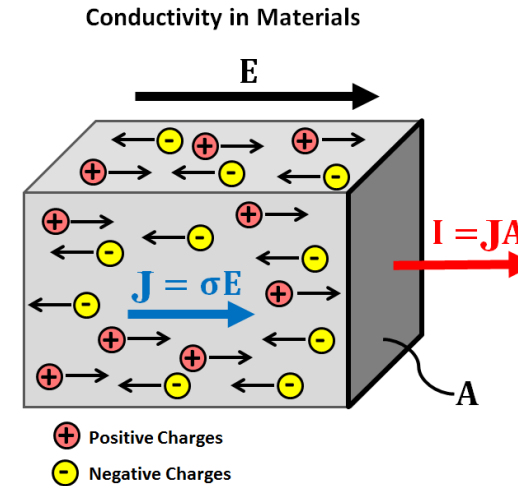
- Schematic diagrams can be a great tool!



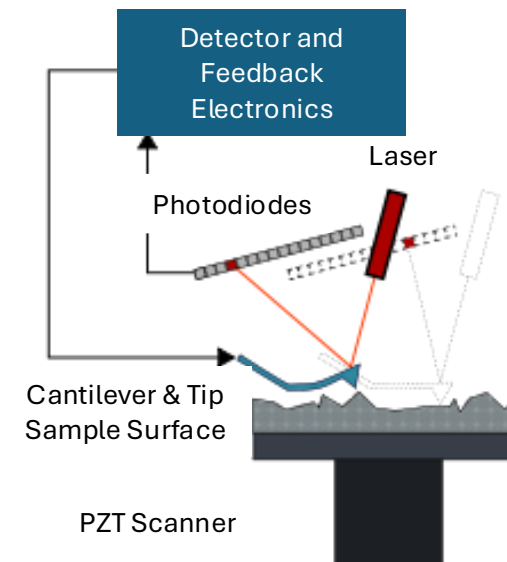
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Considerations for Creating a Poster

What goes on a poster?

- Minimal words – lots of visuals
- Nice big title – catchy and informative, should accurately describe your “story”
- Abstract – **only if** conference instructions mandate it (it is a lot of text)
- Intro / Background
- Objective / Motivation
- Methods
- Results
- Discussion and Conclusion
- References

A successful poster is

- Appropriate for audience
 - **Know your audience**
- Should still make sense even if you are not there to explain it
- Well organized
- Attractive - and not too busy
- Has a well-rehearsed ‘pitch’

Designing a poster

- Use a graphics program
 - PowerPoint is fine, but use what you are comfortable with
- Find out the dimensions from the conference/event organizers, set this in the page set-up (whenever possible, use **landscape** over portrait!)
- Choose an attractive colour scheme (colour is good but too much can be distracting; stick to 2-3 colours)
- Dark font on light background is best for printing
 - If you want to use a dark overall background, consider white boxes for your content sections
- Be careful with background images and patterns – contrast is key and simple is best (colour blindness test)

White space is important

- Don't crowd your text / figures
 - Adjust line spacing to give your text breathing room and make it easier to read

When we consider the rotational equilibrium of a rigid body, we can treat the gravitational force as if it were a single force applied at the centre of mass.

