

(SYS 5902)

Research Methods for Engineers (week 2)

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Today's Quote

“THE GREATEST DANGER
FOR MOST OF US IS NOT
THAT OUR AIM IS TOO HIGH
AND WE MISS IT, BUT
THAT IT IS TOO LOW
AND WE REACH IT”

-MICHELANGELO-
quotes4sharing.com

Outline

- Some tips about topic selection
- Public Presenting/speaking techniques
- In-class workshop
- Slide Preparation Guidelines

Some topic selection tips

- Choose (2-5) topics that you are interested in
 - The research process is more relevant if you care about your topic.
 - Your background from your undergraduate program, previous courses, and personal curiosity.
- Narrow your topic to something manageable.
 - If your topic is too broad, you will find too much information and not be able to focus.
- Talk about research ideas with a friend. S/he may be able to help focus your topic by discussing issues that didn't occur to you at first.

Some topic selection tips

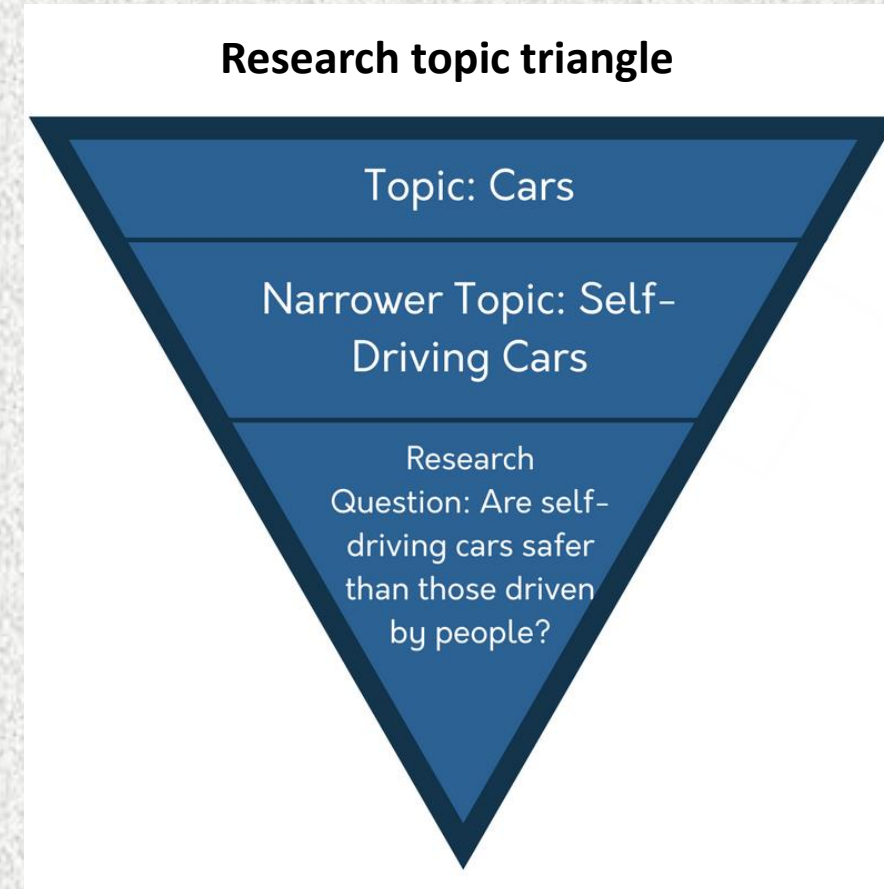
- Think of the who, what, when, where, and why questions:
 - **WHY** did you choose the topic? What interests you about it? Do you have an opinion about the issues involved?
 - **WHO** are the information providers on this topic? Who might publish information about it? Who is affected by the topic? Do you know of organizations or institutions affiliated with the topic?
 - **WHAT** are the major questions for this topic? Is there a debate about the topic? Is there a range of issues and viewpoints to consider?
 - **WHERE** is your topic important: at the local, national or international level? Are there specific places affected by the topic?
 - **WHEN** is/was your topic important? Is it a current event or a historical issue? Do you want to compare your topic by time period?

