

# DISCOVERY PROGRAM

## Discovery Program (Core Curriculum Requirement)

The Discovery Program provides the intellectual framework for students in any major. It represents the faculty's collective belief in what constitutes and contributes to essential knowledge of the world. Together, students and faculty attempt to understand fully and use ethically that knowledge, both in the present and as a reservoir from which to draw in the future. These intellectual skills, knowledge, and ethical grounding will help prepare students to contribute to the creation of a more sustainable, healthy, just, and prosperous world.

*"He who learns but does not think is lost. He who thinks but does not learn is in great danger." Confucius.*

### Discovery Program Student Learning Outcomes

After completing the Discovery Program at UNH, students should be able to:

1. Communicate effectively by applying skills in reading, writing, speaking, and listening.
2. Acquire and use information appropriately and effectively to research, organize, and present knowledge.
3. Apply mathematical concepts and/or statistical models to understand phenomena and/or solve problems in multiple contexts.
4. Formulate and evaluate open-ended questions that lead to empirical/researchable investigations of complex problems and issues.
5. Analyze and synthesize ideas and perspectives from diverse traditions from around the world.
6. Analyze and synthesize ideas and perspectives from more than one academic or intellectual discipline.
7. Clarify connections between their academic learning and their own ethical values.
8. Demonstrate the integration of learning they have achieved in their major field of study.
9. Exercise imagination in grappling with complex problems of both the natural and human created worlds, and understand the centrality of imagination to all human endeavors.
10. Make connections among the various branches of human knowledge and endeavor.

## Discovery Program Requirements

### Discovery Foundation Skills

**Inquiry course.** This course may fulfill a Discovery category and/or a departmental requirement. It should be taken during a student's first or second year or prior to completion of 57 credits. For students who transfer in with 26 or more credits, the Inquiry requirement is waived automatically.

One course in writing skills. Most students will satisfy the first-year writing requirement with ENGL 401 First-Year Writing. This course should be taken during a student's first year or prior to completion of 32 credits.

One course in quantitative reasoning. This course is normally completed by the end of the first year or 32 credits.

### Discovery in the Disciplines

Students must take one course from each Discovery category at the 400-600 levels. Inquiry courses that carry Discovery category designations may be used to satisfy this requirement.

- One course in Biological Science (BS);<sup>1</sup>
- One course in Physical Science (PS);<sup>1</sup>
- One course in Environment, Technology, and Society (ETS);
- One course in Fine and Performing Arts (FPA);
- One course in Historical Perspectives (HP);
- One course in Humanities (HUMA);
- One course in Social Science (SS); and
- One course in World Cultures (WC) (also may be satisfied by approved study abroad programs).

<sup>1</sup> One of these courses must have a Discovery lab component (DLab).

## Discovery and Integrative Understanding

One senior capstone experience, supervised and approved within the major.

The capstone experience is typically completed by senior students within the major and is designed to elicit opportunities for educational reflection and synthesis of knowledge and skills; however, students who have completed 90 credits at the end of their junior year may complete their capstone during the summer prior to their senior year. The capstone may be met with an approved experience (as described below). It is not necessarily a course.

Suggested ways of meeting capstone may include: McNair research theses, Hamel Center Programs (IROP, SURF USA, SURF Abroad, URA, INCO 790 Advanced Research Experience), and senior honors theses. Examples of capstone experiences include courses, projects, independent research, internships, artistic expression, or community and service learning opportunities.

### The senior capstone experience must meet one or more of the following criteria:

The capstone synthesizes and applies disciplinary knowledge and skills. The capstone fosters reflection on undergraduate learning and experience. The capstone demonstrates emerging professional competencies. The capstone applies, analyzes, and/or interprets research or data or artistic expression. The capstone explores areas of interest based on the integration of prior learning. The capstone requirement will vary across departments and colleges and may be satisfied through a course, thesis, created work or product, mentored research project, or some form of experiential learning (e.g., fieldwork). The capstone should occur during the student's senior year. Departments designate capstones as appropriate to their respective disciplines following the usual administrative procedures for their college or school. Departments are responsible for certifying that graduating seniors have met the capstone requirement for their majors.