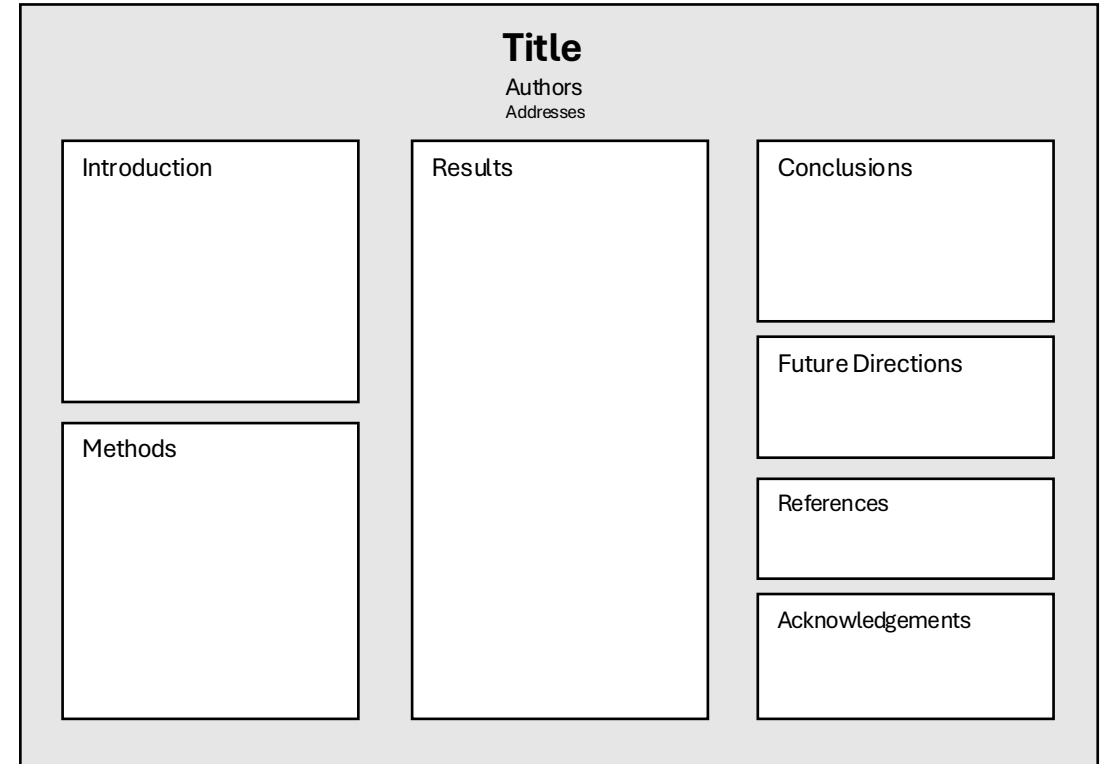
0.9 spacing

VS

When we consider the rotational equilibrium of a rigid body, we can treat the gravitational force as if it were a single force applied at the centre of mass.