Sources of research topic and research questions

- Reviewing of published literature
- Being alert to new ideas and techniques
 - Attending research meetings/conferences
 - Having a skeptical attitude about prevailing belief
 - Applying new technologies to an old issue
- Keeping the imagination roaming
- Carefully observation, teaching, tenacity
- Choosing a guide/mentor/supervisor
- Uncensored brainstorming

Narrowing down the research area

- Broad Area: Social media Marketing
 - Niche Area: Facebook Marketing/ YouTube Marketing
- Broad Area: Wireless Networks
 - Niche Area: Cellular Networks/ Multichip networks
- Finding keywords (search terms) helps to find sources easier (individual and/or group brainstorming)



<https://human.libretexts.org/>

Ranking among research topics

- Topic evaluation criteria (score form 10)
 - Originality
 - Importance/significance
 - Literature base –is it enough literature to build on? (neither too new nor too old)
 - Data access: will you need to have the data?
 - Resource access: a specific lab and equipment?
 - Data collection: are you able (and willing) to collect data?
 - Analysis: Do you have the skills necessary to analyze the data carefully?
 - Personal attraction

How to build your elevator pitch (statement)

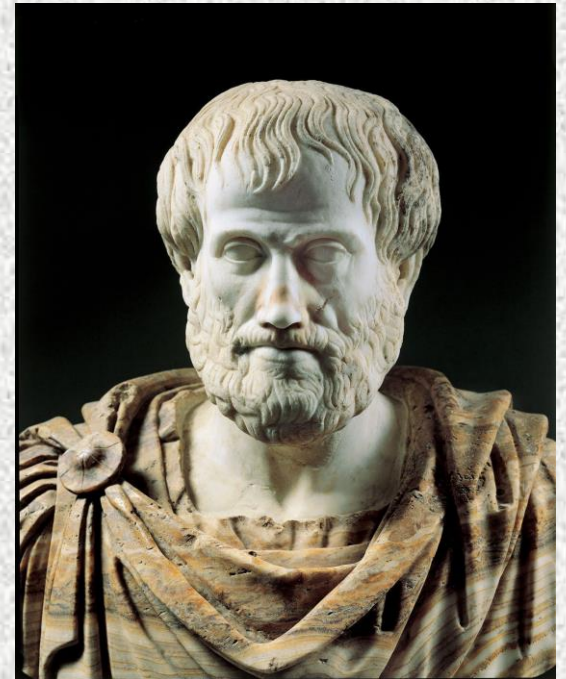
- A short description of an idea that explains the concept in a way such that any listener can understand it in a short period of time.
- One page (ideally one paragraph)
 - What? Explain the big picture of your research topic.
 - Why it is original? explain how your topic is unique.
 - Why is it important? explain why this is valuable.
 - How? Explain how you will undertake the research.

Final Topic Selection

- Get feedback from people/friends/peers
 - Which topic is their favorite.
 - Why do they like that specific topic
 - What challenges do foresee?
- Elaborate on their comments
- Don't delay your decision
 - Pick one that appeals to you most, and stick with it

