

LOVE YOUR CAREER



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PRESENTER:
PETER LEWIS

**TIPS FOR TECHNICAL
INTERVIEWS (STEM)**



What will we cover.....?

- Purpose of interviews
- Purpose of technical interviews and what form they may take
- Technical knowledge required
- Solving a problem/scenario
- Technical Presentations
- Skills employers are looking for
- Top tips for interviews
- Sample Technical Questions
- Identifying & evidencing your strengths

Purpose of an Interview

- Demonstrate your suitability for the role
- Back up claims you have made in your application
- Provide evidence of your key selling points – skills, attributes, experience, qualifications, interests, achievements as they relate to the role
- Differentiate yourself from the other SUITABLE candidates!

Common Interview Questions

- Tell me about yourself?
- Why did you apply for this job/course?
- Why do you want to work for this company?
- What motivates you ?
- Why do you want to be a Mechanical Engineer?
- Why are you suited to this role?
- Why should I hire you?
- What personal characteristics will you bring ?
- What makes you different from all the other candidates?
- **Give me an example of when you demonstrated (skill – problem solving; teamwork; presentation)**
 - What did you do?
 - How did you deal with problems that arose?
 - What would you do differently?

Common Interview Questions

- **What are your hobbies/interests?**
- **Why did you choose this course/subject area?**
- **How has your course prepared you for this role/industry (ref to subjects, labs, projects)? Tell me about your final year project?**
- **Favourite aspect of your degree programme?**
- **Present a typical work-related scenario / challenge and ask candidate how they would manage this task/challenge.**
- **Key challenges for our industry?**
- **How do you think your work or other extracurricular experience has prepared you for working in this role/industry/ our company?**
- **Any questions or anything you'd like to add?**

Purpose of a Technical Interview

- Common with engineering, science, IT, STEM employers.
- Back up claims you made on your application re your technical skills.
- Discover/test the extent of your specialist technical knowledge, skills & experience
- Show your capacity to explain technical concepts to non-technical people.
- Show how you apply technical knowledge to something that may be unfamiliar and your approach to problem solving.



What form might it take?

- Standard interview including a series of technical questions
- Technical interview - sole focus on technical questioning (technical knowledge, solving a problem, scenarios, exercises, challenges)
 - May follow initial round of interviews.
 - May form part of an assessment centre.
 - Technical exercise/challenge or case study (often as part of an assessment centre, completed individually or as part of a group)
- On-site or online interview

Technical Knowledge

- Discuss projects/modules/labs you found interesting or related to the organisation/role
- Discuss basic principles /foundational knowledge/ fundamentals. (may be tested on these)
- Provide definitions
- Describe systems, structures, processes
- Regulatory & legislative standards
- Sketch a common process/structure e.g. circuit
- May be shown a drawing and ask to explain basic components and operation around the drawing.
- A short test – e.g. coding, numerical reasoning/calculation
- Brain teasers

If a sketch or diagram would help you explain something, ask for a piece of paper or ask to share your screen and sketch it using some design/art software.



Intel Technical Questions 'Manufacturing Technician'

- Describe – analogue, digital systems
- Sketch – transistor, solenoid
- Project work
- Definitions – Vacuum systems, Ohms Law, Currents

Revise key engineering principles!





Solving a Problem/Scenario

Solve a problem/scenario task you may/may not be familiar with:

- Talk through the problem/scenario/technical process as you understand it
 - What are the issues? What do you need to consider? What would you do?
- Not seen scenario/problem before? Apply **logic** to how you would approach it. Explain your reasoning. Offer a number of possible solutions
- Focus on the methodology, process, logic, not necessarily about getting the right answer.
- May present solution verbally, on paper, whiteboard, screenshare a design/drawing tool (you can ask to do this if it is not offered)
- May be asked/given the option to use a whiteboard to talk through the process/methodology

Examples:

- Explain how a certain device or piece of equipment works ; Analyse a wiring diagram or line of computer coding ; Technical exercise/challenge, case study (individual/group – often at assessment centre)

Technical Presentation Tips

- **Purpose** (inform, persuade, inspire....)
- **Subject** (final year project, your/employers choice of topic)
- **Duration** (incl. Q&A?)
- **Facilities available** (e.g. software, flip chart)
- **The Audience** (technical/non-technical, both - pitch to right level!)
 - Show you can communicate technical ideas clearly
 - Show you can organise/structure your presentation so it runs to time
 - Show you can communicate some key ideas.
- **Intro** – what you will cover and why
- **Avoid padding/too much detail.** Bigger picture!
- **3 key points** you want audience to take away. Focus content on these.
- **Visual impact** - graphs and charts, not tables! Use images, diagrams, photos



What skills are employers looking for?

