Collected learning goals for EOSC 1xx and 2xx courses, taken from course home pages, May 9, 2011.

See also Dep't level "service course" learning goals (http://www.eos.ubc.ca/courses/ServiceCoursesGoals.html)

#	Course	Learning Goals from course home page.
1	EOSC110	By the end of this course, students should be able to: 1. Describe the dynamic processes that form Earth's materials, produce its internal structure, and shape its surface features 2. Appreciate the influence of geologic time on the processes that shape our planet 3. Apply their knowledge of geoscience to environmental, socio-economic, and political concerns The instructors' goal in teaching this course is to: 1. Excite students about our fascinating, dynamic planet.
2	EOSC111	By the end of this course, students should be able to: 1. Make interpretations and draw conclusions based on observations and evidence in an earth system science context 2. Apply qualitative and quantitative approaches to earth system data and samples 3. Appreciate that earth systems science is exciting and relevant to society and our lives 4. Recognize the interconnectedness of earth system science
3	EOSC112	By the end of this course, students will be able to… 1. DESCRIBE Earth as an integrated system consisting of interacting components driven by a continuous supply of energy 2. EXPLAIN how interactions within the Earth system control climate on Earth. 3. APPLY this knowledge to explain the long-term evolution of Earth's environment and climate. 4. APPLY this knowledge to explain shorter term climatic variability in the modern world. 5. Critically EVALUATE public information on present global environmental changes and the effect of natural variability versus anthropogenic forcing. 1. 6. CONTRIBUTE TO informed social and political debates over global climate, and local environmental issues.
4	EOSC114	A. For earthquakes, volcanoes, landslides, storms, waves, and meteor impacts, you will: 1. Learn how they work. 2. Locate the dangerous places where they've often occurred. 3. Learn ways to observe and monitor them. 4. Find out why it's hard to forecast them. 5. Learn what you and your community can do to prepare for them. B. We will strive to: 1. Empower you to be a survivor. 2. Enable you to approach new challenges insightfully. 3. Sharpen your observations of nature. 1. 4. Stimulate your excitement in our planet.
5	EOSC116	By the end of this course, students should be able to: 1. Describe the dynamic processes that operate in the Earth system including those in the atmosphere, hydrosphere and the lithosphere.

		2. Appreciate the influence of geologic time on the processes that shape our planet with a particular focus on the development of the biosphere. 3. Apply their knowledge of geoscience to enable the study and elucidation of Earth history with an emphasis on the Mesozoic.
6	EOSC118	"Earth's Treasures: Gold & Gems" (EOSC118) aims to enable students to: 1. Be able to recognize valuable gems & metals. 2. Be able to apply this knowledge in their personal gem & metal investments. 3. Appreciate the processes needed to discover, mine, add value (facet and polish), and market these gems and metals. 4. Understand the gem industry in BC, Canada, & world. 5. Relate economic and social development in BC to past gold rushes & future discoveries. 6. Sharpen observations of natural materials. 7. Make connections between science & everyday life.
7	EOSC210	By the end of this course you will be able to: 1. Recognize and differentiate the adverse effects that earth processes can have on site conditions, engineering designs and vice versa. 2. Use case histories to demonstrate how unrecognized geologic factors have led to failed engineering designs, cost overruns, fatalities, and environmental problems, and how we have learned from these past mistakes. 3. Relate the effects that large scale and long term geologic processes can have on specific site conditions. 4. Distinguish various rock and soil types, their mechanical and hydrologic properties, and their significance to different types of engineering projects. 5. Explain how rock and soil properties can vary with space and time and how this makes them difficult to characterize and carry out designs for. 6. Communicate confidently with geoscientists when working together on a project. 7. Observe our planet from a more enthusiastic and informed perspective to aid in the process of becoming a responsible professional. Lab goals: 1. Practice geologic diasgnostic and observation skills. 2. Use geologic maps to extract information relevant to engineering projects. 3. Solve problems for a variety of real world geotechnical and environmental cases.
8	EOSC211	Students will write computer programs to model and analyze data in the solid earth, atmospheric, and oceanographic sciences. This requires 1. Breaking problems into logical steps using flowcharts and pseudocode to specify algorithms. 2. Writing and debugging MATLAB computer programs to correctly implement algorithms. 3. Modifying existing MATLAB computer programs, using the elements of good programming style, to make it more efficient, readable, and documented for future reuse. 4. creating scientifically informative and visually appealing plots (scatterplots, time series, contours, multiple subplots, legends).
9	EOSC212	Goals related to working in Earth and Ocean Sciences 1. Concepts and topics: Describe the essential Earth science concepts that underlie each topic; Identify core concepts and elements of scientific controversy 2. Models versus measurements: For each topic, characterize the relationship between measurements and models.

