

**The Ohio State University
College of Arts and Sciences**

Earth Sciences Minor (Earth Sciences subprogram)

School of Earth Sciences, 275 Mendenhall Laboratory,
125 South Oval Mall, Columbus, OH 43210-1398;
Dr. Karen Royce; 614-292-6961; royce.6@osu.edu;
<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in Earth Sciences requires a minimum of 12 semester credit hours in core courses. Preparation for the minor includes one or two courses (listed below), for a total minimum of 16 credit hours. Some of the core courses have additional pre-requisite courses that are not part of the minor.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (4 credit hours)

Earth Sciences 1100 or 1200 and 1105 or 1108 or 1110 or 1121 or 1151 (4 hours)

Where available, an Honors version can substitute for the equivalent non-Honors courses listed above.

Core Course (4 credit hours required)

Earth Sciences 2122: Climate and Life over Billions of years on Earth (4 hours)

Additional courses (at least 8 additional hours are required)

Complete a minimum of 8 semester hours in Earth Sciences at the 2000-level or above, with at least 3 credit hours at the 3000-level or higher. A maximum of 3 total credit hours among internship (x191), research (x998, x999), or individual study (x193) can be counted towards the minor with prior approval.

Earth Sciences (Earth Sciences subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above.

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- minor.
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X191, x998, x999, x193 No more than 3 credit hrs

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by the academic unit offering the minor.

College of Arts and Sciences
Curriculum and Assessment Services
306 Dulles Hall
230 Annie and John Glenn Ave.
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The Ohio State University
College of Arts and Sciences

Earth Sciences Minor (Paleontology subprogram)

School of Earth Sciences, 275 Mendenhall Laboratory,
125 South Oval Mall, Columbus, OH 43210-1398;
Dr. Karen Royce; 614-292-6961; royce.6@osu.edu;
<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in paleontology requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes 7 credit hours, for a total minimum of 19 credit hours. Some of the required courses have additional pre-requisite courses that are not part of the minor.

The minor in Earth Sciences with an emphasis in paleontology offers the background necessary for a better understanding of Earth's biosphere and of the chemical and physical processes affecting life on Earth.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (7 credit hours)

Earth Sciences 1100 or 1200 and 1105 or 1108 or 1121 or 1151 (4 hours)

And 3 hours in Biological Sciences

Honors versions of these courses, where they exist, may be substituted.

Core Course (8 credit hours required)

Earth Sciences 2122: Climate and Life over Billions of years on Earth (4 hours)

Earth Sciences 4501: Paleontology (4 hours)

Additional courses (at least 4 additional hours are required)

Earth Sciences 4502: Stratigraphy and Sedimentology (4 hours)

Earth Sciences 4911: Earth's climate: Past and Future (3 hours)

Earth Sciences 5615: Paleoecology (4 hours)

Earth Sciences 5621: Introduction to Geochemistry (3 hours)

Earth Sciences 5206: Advanced Oceanography (3 hours)

Earth Sciences (Paleontology subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above.

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by the academic unit offering the minor.

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The Ohio State University
College of Arts and Sciences

Earth Sciences Minor (Economic Geology subprogram)

School of Earth Sciences, 275 Mendenhall Laboratory,
125 South Oval Mall, Columbus, OH 43210-1398;
Dr. Karen Royce; 614-292-6961; royce.6@osu.edu;
<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in economic geology requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes Earth Sciences 1121 and 1200 and Chemistry 1210, for a total minimum of 21 credit hours. Some of the required courses have additional pre-requisite courses that are not part of the minor.