1.2 spacing

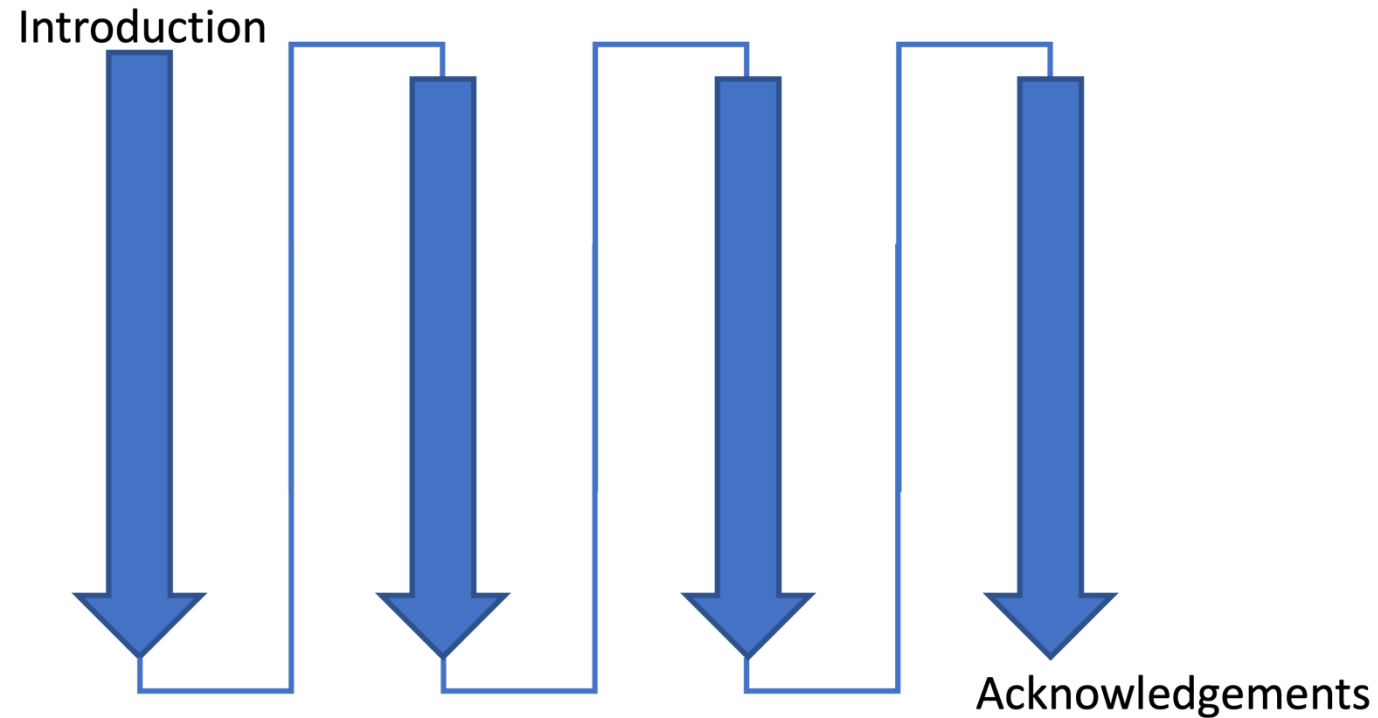
- Aim for ~40% white space



- Play with proportions
- Do not be afraid to edit

Flow

Standard flow:



- The standard flow is easy to follow
- You *can* be more creative → but be sure to make sure flow is clear

Fonts – General Guidelines

- Need to readable from >1 m away
- Avoid ALLCAPS
- **Titles** ~ 90 (72 - 112 point), sans serif font
 - Best practice: use sentence case (only capitalize first word and proper nouns)
- **Section headings** should be noticeably larger than body text
- **Body text:** serif fonts can be more readable if you have significant blocks of text, size at least 24 points
- **References:** font can be smaller in this section

Fonts for posters

Good Font Choices

Calibri	}	Sans serif title
Arial		
Helvetica		
Calibri	}	Sans serif body
Arial		
Helvetica		
Cambria	}	Serif body
Times New Roman		

Poor Font Choices

Garamond	}	These fonts are hard to read from a distance
Bauhaus 93		
<i>Brush Script</i>		
Impact		
Trattatello		

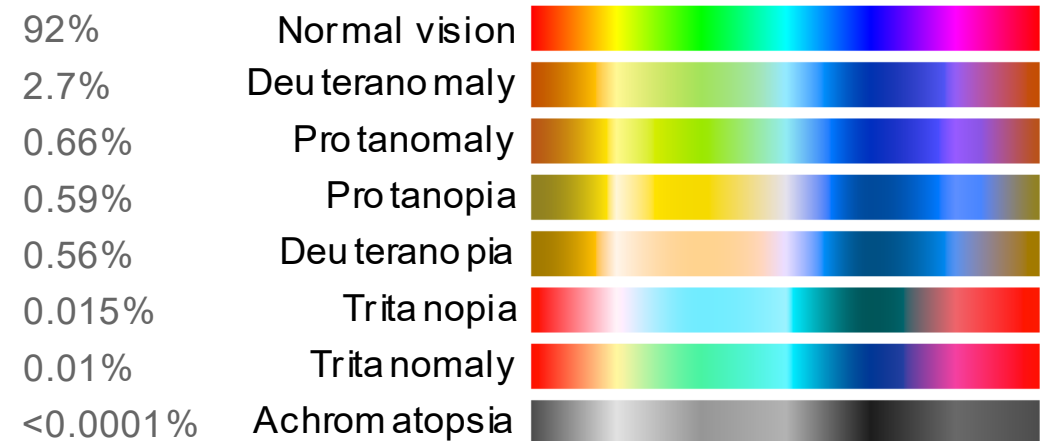
Colour considerations

- Never use red on green or blue, blue/green on red, or colours without significant contrast (e.g. yellow and orange, green and cyan)
- Adequate color contrast (4.5:1 for text and 3:1 for images) reduces cognitive strain and confusion and makes your design easier to understand (this benefits those with low-vision, colour blindness, presbyopia, and visual stress)
- Make sure that your presentation is accessible – consider colour-blindness