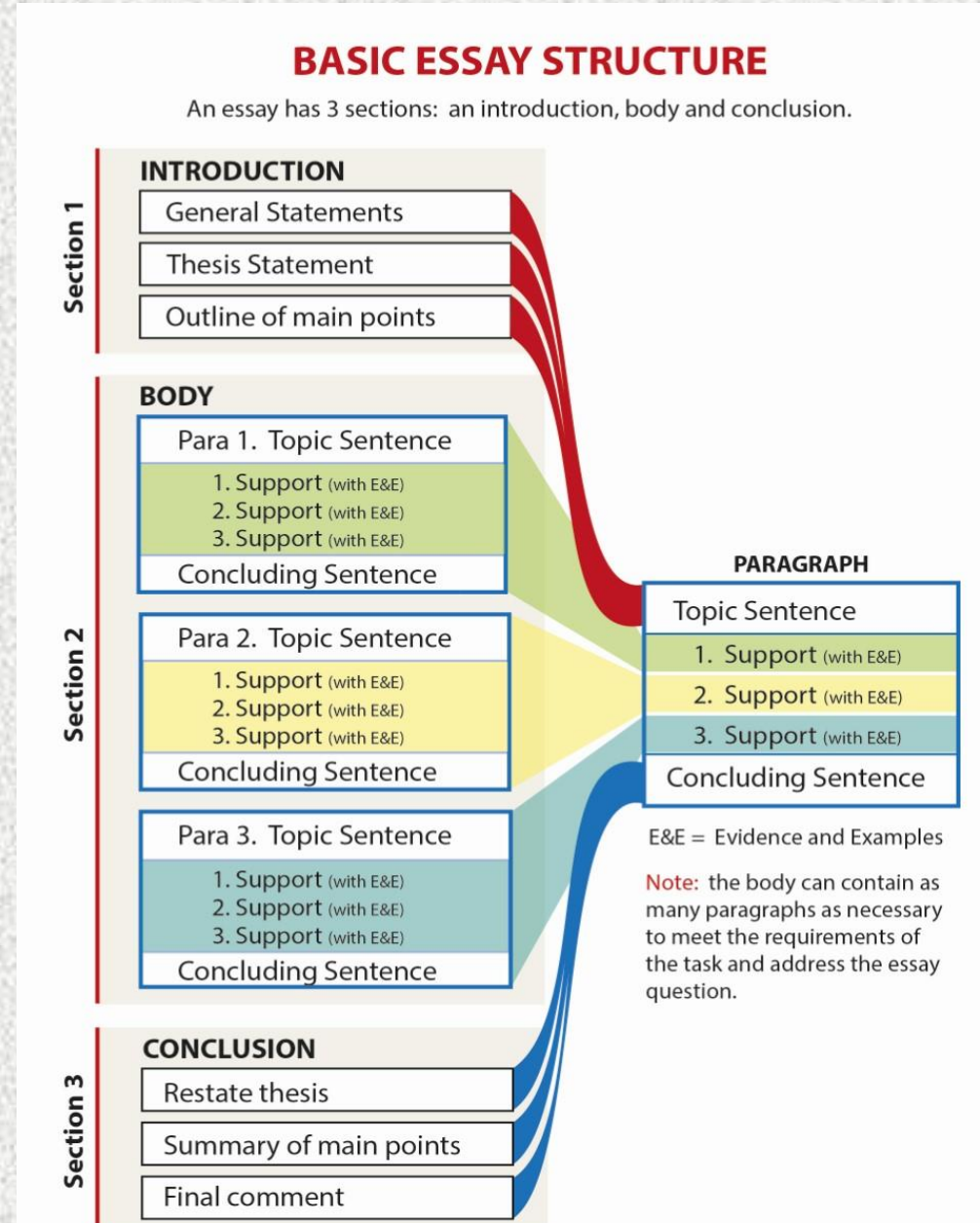
Aristotle's 3 Act Structure.

- Aristotle believed that every piece of poetry or drama must have the following three parts
 - Beginning (Introduction)
 - Middle (Body)
 - end (Conclusion)



Aristotle's Structure

- Writing
- Speech
 - Entering gently into the topic (**introduction**)
 - Developing the main message (**body**)
 - Providing some takeaways and concluding the speech (**conclusion**)



Characteristics and qualities of good presenters

- **Confidence**
 - The presenter has confidence in what they're saying.
- **Audience Engagement**
 - The presenter is connecting with the audience in some capacity whether it's direct dialogue, an emotional appeal, or recalling a shared experience.
- **Charisma**
 - An individual's ability to attract and influence other people. While it is often described as a mysterious quality that one either has or doesn't have, some experts argue that the skills of charismatic people can be learned and cultivated.
- **Control**
 - The presenter is in control of the entire presentation and the attention of the audience.