- Problem solving
- Logic/Reasoning
- Communication of technical information
- Analytical
- Data analysis
- Critical thinking
- Lateral thinking
- Creative / innovative thinking
- Practical application to work situations
- Technical writing
- Work under pressure
- Project management
- Organisation/Planning
- Numeracy
- Software applications / equipment
- Interpersonal/People Skills
- Teamwork
- Decision-Making
- Adaptable/flexible
- Accuracy/Attention to detail
- Time Management/Prioritisation
- Meeting deadlines
- Leadership
- Commercial Awareness



Days/Weeks Leading up to Interview – Top tips

- Research – know yourself, the role and the company/industry
- Think of likely questions
- Know your CV/Application form
- Research who is interviewing you (LinkedIn)
- Prepare your presentation if required
- Practice, practice, practice (out loud)
- Get appropriate attire for interview (e.g. suit)
- Good sleep the night before



Top Tips – Technical Interviews

- Review what you have studied in previous years.
- Be able to talk convincingly about technical modules, labs, projects you have referenced on your CV.
- Be able to share examples of your technical skills, work you have produced, schematics, use of software.
- Be able to talk about any technical work experience you have completed
- Use relevant terminology appropriately. **Avoid too much jargon and acronyms!**
- Gather any materials you may want to have with you to interview (e.g. portfolio of project work/experience). Can share this with employer and use to illustrate answers.



Top Tips Technical Interviews (more tips)

- Practice answering technical questions out loud (ideally with someone who has technical knowledge).
- Practice/think about problems and scenarios you may be faced with within the job (using job spec as guide).
- Practice solving tech problems on paper/whiteboard
- Refresh basic technical, foundational knowledge. Brush upon the fundamentals.
- Research employer activities and issues facing the industry

During The Interview – Top tips

Before:

- Arrive on time
- Dress appropriately

First Impressions!! - Concentrate on:

- Firm handshake (post-Covid)
- Smile and be friendly
- Sit in alert position
- Speak clearly, actively listen



.....more tips

During

- Seek clarification when necessary
- Say you don't know (better to come clean than struggle on unconvincingly) but do suggest how would go about finding the information
- Be ENTHUSIASTIC – willing to learn
- Listen to question and answer the question asked of you
- Compose yourself – drink water, breathe slowly
- Emphasise the positive – sell yourself
- Elaborate appropriately – don't talk for Ireland
- Be honest
- Show you can get on with people
- Don't jump in with pre-prepared answers
- Ask for a minute to think



Sample technical questions

- Tell me about the most challenging engineering project that you have been involved with during the past year.
- What processes have you helped develop or singularly created that enhanced engineering performance capabilities?
- Describe the most challenging written technical report or presentation that you've had to complete.
- How much oil is necessary to pollute the ocean?
- How would you explain a complicated technical concept to a non-technical person?
- What checks and balances do you use to make sure that you don't make mistakes?
- Describe your degree subject as if to a five year old in three minutes
- Describe the process of laying a wind turbine on the ocean floor
- How would your degree subject contribute to the production of Mars bars?
- What are the issues of installing underground cables?
- What kind of tech projects do you work on in your spare time?



More Sample technical questions

- What kind of experience do you have collecting and analysing biological data about relationships among and between organisms and their environment? Share an example.
- What is the minimum number of cuts needed to split a cube into 27 smaller cubes?
- Can you explain this jet engine/PWR reactor/geology profile to me?
- What do you do to keep your tech skills up to date?
- What are your favourite tech products to use and why?
- Why are doors rectangular instead of round or square?
- What's the probability of rolling a two on a die the first time?
- What resources do you use to keep up with the newest engineering technology and developments?
- Share an experience in which you oversaw the assembly of a field of wind turbines.
- What is a default and conversion constructor?
- What are the primary components of a computer system?
- Describe the process you use for writing a piece of code, from requirements to delivery.