BLUE on RED appears blurry

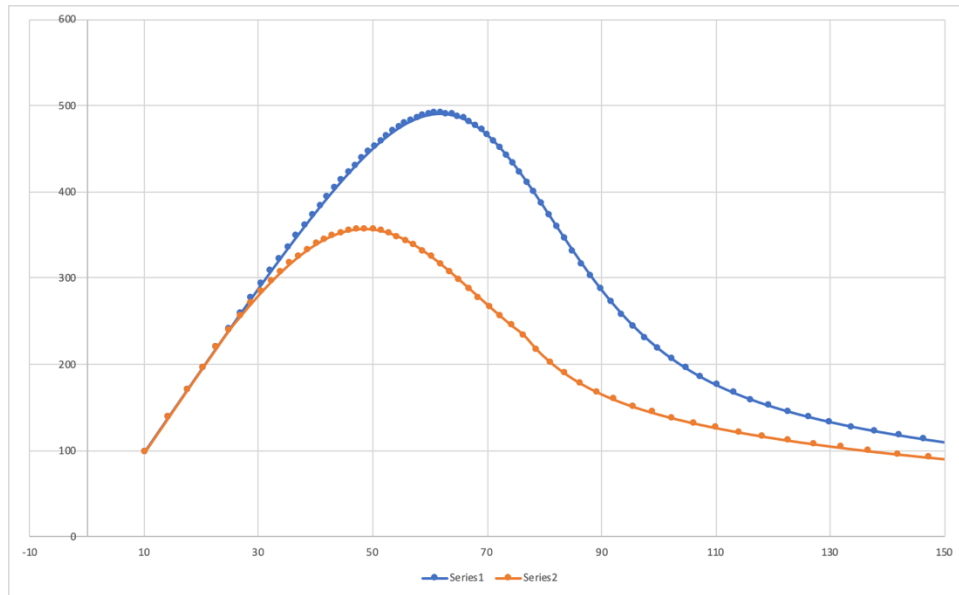
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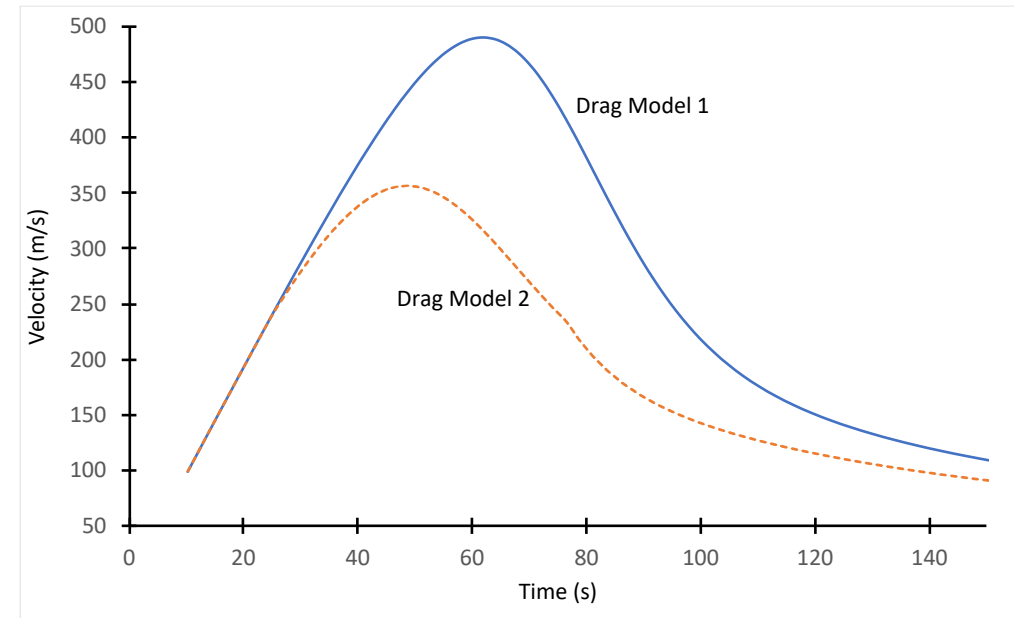