Presenting Skills

- **Arrive Early**
- **Be organically connected to your material**
- **Know Your Topic**
 - Being knowledgeable on the topic you're about to present will help you craft and deliver a better presentation overall.
- **Know Your Audience**
 - Depending on your audience, you'll need to adapt your presentation to what matters to them.
- **Outline Your Presentation**
 - What are the main takeaways you want the audience to leave with
- **Use Visual Aids**
 - Avoid using **too much text**

Presenting Skills

- **Tell a Story**

- Even if it's a simple three-structure story with a beginning, middle, and end.

- **Practice**

- practice makes perfect- practice your presentation at least 10 times before you present. [Obey the time limitation.](#)

- **Use Body Language**

- Using body language will help you be more engaging with your audience. Not too much
- Keep arms uncrossed, move slowly, and don't shift your weight too often

Presenting Skills

- **Move Around**

- Moving around also helps keep your audience focused.
 - If you're standing in one place, the audience only has to use their ears.
 - If you're moving around, the audience will need to follow you with their eyes, neck, and even their entire body positioning depending on how much you move

- **Avoid Monotone Speaking (use varied intonation)**

- Pitch is the highness or lowness of your voice (frequency of your local cords vibration).
- Intonation is how we change and vary our pitch for meaning

- **Use silence carefully and thoughtfully**

- **Don't Rush**

- Rushing will only harm your presentation skills

Presenting Skills

- Play with the volume, pace, and intonation of your voice while
 - changing the topic as indicated in your presentation outline
 - Drawing audience attention to an issue
 - Engaging the audience better
 - Avoiding monotone speaking

Presenting Skills

- **Make eye contact**
 - Make slow and deliberate eye contact, **sweeping** through the whole audience from left to right (combine your movement with your eye contact sweeping)
- **Eye contact in virtual presentations**
 - look at the webcam and a small area around it (do not overdo it)
 - Sticking a post-it note around your camera
- **Get some feedback (implicit/explicit) during your presentation**
- **Avoiding repeating the same word**
 - “like”, “you know”, “and”, “Umm”,...
- **End with key takeaways.**

Tips for Making Eye Contact (when meeting others)

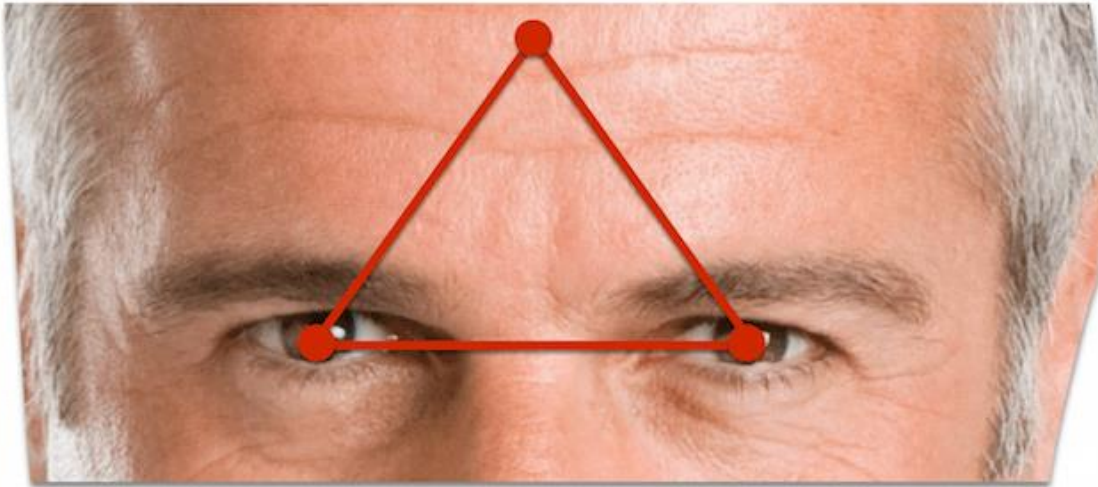
- **Establish eye contact at the start.** Make eye contact before you start talking to someone.
- **Use the 50/70 rule.** Maintain eye contact 50% of the time when speaking and 70% when listening. (Don't stare, break gaze...)
- **Look for 4–5 seconds.** Hold eye contact for about four to five seconds at a time, or about as much time as it takes you to register the color of their eyes. When you break eye contact, glance to the side before resuming your gaze.
- **Look away slowly.** When you look away, do it slowly. Looking away too quickly (darting your eyes) can make you appear nervous or shy.

