**CURRICULAR MAP OF COURSES AVAILABLE IN EARTH SCIENCES B.S.**

**Revised Autumn 2015 to include proposed Earth Sci 5160**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Preparation for the Major | | |  |  |  |  |  |  |
| Earth Sciences | 1121 | The Dynamic Earth | B | B | B | B | B | B |
| Earth Sciences | 1122 | Earth through Time | B | B | B | B | B | B |
| Earth Sciences | 2245 | Introductory Data Analysis for Earth and Environmental Sciences |  | B | B | B | B | B |
| Major Program | | |  |  |  |  |  |  |
| Earth Sciences | 4194 | Group Studies | I | I | I | I | I | I |
| Earth Sciences | 4194H | Honors Group Studies | I | I | I | I | I | I |
| Earth Sciences | 4310 | Remote Sensing in the Earth Sciences | I | I | I | I | I | I |
| Earth Sciences | 4421 | Earth Materials | I | I | I | I | I | I |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 4423 | Introductory Petrology | I | I | I | I | I | I |
| Earth Sciences | 4425 | Energy Resources and Sustainability | I | I | I | I | I | I |
| Earth Sciences | 4450 | Water, Ice, and Energy in the Earth System | I | I | I | I | I | I |
| Earth Sciences | 4501 | Paleontology | I | I | I | I | I | I |
| Earth Sciences | 4502 | Stratigraphy and Sedimentation | I | I | I | I | I | I |
| Earth Sciences | 4530 | Structural Geology | I | I | I | I | I | I |
| Earth Sciences | 4560 | Applied Geophysics | I | I | I | I | I | I |
| Earth Sciences | 4880 | Seminar in Geophysics | I | I | I | I | I | I |
| Earth Sciences | 4998 | Undergraduate Research in Earth Sciences | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 4998H | Honors Undergraduate Research in Earth Sciences | A | A | A | A | A | A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 4999.01 | Undergraduate Thesis in Earth Sciences | A | A | A | A | A | A |
| Earth Sciences | 4999.01H | Honors Undergraduate Thesis in Earth Sciences | A | A | A | A | A | A |
| Earth Sciences | 4999.02 | Undergraduate Research for Thesis in Earth Sciences | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 4999.02H | Honors Undergraduate Research for Thesis in Earth Sciences | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 5160 | Geomicro  biology | I – A | I – A | I – A | I – A | I – A | I - A |
| Earth Sciences | 5189.01 | Field Geology I | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 5189.02 | Field Geology II | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 5191 | Internship in the Earth Sciences | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 5193.xx | Individual Studies | I - A | I - A | I - A | I - A | I - A | I - A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 5194 | Group Studies | I - A | I - A | I - A | I - A | I - A | I - A |
| Earth Sciences | 5203 | Geo-environment and Human Health | A | A | A | A | A | A |
| Earth Sciences | 5206 | Advanced Oceanography | A | A | A | A | A | A |
| Earth Sciences | 5550 | Geomorphology | I-A | I-A | I-A | I-A | I-A | I-A |
| Earth Sciences | 5600 | Siliciclastic Depositional Systems | A | A | A | A | A | A |
| Earth Sciences | 5601.01 | Sedimentary Petrology: Sandstones | A | A | A | A | A | A |
| Earth Sciences | 5601.02 | Sedimentary Petrology: Carbonate Rocks and Shales | A | A | A | A | A | A |
| Earth Sciences | 5602.01 | Carbonate Depositional Systems I | A | A | A | A | A | A |
| Earth Sciences | 5602.02 | Carbonate Depositional Systems II | A | A | A | A | A | A |
| Earth Sciences | 5603 | Stratigraphy | A | A | A | A | A | A |
| Earth Sciences | 5604 | Sequence Stratigraphy | A | A | A | A | A | A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 5605 | Paleoceano  graphy | A | A | A | A | A | A |
| Earth Sciences | 5613 | Micropaleon  tology | A | A | A | A | A | A |
| Earth Sciences | 5614 | Paleobiology | A | A | A | A | A | A |
| Earth Sciences | 5615 | Paleoecology | A | A | A | A | A | A |
| Earth Sciences | 5617 | Petrology of Earth and Planets | A | A | A | A | A | A |
| Earth Sciences | 5618 | Advanced Historical Geology | A | A | A | A | A | A |
| Earth Sciences | 5621 | Introduction to Geochemistry | A | A | A | A | A | A |
| Earth Sciences | 5622 | Stable Isotope Biogeo  chemistry | A | A | A | A | A | A |