The minor in Earth Sciences with an emphasis in economic geology offers the background necessary for a better understanding of the formation and exploitation of mineral and precious metal deposits.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (9 credit hours)

Earth Sciences 1121 and 1200 or 1121H (4 hours)
Chemistry 1210 (5 hours)

Core Courses (9 credit hours required)

Earth Sciences 2210: Energy, Mineral Resources, and Society (3 hours) OR
Earth Sciences 2155: Energy and Environment (3 hours) and
Earth Sciences 4421: Earth Materials (3 hours) and
Earth Sciences 4423: Intro Petrology (3 hours)

Additional courses (at least 1 additional course is required) to total at least 12 semester hours in the minor

Earth Sciences 4425: Energy Resources Sustainability (3 hours)
Earth Sciences 5621: Introduction to Geochemistry (3 hours)
Earth Sciences 5660: Geology of Mineral Resources (4 hours)
Earth Sciences 5670: General and Economic Geology of Selected Areas (2–4 hours)
Earth Sciences 5687: Borehole Geophysics (3 hours)
Earth Sciences 5780: Reflection Seismology (4 hours)

Earth Sciences (Economic Geology subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above.

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

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The Ohio State University
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Earth Sciences Minor (Geoaerchology subprogram)

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125 South Oval Mall, Columbus, OH 43210-1398;
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<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in geoaerchology requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes Earth Sciences 1121 and 1200 and 3 hours of Biological Sciences, for a total minimum of 19 credit hours. Some of the required courses have additional pre-requisite courses that are not part of the minor.

The minor in Earth sciences with an emphasis in geoaerchology offers the background necessary for a better understanding of the physical nature of natural and artifactual discoveries.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (7 credit hours)

Earth Sciences 1121 (3 hours)
Earth Sciences 1200 (1 hour)
And 3 hours in Biological Sciences
Honors versions of the above courses can be substituted.

Core Courses (8 credit hours required)

Earth Sciences 2122: Climate and Life over Billions of years on Earth (4 hours)
Earth Sciences 4501: Paleontology (4 hours)

Additional courses (at least 1 additional course is required)
to total at least 12 semester hours in the minor

Earth Sciences 4421: Earth Materials (3 hours)
Earth Sciences 4423: Intro Petrology (3 hours)
Earth Sciences 4502: Stratigraphy and Sedimentology (4 hours)
Earth Sciences 4560: Applied Geophysics (3 hours)
Earth Sciences 5242: Natural History of The Bahamas (4 hours)
Earth Sciences 5550: Geomorphology (4 hours)
Earth Sciences 5622: Stable Isotope Biogeochemistry (3 hours)
Earth Sciences 5650: Glaciology (4 hours)

Earth Sciences (Geoaerchology subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above.

Transfer and EM credit hours allowed

A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

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The Ohio State University
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Earth Sciences Minor (Geophysics subprogram)

School of Earth Sciences, 275 Mendenhall Laboratory,
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Dr. Karen Royce; 614-292-6961; royce.6@osu.edu;
<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in geophysics requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes one Earth Sciences introductory course and lab, for a total minimum of 16 credit hours. Some of the required courses have additional pre-requisite courses that are not part of the minor.

The minor in Earth Sciences with an emphasis in geophysics offers the background necessary to use of physics to understand Earth's subsurface environment.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (4 credit hours)

Earth Sciences 1121 (3 hours) or
Earth Sciences 1151 (3 hours)
And Earth Sciences 1200 (1 hour)
Honors versions of the above courses can be substituted.

Core Courses (12 credit hours required)

Complete 12 hours in Earth Sciences at the 2000-level or above, with at least 9 of the credit hours chosen from the following.

Earth Sciences 2205: The Planets (3 hours)
Earth Sciences 4421: Earth Materials (3 hours)
Earth Sciences 4423: Intro Petrology (3 hours)
Earth Sciences 4560: Applied Geophysics (3 hours)
Earth Sciences 5205: Planetary Science (3 hours)
Earth Sciences 5310: Remote Sensing in the Earth Sciences (3 hours)
Earth Sciences 5680: Deep Earth Geophysics (3 hours)
Earth Sciences 5687: Borehole Geophysics (3 hours)
Earth Sciences 5780: Reflection Seismology (4 hours)

Earth Sciences (Geophysics subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

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The Ohio State University
College of Arts and Sciences

Earth Sciences Minor (Geochemistry subprogram)

School of Earth Sciences, 275 Mendenhall Laboratory,
125 South Oval Mall, Columbus, OH 43210-1398;
Dr. Karen Royce; 614-292-6961; royce.6@osu.edu;
<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in Geochemistry requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes Earth Sciences 1121 and 1200 and Chemistry 1210, for a total minimum of 21 credit hours. Some of the required courses have additional pre-requisite courses that are not part of the minor.