### Additional Information

Discovery Program requirements shall not be waived on the basis of special examinations or placement tests, except for the College Board Advanced Placement tests and the College Level Examination Program (CLEP) tests. All students transferring to UNH in academic year 2019-20 will come in under Discovery Program requirements. For students who

transfer in with 26 or more credits, the Inquiry requirement is waived automatically.

*Note to Faculty: Students may petition the Discovery Committee to replace a requirement. The student's petition must be approved by the student's major adviser and forwarded to the Dean of the student's college.*

The required courses cannot be taken on a pass/fail basis. No single course may be counted in more than one Discovery discipline category. Academic departments may or may not permit Discovery courses to count toward requirements for a major. TSAS courses may not be used for general-education (1984-2009), writing-intensive, or foreign language requirements. TSAS courses that are 400-600 level and Discovery-approved may count for Discovery requirements. All Discovery courses carry 3-4 credits.

The most current list of Discovery courses may be found on the [Registrar's Office website](#).

## Discovery Foundations

### Inquiry

All Inquiry courses must contain four individually necessary and collectively sufficient features:

Inspire curiosity: an Inquiry student will compose open-ended questions that lead to further investigation into increasingly focused problems and issues. Develop understanding and perspective: an Inquiry student will explain a central issue or question of the course using at least two unique perspectives. Clarify standards of thinking: an Inquiry student will be able to identify, compare, and evaluate different interpretations (hypotheses, explanations) of a given phenomenon. Create effective communicators: an Inquiry student will present in clearly organized form the results of the investigation into questions or problems the student has posed.

A complete list of Inquiry courses can be found on the [Registrar's Office](#) homepage.

### Writing Skills

Please refer to the [University Writing Requirement](#) section for complete information about this Discovery Foundation.

### Quantitative Reasoning

Quantitative reasoning refers to the ability to think critically and analytically using abstract formal methods with broad application. Mathematics is the foundation for the physical sciences and, increasingly, for the biological sciences. Its principles and processes illuminate significant aspects of the social sciences as well. In its most precise forms, it enables the design of bridges and the orbiting of satellites. Mathematics discloses invisible truths about the world, makes sense of patterns of which we may or may not be aware, and introduces some order to chaos. In its purest form, it creates its own world of beauty and logic. In its more applied forms, it attempts to make sense of individual and collective human behaviors and complex systems. Many courses listed under this category will help students appreciate the principles of mathematics and gain some skill in its applications to realistic situations, while other courses will introduce kindred subjects including symbolic logic, information theory, statistics, and computer science.

#### Student Learning Outcomes - Quantitative Reasoning

- Demonstrate proficiency in carrying out college-level mathematical procedures.

- Use college-level mathematical thinking to analyze situations and data and to solve

## Discovery in the Disciplines

### Biological Science

Biology is a branch of science that investigates the structure and function of living organisms. Scientists investigate ideas and observations that solidify our understanding of the diversity of life from single cells to complex organisms. Biology has deep relations with agriculture, chemistry, psychology, and many other fields of study, and it is the foundation of our knowledge of health and disease. Courses under this category deal with the basic structure and function of organisms, the interaction of organisms with their environment, human health, biotechnology, and the concepts and mechanisms of evolution as a fundamental biological paradigm. All courses will provide some understanding of the methods of scientific inquiry and seek knowledge about the living world.

#### Student Learning Outcomes - Biological Science (BS)

- Learn about aspects of the living world as described in the course description.
- Demonstrate an understanding of fundamental concepts in biological science.
  - [Additional Student Learning Outcomes for BS Discovery Lab \(DLAB\) courses](#)
- Communicate scientific material effectively in written and oral formats.
- Summarize, analyze, and evaluate scientific data.
- Explain how scientific hypotheses are tested or rejected.
- Master appropriate laboratory and field techniques commonly used in biology.