		3. Using skills to work with scientific information: Use first-year math and analytic skills to analyze & interpret data sets similar to those encountered in readings. 4. Enthusiasm for and knowledge of EOS: Enthusiasm for all Earth and planetary sciences should grow, as well as awareness of research and expertise within the EOS Department. Goals related to thinking as scientists do 5. Using science articles: Recognizing the principle questions, measurements, data sets, interpretations and uncertainties in assigned readings. 6. Communicating: Presenting, debating and asking insightful (and precise) questions about scientific ideas in assigned and self selected readings. 7. Awareness of science learning: Articulating both what has been learned and what is perceived as missing in your own understanding.
10	EOSC217	**NONE**
11	EOSC220	By the end of this course, students should be able to: 1. Use atomic structure and crystallography to identify and explain the properties and groupings of common minerals. 2. Explain correlations between relevant chemical concepts (e.g., substitution and solid solution) and the parts of chemical formulas that control the properties and groupings of common minerals. 3. Describe and explain the processes and environments that lead to common associations of minerals in rocks. 4. Observe, describe, and measure properties of mineral hand specimens to identify minerals and place them in groups. 5. Develop interpersonal and practical skills useful in future careers, such as working in groups to make decisions and preparing individual laboratory term projects. 6. Apply mineralogy concepts and skills learned in lecture and lab to geological, materials science, environmental, and economic topics. 7. Appreciate the rarity, beauty, and usefulness of Earth's minerals.
12	EOSC221	Students should be able to: 1. Classify (assign complete names to) rocks, using published schemes employed by professionals. 2. Describe rock-forming processes. 3. Use fundamental petrographic observations to identify minerals and rock textures in thin section. 4. Describe the modal mineralogy and texture of a rock. 5. Evaluate the petrogenesis of rocks and rock associations in a plate tectonic context. 6. * Assess or evaluate how petrology transfers to other fields of study.
13	EOSC222	1. Describe Earth history using stratigraphic principles, paleontology and radioactive decay. 2. Apply an understanding of sedimentary rocks and fossils in the interpretation of geological features. 3. Describe how the biosphere has adapted to exploit various environments in the Earth's oceans over time.
14	EOSC223	By the end of this course, students should be able to: 1. Create geologic maps and cross sections from their own field data. 2. Exhibit safe, courteous, ethical, and environmentally sustainable behaviour in the field. 3. Interpret the geology and geologic history of an area from reading a geologic map. 4. Transfer knowledge gained from geologic maps to other fields (e.g. natural hazards, land use planning, resource extraction).
15	EOSC250	**NONE**
16	EOSC252	By the end of this course, students will be able to …

		1. Discuss qualitatively the ways in which important factors affect quantitative values of volumetric, mechanical and electrical properties of rocks and soils. 2. Apply appropriate mathematical relationships to estimate bulk property values based on constituent components, or vice-versa. 3. Employ fundamental principles of non-uniqueness, cause-and-effect, and simplification to recognize where theories are incomplete. 4. Provide bounding values on physical properties when specific answers are not possible. 5. Develop analytical and laboratory skills by making quantitative measurements on rocks, including assessment and propagation of measurement uncertainties. 6. Recommend which physical property(ies) is(are) most likely to help distinguishing between two rock or soil units by identifying how constituent components will likely affect bulk physical property values.
17	EOSC256	**NONE**
18	EOSC270	Students are expected to; 1. acquire a knowledge of marine ecosystem diversity, 2. identify ecological, physical and chemical processes and interactions that define ecosystems, 3. compare and contrast habitat, prevalent ecological processes and trophic dynamics between any number of marine ecosystems described here, 4. develop an appreciation how inherent characteristics of an ecosystem make it resilient or susceptible to anthropogenic threats, 5. understand how ecosystems are tied together by large scale processes, such as global circulation, biogeochemical cycling, etc.
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