

# ORIGINS SCIENCES, BA

217 Rockefeller, Institute for the Science of Origins  
 Phone: 216.368.4257  
 Patricia Princehouse, Director of the Major  
 patricia.princehouse@case.edu

**More Information:** <http://origins.case.edu/major/>

**Degree:** Bachelor of Arts (BA)

**Major:** Origins Sciences

The Origins Sciences Program offers the Bachelor of Arts degree. The major provides a rigorous course of study with great flexibility in the choice of specific topics and courses. Students play a creative role in designing their own individual educational plans within the major. As a result, they are free to explore nontraditional, multidisciplinary and transdisciplinary subjects.

The Origins Sciences major is designed to connect students with professors breaking through barriers to ask big questions in ways that matter, both at the highest theoretical levels and with immediate practical applications in areas such as medicine and technology. Its concerns range from the nanoscale to ecological relationships to galaxies to dark matter, dark energy and the nature of the universe itself. The major's sponsor, the Institute for the Science of Origins (ISO), brings together scientists from Case Western Reserve University, the Cleveland Museum of Natural History and other partner institutions to answer questions about the origin and evolution of simple and complex systems, from the big bang to the human mind.

The curriculum emphasizes a broad grounding in the origins sciences, including fundamentals of physics, biology, chemistry and mathematics, and encompassing aspects of anthropology, cognitive science, astronomy and earth, environmental and planetary sciences, making it reasonable for students to consider a double or secondary major or a dual degree. A faculty actively engaged in research in these fields and beyond provides first-rate instruction and opportunities for undergraduate involvement in cutting-edge research, including laboratory and museum experience and fieldwork across the globe.

An undergraduate degree in Origins Sciences can be tailored to meet the needs of pre-med or other pre-health students or to prepare students for graduate programs in any of the allied disciplines, including anthropology, astronomy, biology, chemistry, cognitive science, geosciences, applied mathematics, paleontology and physics.

Majoring in Origins Sciences gives students added value in applying to medical school, graduate school or the increasingly technical science-related MBA and JD programs. The major also provides a strong background for students interested in pursuing careers in science writing; internships are available at ideastream, ISO's public TV and radio partner institution.

## Undergraduate Policies

For undergraduate policies and procedures, please review the Office of Undergraduate Studies section of the General Bulletin.

## Accelerated Master's Programs

Undergraduate students may participate in accelerated programs toward graduate or professional degrees. For more information and details of the policies and procedures related to accelerated studies, please visit the Office of Undergraduate Studies section of the General Bulletin.

## Program Requirements

Origins Sciences is a primary major, but may also be pursued in conjunction with a more traditional disciplinary major. Up to 12 credits in required and elective courses taken by students for their other major may be applied to their Origins Sciences major.

The 30-credit interdisciplinary major in Origins Sciences consists of:

- Science Core
- Origins Core
- Origins Foci

Within the Origins foci, each student will design a curriculum that includes concentrations in at least two Origins Sciences fields, such as:

- Cosmology and astrophysics
- Integrative evolutionary biology (e.g., biochemistry, physical anthropology, paleontology, and evolutionary cognitive science)
- Planetary science and astrobiology

In consultation with a major advisor, students create individual plans of study to suit their particular interests within the major. A typical student will develop a proposal as a sophomore and submit that plan for approval by the Origins Sciences Major Advisory Committee. Each concentration must include at least two 300 or higher level classes and their prerequisites. Subsequent revisions to the plan are encouraged when appropriate but must be submitted for approval by the committee at least two weeks before the beginning of the semester preceding the one in which the revisions take effect. Students are strongly encouraged to include an Origins Sciences research experience in their educational plans.

### Science Core:

Code	Title	Hours
BIOL 214	Genes, Evolution and Ecology	3
BIOL 214L	Genes, Evolution and Ecology Lab	1
BIOL 225	Evolution	3
CHEM 105	Principles of Chemistry I	3
CHEM 106	Principles of Chemistry II	3
MATH 121 or MATH 125	Calculus for Science and Engineering I Math and Calculus Applications for Life, Managerial, and Social Sci I	4
MATH 122 or MATH 126	Calculus for Science and Engineering II Math and Calculus Applications for Life, Managerial, and Social Sci II	4
PHYS 121 or PHYS 123	General Physics I - Mechanics Physics and Frontiers I - Mechanics	4
PHYS 122 or PHYS 124	General Physics II - Electricity and Magnetism Physics and Frontiers II - Electricity and Magnetism	4

**Origins Core:**

<b>Code</b>	<b>Title</b>	<b>Hours</b>
ORIG 101	Origins Prologue: Life, the Universe, and Everything (Optional)	1
ORIG 201		3
ORIG 202	Origins II: Life in all its diversity	3
ORIG 301	Mathematical Modeling Across the Sciences	3
ORIG 351	(Must be taken twice)	3

**Sample Plan of Study****First Year**

<b>Fall</b>	<b>Hours</b>	
ORIG 101 or ORIG 202	Origins Prologue: Life, the Universe, and Everything or Origins II: Life in all its diversity	1
MATH 121 or MATH 125	Calculus for Science and Engineering I or Math and Calculus Applications for Life, Managerial, and Social Sci I	4
Select one of the following:		4
BIOL 214	Genes, Evolution and Ecology	
CHEM 105	Principles of Chemistry I	
PHYS 121	General Physics I - Mechanics	
PHYS 123	Physics and Frontiers I - Mechanics	
Humanities Elective		3
SAGES First Seminar		3
PHED Elective		0
<b>Hours</b>		<b>15</b>

**Spring**

ORIG 201 or EEPS 101	or The Earth and Planets	3
MATH 122 or MATH 126	Calculus for Science and Engineering II or Math and Calculus Applications for Life, Managerial, and Social Sci II	4
Select one of the following:		3-4
BIOL 214	Genes, Evolution and Ecology	
BIOL 225	Evolution	
PHYS 121	General Physics I - Mechanics	
PHYS 123	Physics and Frontiers I - Mechanics	
Humanities or Global/Cultural Elective		3
SAGES University Seminar		4
PHED Elective		0
<b>Hours</b>		<b>17-18</b>
<b>Total Hours</b>		<b>32-33</b>