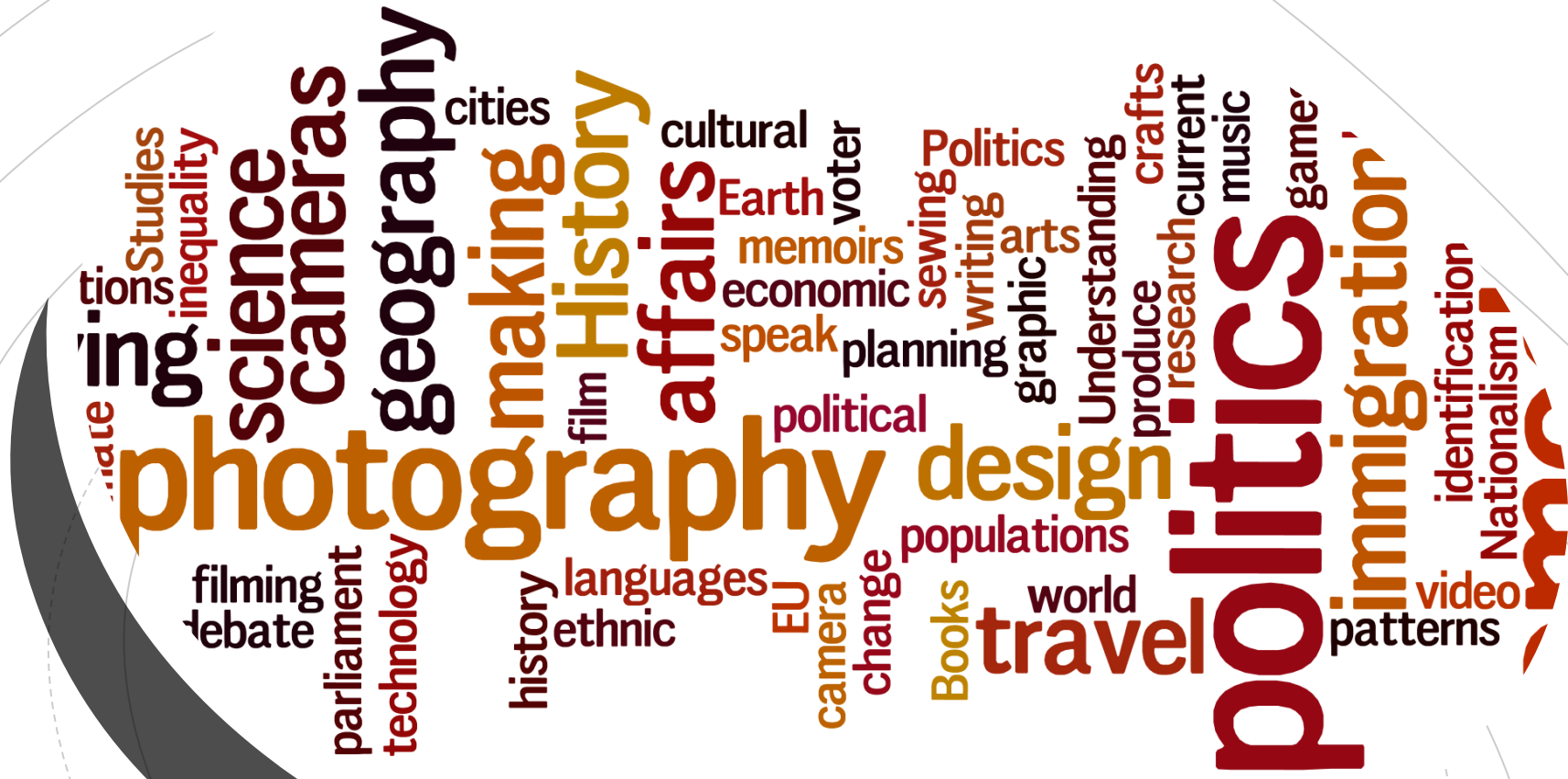


What am I
good at?
(Skills)



What is
important to
me? (Values)





**What am I
passionate
about?
(Interests)**

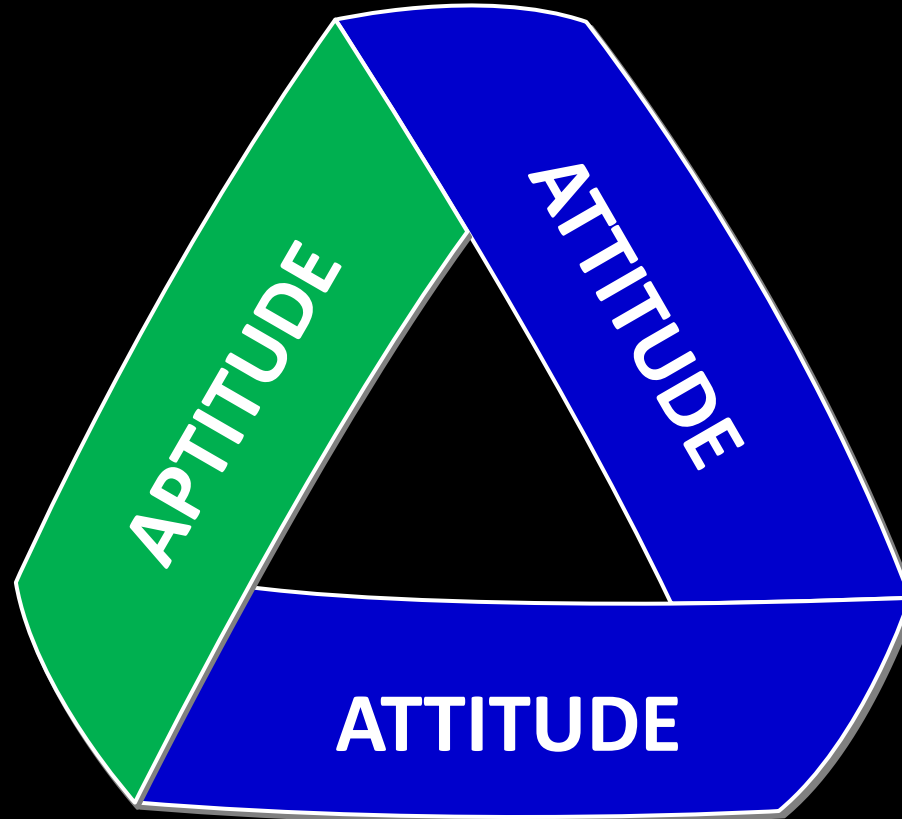
A group of five diverse professionals are gathered around a red table in a meeting. They are looking at documents, a laptop, and a tablet. The scene is brightly lit, suggesting an office or conference room environment. The text 'Where do I fit? (Personality)' is overlaid in the center of the image.