| Earth Sciences | 5625 | Igneous Petrology | A | A | A | A | A | A |
| Earth Sciences | 5627 | Global Biogeochemical Cycles | A | A | A | A | A | A |
| Earth Sciences | 5628 | Environmental Isotope Geochemistry | A | A | A | A | A | A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 5629 | Principles of Petrology | A | A | A | A | A | A |
| Earth Sciences | 5636 | Advanced Topics in Mineralogy and Crystallography | A | A | A | A | A | A |
| Earth Sciences | 5641 | Geostatistics | A | A | A | A | A | A |
| Earth Sciences | 5642 | Geomathe  matical Analysis | A | A | A | A | A | A |
| Earth Sciences | 5644 | Tectonic Evolution of Continents | A | A | A | A | A | A |
| Earth Sciences | 5645 | Advanced Structural Geology | A | A | A | A | A | A |
| Earth Sciences | 5646 | Geodynamics | A | A | A | A | A | A |
| Earth Sciences | 5650 | Glaciology | A | A | A | A | A | A |
| Earth Sciences | 5651 | Hydrogeology | A | A | A | A | A | A |
| Earth Sciences | 5655 | Land Surface Hydrology | A | A | A | A | A | A |
| Earth Sciences | 5660 | Geology of Metallic Deposits | A | A | A | A | A | A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 5661 | Petroleum Geology | A | A | A | A | A | A |
| Earth Sciences | 5663 | Global Change and Sustainability in the Earth System | A | A | A | A | A | A |
| Earth Sciences | 5670 | General and Economic Geology of Selected Areas | A | A | A | A | A | A |
| Earth Sciences | 5676 | Elemental Chemical Analysis using Inductively Coupled Plasma Optical Emission and Mass Spectrometry | A | A | A | A | A | A |
| Earth Sciences | 5680 | Deep Earth Geophysics | A | A | A | A | A | A |
| Earth Sciences | 5687 | Energy Geophysics | A | A | A | A | A | A |
| Earth Sciences | 5703 | Principles of Biostratigraphy | A | A | A | A | A | A |
| Earth Sciences | 5713 | Taxonomy and Phylogeny in the Fossil Record | A | A | A | A | A | A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 5714 | Biometry | A | A | A | A | A | A |
| Earth Sciences | 5717 | Critical Issues in World Freshwater Resources | A | A | A | A | A | A |
| Earth Sciences | 5718 | Aquatic Geochemistry | A | A | A | A | A | A |
| Earth Sciences | 5719 | Environmental Organic Geochemistry | A | A | A | A | A | A |
| Earth Sciences | 5746 | Seminar in Rheological Properties of Solids | A | A | A | A | A | A |
| Earth Sciences | 5751 | Quantitative Reservoir Modeling | A | A | A | A | A | A |
| Earth Sciences | 5752 | Contaminants in Aqueous Systems | A | A | A | A | A | A |
| Earth Sciences | 5754 | Risk Assessment and Management in Earth Systems | A | A | A | A | A | A |
| Earth Sciences | 5779 | Seminar in Physical Properties of Minerals and Rocks | A | A | A | A | A | A |
| Earth Sciences | 5780 | Reflection Seismology | A | A | A | A | A | A |
|  | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods | Identify Earth Sci problems, develop solutions | Apply other sciences |
| Earth Sciences | 5781 | Gravity Exploration | A | A | A | A | A | A |
| Earth Sciences | 5782 | Magnetic Exploration | A | A | A | A | A | A |
| Geod Sci | 5781 | Geodesy and Geodynamics | A | A | A | A | A | A |
|  | | | Course Number | Course Title | Read/ evaluate Earth Sci literature | Present Earth Sci info | Apply Earth Sci data | Apply appropriate techniques/ methods |
| Electives from other departments (Geog, AtmosSC, EEOB, ENR, Chem, Math, etc.) | | |  |  |  |  |  | I-A |

Program Learning Goals:

A) Students critically read and evaluate Earth Science literature

B) Students present Earth Science information in a clear and logical manner, both orally and in writing.

C) Students apply knowledge of Earth Science data to understand the dynamic physical, chemical, and biological processes of the Earth and its history.

D) Students apply knowledge of appropriate techniques, field methods, field mapping, and numerical methods to measure, portray, analyze, and interpret Earth Science data in specific subdisciplines.

E) Students identify Earth Science problems and develop solutions.

F) Students apply knowledge of modern applications from chemistry, physics, biology, mathematics, statistics, and computing to the solution of Earth Science problems.

Key: B = Beginning level; I = Intermediate level; A = Advanced level