The minor in Earth Sciences with an emphasis in geochemistry offers the background necessary for a better understanding of the chemical nature of Earth's environment.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (9 credit hours)

Earth Sciences 1121 (3 hours)

Earth Sciences 1200 (1 hour)

Chemistry 1210 (5 hours)

Honors version of these courses may be substituted.

Core Courses (6-7 credit hours required)

Complete 1 of the following courses:

Earth Sciences 2122: Climate and Life over Billions of years on Earth (4 hours)

Earth Sciences 2203: Environmental Geoscience (3 hours)

Earth Sciences 2204: Exploring Water Issues (3 hours)

Earth Sciences 2206: Oceanography (3 hours)

Complete the following course:

Earth Sciences 4421: Earth Materials (3 hours)

Additional courses (at least 2 additional courses are required from the list below)

Earth Sciences 4423: Intro Petrology (3 hours)

Earth Sciences 5621: Introduction to Geochemistry (3 hours)

Earth Sciences 5622: Stable Isotope Biogeochemistry (3 hours)

Earth Sciences 5627: Global Biogeochemical Cycles (3 hours)

Earth Sciences 5628: Environmental Isotope Geochemistry (3 hours)

Earth Sciences (Geochemistry subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by the academic unit offering the minor.

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The Ohio State University
College of Arts and Sciences

Earth Sciences Minor (Mineralogy and Petrology subprogram)

School of Earth Sciences, 275 Mendenhall Laboratory,
125 South Oval Mall, Columbus, OH 43210-1398;
Dr. Karen Royce; 614-292-6961; royce.6@osu.edu;
<http://earthsciences.osu.edu/>

With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in mineralogy and petrology requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes Earth Sciences 1121 and 1200 and Chemistry 1210, for a total minimum of 21 credit hours. Some of the required courses have additional pre-requisite courses that are not part of the minor.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (9 credit hours)

Earth Sciences 1121 (3 hours)

Earth Sciences 1200 (1 hour)

Chemistry 1210 (5 hours)

The Honors version of this course can be substituted.

Core Courses (6 credit hours required)

Earth Sciences 4421: Earth Materials (3 hours)

Earth Sciences 4423: Intro Petrology (3 hours)

Additional courses (at least 6 additional hours are required, chosen from among these courses)

Earth Sciences 5617: Petrology of Earth and Planets (4 hours)

Earth Sciences 5621: Introduction to Geochemistry (3 hours)

Earth Sciences 5625: Igneous Petrology (4 hours)

Earth Sciences 5636: Advanced Topics in Mineralogy and Crystallography (3 hours)

Earth Sciences (Mineralogy and Petrology subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credits must be at the 3000 level or above

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

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Earth Sciences Minor (Environmental Studies subprogram)

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With this minor, students will have critical knowledge and hands-on experience to participate successfully in many public, private and international career opportunities such as government research, homeland security, environmental consulting, oil and natural gas exploration & production, international business, precious and industrial mineral exploration, mining, and processing, renewable and alternative energy resources, and education.

The subprogram in environmental studies requires a minimum of 12 credit hours in upper-level Earth Sciences courses. Preparation for the minor includes one introductory Earth Sciences course with a lab, for a total minimum of 16 credit hours for the minor. Some of the required courses have additional pre-requisite courses that are not part of the minor.

The subprogram in environmental studies offers an introduction to the increasingly complex issues and problems affecting Earth's environment.