Figures

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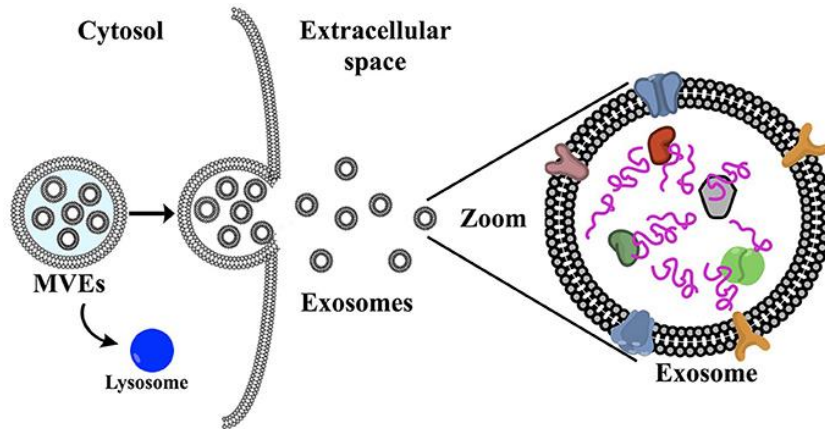
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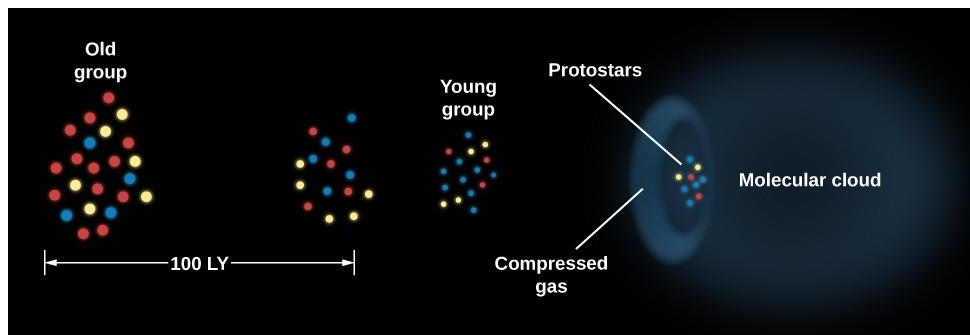
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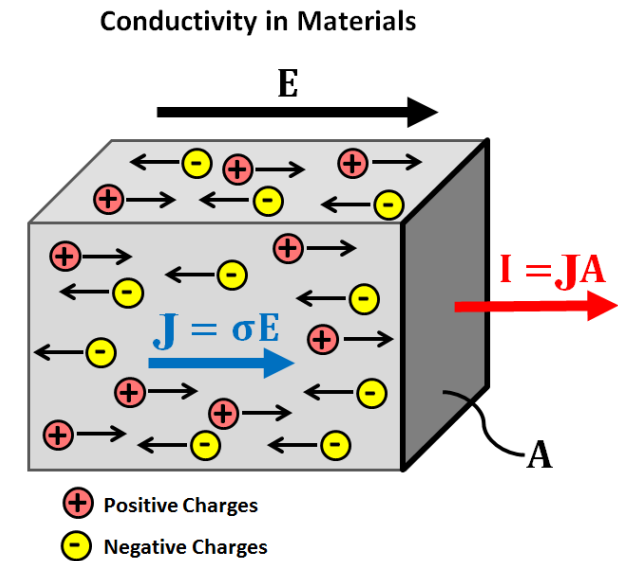
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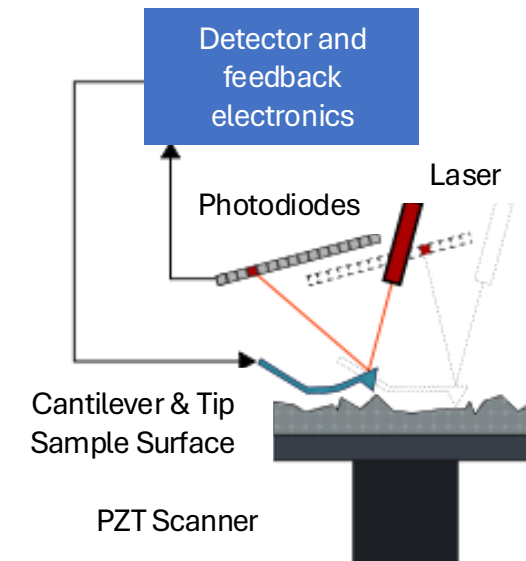
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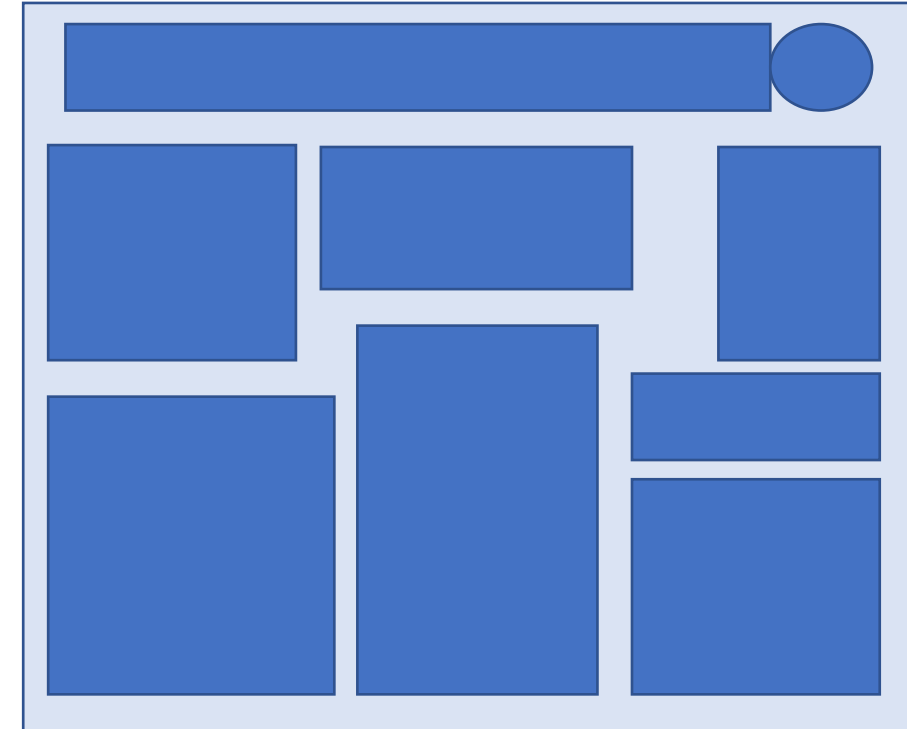
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Pay attention to detail