Where do I fit? (Personality)

Employer's **MOTIVATIONAL** Profile

Can you do it?

Do you (potentially)
have the necessary
skills and knowledge?



Will you do it?

Are you interested
and motivated?

**Will you fit the
role/environment/culture?**



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TELL ME ABOUT A TIME WHEN?

YOU OVERCAME A DIFFICULT CHALLENGE

YOU COMMUNICATED EFFECTIVELY

YOU DEALT WITH FAILURE

YOU WORKED EFFECTIVELY IN A TEAM

YOU MANAGED A PROJECT

YOU WORKED WITH CLIENTS/CUSTOMERS

Skills Exercise

- Identify your top 3-4 skills you feel you have to offer / that are relevant to the job
- Then identify some examples you can use to provide evidence for these skills and to talk about at an interview

Examples can be drawn from:

- Academic programme (projects (team/individual, research, labs etc.)
- Extra/Co-Curricular Activity in College (clubs, societies etc)
- Work experience (paid/unpaid, course-related or not)
- Personal Interests/Activities, Causes, Community Involvement
- Positions of responsibility
- Personal achievements

Achievements – what are you proud of?

- Did you ever look at the way something was done, and changed it around to do it more efficiently?
- Did you ever satisfy a particularly demanding customer?
- Did you ever make a suggestion that was adopted by your classmates, team or co-workers?
- Have you ever completed something successfully, you didn't believe you could do beforehand?
- Have you ever worked at something for a long time, and despaired during the process, but it came good at the end?
- Have you ever trained or taught people?
- Did you ever receive some form of recognition e.g. award, certification



Interview Resources / Skills Descriptors

- <https://www.tudublin.ie/for-students/career-development-centre/students-and-graduates/getting-ready-for-interviews/>
- <https://www.tudublin.ie/media/website/for-students/careers/docs/Skills-descriptors-and-prompts.pdf>



Context

- what was the challenge, task to be done, where, when, your role, consequences etc - detail needs to be provided here

Action

- what did you do, what was your **rationale** for your decisions - '**because**' is a key word; Use active verbs - organised; planned; (dis)assembled; calibrated; managed; arranged; oversaw; researched; gathered; undertook; observed; etc

Result

- what was the outcome of you acting in the way you did; good bad or indifferent; what were the key factors that led to that outcome. What did you do, what was your rationale for your decisions - '**because**' is a key word;

Reflection

- what did you learn from the experience - about yourself; the skill (teamwork; problem solving; structuring a project) - what would you do differently next time - again because is a key word to use

| | |
|-------------------|---|
| Context | A key feature of the degree in Marketing is participation in a number of time framed group syndicated case-studies set by academic staff. These are then presented for academic and peer evaluation. A group mark is awarded. On one occasion a fellow team member was gauged to be not contributing fully to the process thus jeopardizing team dynamics and final result. |
| Action | Having noticed the situation, I decided to confer with colleagues as to the best approach to take. I suggested taking the responsibility to approach the individual and raise concerns about behaviour. I enquired about difficulties with the workload/type and also tried to ascertain whether there were any underlying personal difficulties..... |
| Results | My approach was appreciated and indeed there were underlying personal factors involved. An arrangement was made to provide the said individual with a workload that suited her/his individual strengths. The group dynamic changed, communication skills developed and good standard group marks were secured. |
| Reflection | In retrospect I can now acknowledge/respect the importance of setting ground rules. I was however very happy that my communication skills shone through in building a rapport and trust with my teammate. |

Questions?

Career Development Centre

www.tudublin.ie/careersconnect

