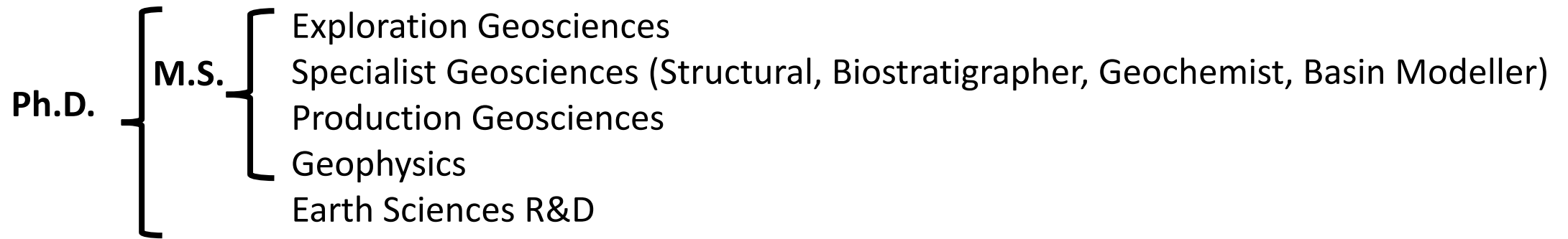**Employer Panel:** Skills/Competencies Needed to Prepare Graduate Students for Future Careers in the Geosciences

Claudia Hackbarth

Typical Geoscience Jobs in a Large Petroleum Exploration & Production Company

New Graduate Geoscientists hired at M.S. and Ph.D. levels

Ph.D. **M.S.**
- Exploration Geosciences
- Specialist Geosciences (Structural, Biostratigrapher, Geochemist, Basin Modeller)
- Production Geosciences
- Geophysics
- Earth Sciences R&D

Technical Data Management (Geomatics)

NEXT:

■ Attributes to get hired

■ Skills/ Competences to be successful once onboard

Example: Hiring Process Highly Values Non-technical Skills –and- Virtual Process

See https://www.shell.us/careers/students-and-graduates/shell-graduate-program.html

■Resume is screened. If invited to apply, then

Online testing

■Online Cognitive Test: Verbal Skills, Numerical Skills, Abstract Reasoning

■Online Personality Questionnaire: Preferred work style, drive, adaptability, supportiveness, assertiveness, and creativity

■Online Situational Judgement Tests: Response to work-related, decision-making scenarios

Filter – Continue with this applicant or not? If yes, then

■Self-recorded video interview to tell about yourself, responding to pre-recorded questions

Filter – Continue with this applicant or not? If yes, then

■Final Assessment (virtual) with two interviewers, to provide

  ■Thoughts about a Case Study (provided in advance) and

  ■Create a presentation on a subject related to the Case Study, in 20-30 minutes and

  ■General, get-to-know-you conversation.

■For Ph.D.s, an additional technically-focused interview may be added.

Example: Technical Competences to be Developed in Geoscience Roles

Data & Information Management

Regional Evaluation, Prospect Volume & Risking, Pore Pressure Prediction

Structural Geology & Fracture Modelling

Geochemistry

Biostratigraphy

Basin Modeling

Exploration roles

Clastic and Carbonate Reservoir Geology, Stratigraphy, Quantitative Lithology and Fluid Characterisation, Static Reservoir Modeling

Well Design, Wellsite Geological Support, Geohazard Assessment

Well & Reservoir Management

Production roles

Seismic Interpretation, Time-Depth Conversion, Geohazard Assessment, Design Geophysical Survey, Manage Geophysical Operations, Seismic Processing, Seismic Imaging, Borehole Geophysics, Gravity/ Magnetics/ EM.

Geophysics roles

Example: Non-Technical Competences to be Developed for All Roles
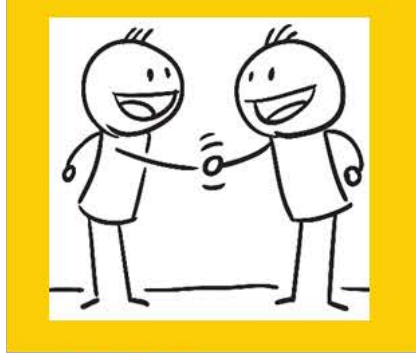
Collaboration

- Build working relationships with diverse others
- Verbal/written communication
- Influencing; Stakeholder Management
- Difficult conversations
- Feedback & coaching

Cognitive skills

- Problem Solving
- Analysing data
- Technical Presentations

Personal Effectiveness

- Manage own work
- Initiative
- Curiosity
- Resilience
- Self-Awareness

Commerciality

- Commercial Acumen
- Risk Management
- Decision Making

Informal Summary: Factors for Success

- **Technical Preparation**
  - Have seen real-world examples and case studies of whatever geological subject is being taught;
  - Knows how to do it* by hand, not just "Nintendo Geology";
  - Systems thinking/scientific method/ experimental design including making sure you are asking the right question, making a hypothesis, collecting a sufficient amount of the right data, drawing conclusions, and doing a "sense check" if it all hangs together;
  - Numerate – Fluent in Statistics and applications to very large data sets using modern tools;
  - Lots and lots of practice writing concise summaries and making clear, logical presentations, including taking questions afterwards.
  - * Contour maps, calculate fault throw, calculate reservoir volumes, etc. etc.
- **Personal Skills**
  - Team player, strong collaborator. Appropriate behavior in a highly diverse workforce. Social skills.
  - Organized, self-starter, time-bound, can be counted on to deliver.
  - Confidence to speak up and to provide healthy challenge to others, as well as to accept feedback and use it for own growth and improvement.