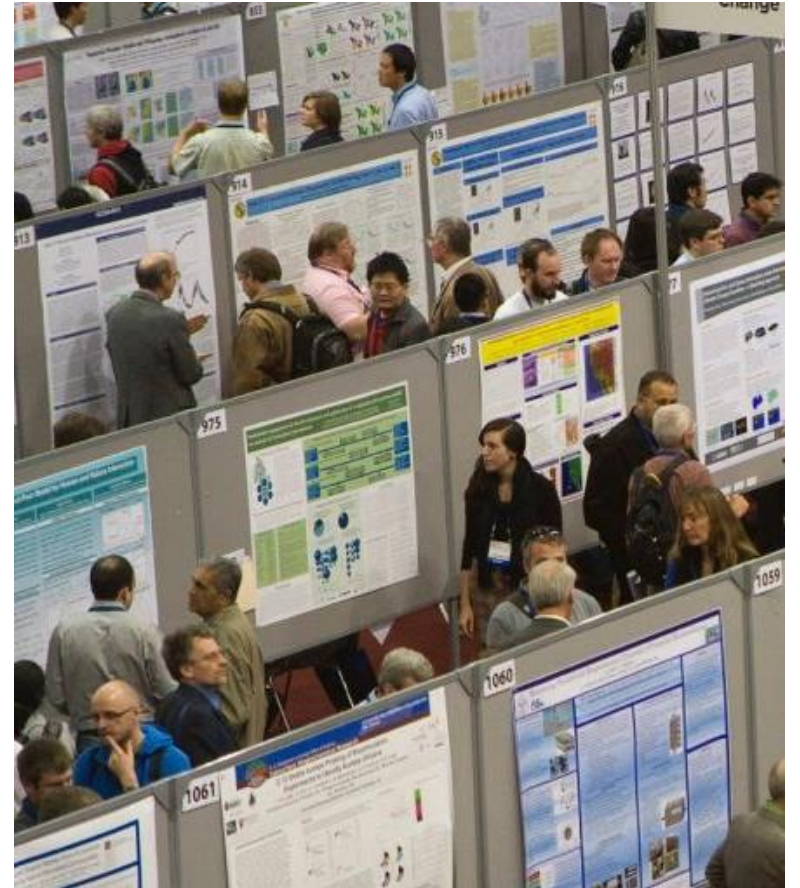
- “Boxes” should all line up
- Fonts should be consistent throughout
- No typos!
 - Get someone else to proofread your poster
- Everything needs to be legible
 - Try .png file type for images to keep them clear
 - Redraw axes and/or figure legends as needed
- Biggest issue: **too much text!**
 - A poster is a visual medium, not a paper



