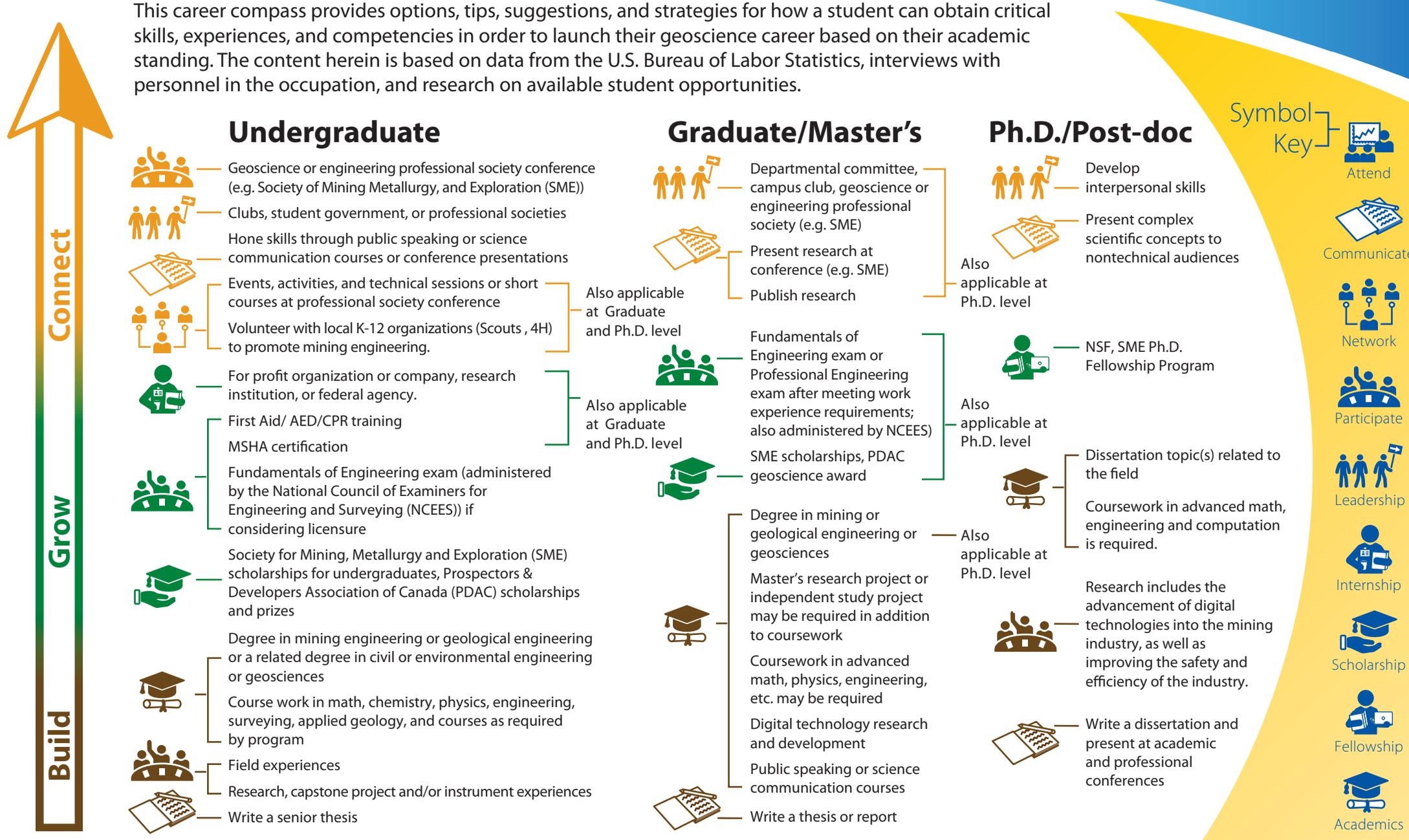




## Job Summary

Mining engineers typically design and develop mines to sustainably extract raw elements that are key ingredients to all industries. Some mining engineers work with geoscientists and metallurgical engineers to find and evaluate ore deposits. Other mining engineers develop new equipment or direct mineral-processing operations to separate minerals from dirt, rock, and other materials. Many work where mining operations are located, such as mineral mines or sand-and-gravel quarries, in remote areas or near cities and towns. Others work in offices or onsite for extraction companies or engineering services firms. Mining engineers are stewards of the earth as they responsibly supply our society with the materials it needs.

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This career compass provides options, tips, suggestions, and strategies for how a student can obtain critical skills, experiences, and competencies in order to launch their geoscience career based on their academic standing. The content herein is based on data from the U.S. Bureau of Labor Statistics, interviews with personnel in the occupation, and research on available student opportunities.

## Undergraduate

- Geoscience or engineering professional society conference (e.g. Society of Mining Metallurgy, and Exploration (SME))
- Clubs, student government, or professional societies
- Hone skills through public speaking or science communication courses or conference presentations
- Events, activities, and technical sessions or short courses at professional society conference
- Volunteer with local K-12 organizations (Scouts, 4H) to promote mining engineering.
- For profit organization or company, research institution, or federal agency.
- First Aid/ AED/CPR training
- MSHA certification
- Fundamentals of Engineering exam (administered by the National Council of Examiners for Engineering and Surveying (NCEES)) if considering licensure
- Society for Mining, Metallurgy and Exploration (SME) scholarships for undergraduates, Prospectors & Developers Association of Canada (PDAC) scholarships and prizes
- Degree in mining engineering or geological engineering or a related degree in civil or environmental engineering or geosciences
- Course work in math, chemistry, physics, engineering, surveying, applied geology, and courses as required by program
- Field experiences
- Research, capstone project and/or instrument experiences
- Write a senior thesis

## Graduate/Master's

- Departmental committee, campus club, geoscience or engineering professional society (e.g. SME)
- Present research at conference (e.g. SME)
- Publish research
- Fundamentals of Engineering exam or Professional Engineering exam after meeting work experience requirements; also administered by NCEES)
- SME scholarships, PDAC geoscience award
- Degree in mining or geological engineering or geosciences
- Master's research project or independent study project may be required in addition to coursework
- Coursework in advanced math, physics, engineering, etc. may be required
- Digital technology research and development
- Public speaking or science communication courses
- Write a thesis or report

## Ph.D./Post-doc

- Develop interpersonal skills
- Present complex scientific concepts to nontechnical audiences
- NSF, SME Ph.D. Fellowship Program
- Dissertation topic(s) related to the field
- Coursework in advanced math, engineering and computation is required.
- Research includes the advancement of digital technologies into the mining industry, as well as improving the safety and efficiency of the industry.
- Write a dissertation and present at academic and professional conferences