To declare this minor, schedule an appointment to meet with the coordinating advisor in the School of Earth Sciences (SES) and discuss the minor requirements. Many of the Earth Sciences courses are taught on a specific course offering schedule and SES wants to help you schedule our classes accordingly. Also, any variation from the program described below needs the approval of the coordinating advisor in SES. For further information about the minor program, contact the coordinating advisor (contact information above).

**Some courses in this minor may have pre-requisites. Please consult the course bulletin before enrolling in courses.*

Preparation for the minor (4 hours)

Earth Sciences 1100 or 1200 and 1105 or 1108 or 1110 or 1121 or 1151 or 2155 (4 hours)

Where available, an Honors course can substitute for an equivalent non-Honors course listed above

Core Course (3 credit hours)

Complete one of these courses

Earth Sciences 2203: Environmental Geoscience (3 hours)

Earth Sciences 2204: Exploring Water Issues (3 hours)

Additional courses (at least 9 additional hours are required). At least 3 credit hours must be at or above the 3000-level

Earth Sciences 2122: Climate and Life over Billions of years on Earth (4 hours)

Earth Sciences 2203 or 2204 (if not used as "Core Course")

Earth Sciences 2205: The Planets (3 hours)

Earth Sciences 2206: Oceanography (3 hours)

Earth Sciences 2210: Energy, Mineral Resources, and Society (3 hours)

Earth Sciences 4450: Water, Ice, and Energy in the Earth System (3 hours)

Earth Sciences 5206: Advanced Oceanography (3 hours)

Earth Sciences 5242: Natural History of The Bahamas (4 hours)

Earth Sciences 5550: Geomorphology (4 hours)

Earth Sciences 5189.05, 5189.06 (2 hours)

Earth Sciences 5621: Introduction to Geochemistry (3 hours)

Earth Sciences 5622: Stable Isotope Biogeochemistry (3 hours)

Earth Sciences 5627: Global Biogeochemical Cycles (3 hours)

Earth Sciences 5628: Environmental Isotope Geochemistry (3 hours)

Earth Sciences 5650: Glaciology (4 hours)

Earth Sciences 5651: Hydrogeology (4 hours)

Earth Sciences 5663: Global Change and Sustainability in the Earth System (4 hours)

Earth Sciences 5717: Critical Issues in World Freshwater Resources (4 hours)

Earth Sciences 5751: Quantitative Ground-Water Flow Modeling (4 hours)

Earth Sciences 5752: Contaminants in Aqueous Systems (4 hours)

Earth Sciences (Environmental Studies subprogram) minor program guidelines

Credit hours required A minimum of 12 credit hrs. 1000 level courses shall not be counted in the minor. At least 6 credit hours must be at or above the 3000-level.

Transfer and EM credit hours allowed A student is permitted to count up to 6 total hours of transfer credit and/or credit by examination.

Overlap with the GE A student is permitted to overlap up to 6 credit hours between the GE and the minor.

Overlap with the major and additional minor(s)

- The minor must be in a different subject than the major.
- The minor must contain a minimum of 12 hours distinct from the major and/or additional minor(s).

Grades required

- Minimum C- for a course to be listed on the minor.
- Minimum 2.00 cumulative GPA for all minor course work
- Course work graded Pass/Non-Pass cannot count on the minor.
- No more than 3 credit hours of coursework graded Satisfactory/Unsatisfactory may count toward the minor.

X193 credits No more than 3 credit hours.

Minor approval The minor program must be approved by the academic unit offering the minor.

Filing the minor program form The minor program form must be filed at least by the time the graduation application is submitted to a college/school advisor.

Changing the minor Once the minor program is filed in the college office, any changes must be approved by the academic unit offering the minor.

College of Arts and Sciences
Curriculum and Assessment Services
306 Dulles Hall,
230 Annie and John Glenn Ave.
<http://artsandsciences.osu.edu>

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