

Category 4B: Physical Sciences

LAC 2014

ADVISING NOTES

For all courses listed under Physical Sciences, students must have satisfied the minimum UNI entrance requirements in English and Mathematics.

Students are required to take a course with a scheduled laboratory from either LAC Category 4A: Life Sciences or 4B: Physical Sciences. Only 6 hours are required for students who meet the LAC laboratory requirement with a course other than the one listed in Life or Physical Sciences.

Any natural science laboratory course will satisfy the LAC lab requirement.

The following major/minor courses may substitute for the Physical Sciences requirement:

- CHEM 1020* Chemical Technology (4)
- CHEM 1110* General Chemistry I (4)
- CHEM 1130* General Chemistry I-II (5)
- EARTHSCI 3328* Fossils and Evolution (4)
- PHYSICS 1511* General Physics I (4)
- PHYSICS 1701* Physics I for Science and Engineering (4)
- SCI ED 1100* Inquiry into Earth and Space Science (4)
- SCI ED 1300* Inquiry into Physical Science (4)

All LAC related student requests should be sent directly to the Provost's Office.

AS A RESULT OF THIS CATEGORY STUDENTS WILL ...

- Know the processes and dynamic nature of science.
- Apply scientific reasoning skills to investigate natural phenomena.
- Be able to articulate why science is important.

IT TAKES MORE THAN A MAJOR

Employers believe that college graduates need **hands-on experience with the methods of science** to succeed in the workplace.

Source: Hart Research Association, *It Takes More than a Major: Employer Priorities for College Learning and Student Success*, (Washington D.C.: Association of American Colleges and Universities, 2013).

COURSE DESCRIPTIONS

CHEM 1010 Principles of Chemistry—4 hrs. Basic concepts of chemistry, the periodic table and its relation to atomic structure and chemical properties. How the understanding of changes in matter and energy is important in both living and non-living systems. Work of the chemist and the interactions of chemistry with other activities of humankind.

- Discussion, 3 periods; lab, 2 periods.
- No credit for student with credit in any college chemistry course.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

CHEM 1011 Molecules and Life—3 hrs. Basic concepts of chemistry, with an emphasis on the structure and function of molecules in living systems.

- Discussion, 3 periods.
- No credit for student with credit in any college chemistry course.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

EARTHSCI 1100 Astronomy—3-4 hrs. Introduction to the Universe, solar system, stars, and galaxies, including apparent motions of bodies in the sky; development of astronomy and its impact on humankind.

- Discussion, 3 periods; lab, 2 periods.
- Also offered as a 3-hour course without lab.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

REQUIREMENT: 3 OR 4 CREDIT HOURS

CHEM 1010*	Principles of Chemistry	4 Hours
CHEM 1011	Molecules and Life	3 Hours
EARTHSCI 1100**	Astronomy	3-4 Hours
EARTHSCI 1110*	Astronomy Laboratory	1 Hour
EARTHSCI 1200	Elements of Weather	3 Hours
EARTHSCI 1210*	Elements of Weather - Lab	1 Hour
EARTHSCI 1300*	Introduction to Geology	4 Hours
GEOG 1210	Physical Geography	3 Hours
GEOG 1211*	Physical Geography Laboratory	1 Hour
PHYSICS 1000	Physics in Everyday Life	3 Hours
PHYSICS 1400*	Conceptual Physics	4 Hours
TECH 1015	Introduction to Sustainability	3 Hours

*Lab Course

**Lab Course if 4-hour option elected

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COURSE DESCRIPTIONS

EARTHSCI 1110 Astronomy Laboratory—1 hr.

Exploration of astronomical phenomena through the use of telescopes, charts, almanacs, computer simulations, and other laboratory equipment. Students will gain experience in methods of observing the night sky and become familiar with celestial objects.

- Lab, 2 periods.
- Prerequisite(s): consent of instructor.
- Corequisite(s): EARTHSCI 1100 Astronomy.

EARTHSCI 1200 Elements of Weather—3 hrs.

Meteorological elements and their applications to environment; interpretation of weather maps and weather data; forecasting and briefing on daily weather.

- Discussion, 3 periods.
- No credit for those who have completed EARTHSCI 3210/5210 Meteorology.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

EARTHSCI 1210 Elements of Weather Laboratory—1 hr.

Fundamentals of meteorological observation, use of basic meteorological instruments, and applications of maps and charts to understanding forecasts.

- Intended for science teaching majors and minors.
- Lab, 2 periods.
- Prerequisite(s) or corequisite(s): EARTHSCI 1200 Elements of Weather.

EARTHSCI 1300 Introduction to Geology—4 hrs.

Introduction to the physical environment, emphasizing materials of the Earth and processes that lead to changes within and on the Earth. Lab emphasis includes rocks and minerals, geologic processes, and landscape development.

- Discussion, 3 periods; lab, 2 periods.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

GEOG 1210 Physical Geography—3 hrs. Explanation of patterns of solar energy receipt, atmospheric pressure, winds, and precipitation around the Earth. Emphasis on how solar energy, water, and crustal movements interact to determine characteristics of natural environments on Earth.

- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

GEOG 1211 Physical Geography Laboratory—1 hr.

Explanation of patterns of solar energy receipt, atmospheric pressure, winds, and precipitation around the Earth. Emphasis on how solar energy, water, and crustal movements interact to determine characteristics of natural environments on Earth.

- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.
- Prerequisite(s) or corequisite: GEOG 1210 Physical Geography.

PHYSICS 1000 Physics in Everyday Life—3 hrs. Basic laws and concepts of physics introduced and demonstrated through operation of everyday devices and systems. Emphasis on understanding physical principles behind working of modern technologies and interplay between science and technology.

- Students may not earn credit in both PHYSICS 1400 Conceptual Physics and PHYSICS 1000 Physics in Everyday Life.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

PHYSICS 1400 Conceptual Physics—4 hrs. Energy; temperature and heat; waves and sound; electricity and magnetism; light and color; and atomic and nuclear structure of matter. Emphasis on observation, interpretation, and conceptual understanding of physical phenomena.

- Discussion, 3 periods; lab, 2 periods.
- Students may not earn credit in both PHYSICS 1400 Conceptual Physics and PHYSICS 1000 Physics in Everyday Life.
- Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics.

TECH 1015 Introduction to Sustainability—3 hrs. Students will gain a basic understanding of sustainability, with focus on possibilities for harmonizing economic, ecological, and social goals for current and future generations. They will conduct practical exercises to enhance personal sustainability.

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