Current learning goals for QES degree specializations. These are essentially the program learning outcomes (PLOs)

See **UBC calendar**: https://vancouver.calendar.ubc.ca/faculties-colleges-and-schools/faculty-science/bachelor-science
Numbering indicates the order presented on corresponding UBC calendar pages.
Colours indicate similarities.

Ability	ATSC	OCGY	GEOPH
Basic science	1. **demonstrate** basic knowledge of atmospheric physics, dynamics, and chemistry on a wide range of scales;	1. **demonstrate** basic knowledge about the chemical and physical ocean environment with emphasis on biological processes and chemical processes;	1. **demonstrate** basic knowledge of the physics of the Earth and other planets;
Numerical & computing methods	3. **use** numerical problem solving, computer programming, mathematical knowledge and statistical approaches for data analysis and atmospheric modelling;	3. **use** numerical problem solving (using computer programming skills) both with models and real data;	3. **use** numerical problem solving, computer programming skills, statistical approaches and inverse theory for data analysis and modelling;
Synthesis	6. **integrate** meteorological knowledge with broader issues including air quality, environment, sustainability, renewable energy, and climate variability;	6. **integrate** concepts across multiple levels of biological complexity (i.e., biochemical, physiological, organismal, and ecological);	5. **integrate** theory, observations, and/or numerics to solve geophysics and related geoscience or technical problems;
Communication	4. **communicate** (written, oral, electronic) weather information to a broad audience;	8. **write** reports and **communicate** through oral presentations;	7. **use** relevant scientific and technical literature, **write** reports and communicate through oral presentations;
Field	5. **deploy and utilize** meteorological field and lab instruments and data loggers;	4. **use** basic field/laboratory skills for observation and experimentation in biological oceanography;	
Math & analytic methods		2. **use** mathematical knowledge including calculus and statistical techniques for environmental set up and data analysis;	2. **use** analytical problem solving and mathematical techniques for model development;
Data / experiment / theory / models		5. **illustrate** the distinctions between data, experiment, theory, and model;	4. **illustrate** the distinctions between data, experiment, theory, and model;
Application	2. **utilize** information from weather radar, satellites, numerical weather prediction, weather maps, and soundings **to form a 3-D understanding** of atmospheric state and evolution;		6. **apply** geophysical approaches **to understand** the structure and dynamics of Earth and other planetary bodies, including their climates, surface evolution and internal composition;
Independence & lifelong learning		7. **conduct** independent study on a topic of their choosing;	