An example of poorly aligned sections on a poster

How to present your poster

- Poster sessions can be busy!
- Have a conversation
 - Prepare a ~5-minute pitch about your poster
 - You can adjust the length depending on the interest of each viewer
- Avoid reading → tell us a story
- If you have published a paper with the results on your poster, you may wish to bring copies of the printed paper to give to people who are
 - Your poster should not look like you have just pinned up the paper → **design & edit**



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Preparing to give your presentation

Public Speaking Tips

1. **Be yourself:** people relate to and connect with authenticity.
2. **Prepare, practice and perfect:** get rid of those crutch words: 'like', 'um', and 'you know'.
3. **Describe what you are telling us:** use vivid words to help the audience paint a picture.
4. **Vocal variety:** change up your tone, volume, and pitch to keep the audience engaged.
5. **Study the greats:** watch what good speakers do.
6. **Get feedback:** a practice audience can help you get the bugs out.
7. **Appearance:** if you look good, you will feel good, which will help you give a great speech.
8. **Pauses:** they give the audience time to think and help them engage.
9. **Body language:** use gestures and make use of the space to help deliver your message.
10. **Be confident:** use your face, body language, and stance to own the stage.

Preparing your presentation

- When preparing a presentation, it is important to think about being as accessible and inclusive as possible.
 - Remember that members of your audience represent a wide range of gender, race, sexuality, (dis)ability, linguistic, and national identities, and we all recognize that these may make a difference to how people present and express themselves.
 - Use inclusive language, avoid addressing audience in gender-binary ways and opt for language that includes a range of gender identities and expressions (e.g., ‘welcome everyone’, ‘folks’...)
- Take enough time to prepare for your presentation – start early!
 - May involve setting notes for key points and/or creating a script
 - Keep in mind that spoken and written language are **not** the same
 - **If** you are preparing a script, make sure that it is in spoke language so that it sounds natural and is easier to say – try starting with a speech to text recording and then edit from there vs. starting by writing.

Rehearsing

- Rehearse by yourself and in front of friends/lab-mates/peers
 - Aim to do a few full presentation run-throughs with an audience at least a few days before your actual presentation – gives you time to make changes based on feedback
- Videotape and watch yourself - this is challenging but can be an effective learning tool
- Time your talk!!! (When you are presenting time dilates or contracts...)
- Rehearsing and preparation can help decrease nervousness
- Attend other talks and pay attention to their delivery
 - See what others do, get ideas of what techniques you would like to try and then find your own style – be true to you.