Tips for Making Eye Contact

- **Use the triangle technique.** Rather than looking away or looking down (as this shows a lack of confidence), you can also look at another spot on their face. Imagine an inverted triangle connecting their eyes and mouth. **Every five seconds, rotate which point of the triangle you are looking at.**
- **Make a gesture.** Break your gaze to make a gesture or to nod, as this appears more natural than looking away because you've grown uncomfortable with the amount of eye contact.
- **Look near the eyes.** If looking someone directly in the eyes is too stressful, instead look at a spot on their nose, mouth, or chin.

Tips for Making Eye Contact

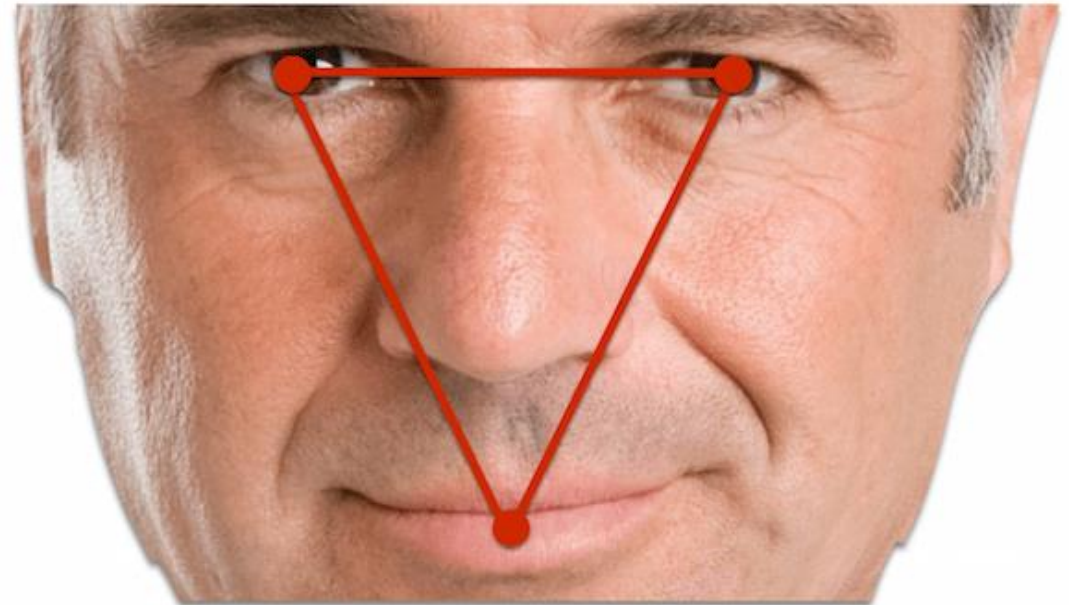
PowerGaze



Business

ScottRouse.com

SocialGaze



Social

ScottRouse.com

A short practice

- Make groups of 2-3 and discuss the potential topics for your written and oral presentation
 - Discuss your potential topics and give/get feedback
 - Make eye contact as much as you can

Further reading/watching

- <https://gradcoach.com/blog/>
- <https://www.youtube.com/watch?v=Unzc731iCUY>
- <https://www.youtube.com/watch?v=3ZrUJ0BkBy0>
- <https://www.youtube.com/watch?v=xjcQoCB2K9E>
- <https://www.youtube.com/watch?v=kYoblPUXvnw>
- https://www.youtube.com/watch?v=Yp_nbz-puE&t=142s
- <https://www.youtube.com/watch?v=rrOnk0JnXW4>

The assignment



- Choose a topic related to your major
 - Follow the information provided in slides 4-10
 - Upload the details to Brightspace along with your final topic by the due date of 25th September.
- Later you are supposed to
 - write a **written document** about that topic and
 - have an **oral presentation** on that topic (due to the population of the class you will record a video from your presentation)