### Environment, Technology, and Society

The exponential growth of the sciences and engineering has bred an equally dramatic growth in technological advances. From the flint arrowhead to the latest communication device or weapon, human beings have been inventing things and transforming their lives, their societies, and their environments as they do. But they seldom foresee all the transformations and consequences their inventions bring about. This category stresses the interplay between at least two of these three realms: environment, technology, and society. Topics might include, but are not limited to, the history of a particular kind of technology (such as transport, fuel, writing, or weaponry), how technological change comes about in general, the scientific and/or social bases for a given technology, its impact for good or ill on human society and the natural environment, the effects of a changing environment on the arts and literature, and/or the ethical questions these topics raise.

#### Student Learning Outcomes - Environment, Technology, and Society (ETS)

One or more of the following:

- Explore the social consequences of technological and/or environmental change.
- Master a technology described in the course description and evaluate its human impact.
- Consider the impact of various technologies on the environment.

- Understand the way the environmental challenges shape the development of technology.

## Fine and Performing Arts

The arts communicate through the intellect, the emotions, and the body, sometimes all at once, in ways simple and subtle, direct and subliminal, gentle and soul shaking. Understanding and appreciating the arts enriches our lives and preserves our cultural heritage for the future. Through its performances, publications, and exhibits, UNH offers many artistic experiences for students and the larger community, some of which are linked to courses under this category. Such courses, which may be about painting, sculpture, architecture, music, dance, theater, or film, will often include learning through practical experience.

### Student Learning Outcomes - Fine and Performing Arts (FPA)

One or more of the following:

- Develop an understanding and appreciation of differing forms of art expression such as music, visual art, theatre, or architecture.
- Develop skills in creative writing.
- Produce art in the studio, workshop, or theatre.

## Historical Perspectives

Even though we are faced daily with evidence of change in our social world and technology, we easily forget that how we live, where we live, and what we see around us are transient states of affairs. It is important to be able to look on one's own world with an imaginative grasp of its history and the forces behind that history. Courses under this category will give students the opportunity to learn about major historical developments and how these developments have shaped contemporary life in all its complexity. Through the study of particular periods and places, students will gain both "historical perspective" and some skill at the methods of historical inquiry. Common to all courses in historical analysis is the presumption that the categories of social analysis are themselves historical and historically contingent, and that to understand the past requires entering imaginatively into languages, institutions, and worldviews quite different from those of the present day.

### Student Learning Outcomes - Historical Perspectives (HP)

- Study the signature events that occurred within the time and geographical expanse specified in the course description.
- Explore the way primary sources reveal the ideas and values of people living in a different time and place.
- Appreciate human diversity through examination of class, race, and/or gender hierarchies of the past.
- Interpret the way past events and belief systems have contributed to and differed from the values and intuitions of the present.

## Humanities

The humanities arose in Renaissance universities as an alternative to theology and consisted mainly of Greek and Latin literature, which dealt with any and every aspect of human life; they became central to the liberal arts. Since the nineteenth century, the humanities also have embraced modern literature, the creative arts, philosophy, and history.

They focus on questions about meaning, ethics, aesthetics, and the foundations of knowledge; they are as concerned with form as with content. Courses under this category explore major works, ideas, and traditions that have shaped our understandings of the world and our sense of self at different times and places while examining the distinctive methods of humanistic inquiry.

### Student Learning Outcomes - Humanities (HUMA)

- Engage with literary, philosophical, artistic and/or cinematic works that explore some aspect of the human condition.
- Pose questions about the nature of being, ethical imperatives, aesthetics, or epistemology.
- Write a critical essay investigating a focused question raised by a literary, philosophical, or artistic work.

## Physical Science

The physical sciences seek to discover the components, structures, properties, and laws of the material world from subatomic particles to the entire universe. Through them, we appreciate both the wondrous complexity of the world and its order. The traditional domains of chemistry, physics, astronomy, cosmology, and Earth sciences are the foundations of knowledge in numberless arenas of human activity, while the intersections between these domains and the biological sciences yield astonishing discoveries about living organisms. All courses will provide some understanding of the methods of scientific inquiry, seek knowledge about the physical universe, and evaluate claims in both technical literature and popular media.

### Student Learning Outcomes - Physical Science

- Learn about aspects of the physical world specified in the course description.
- Demonstrate an understanding of fundamental concepts in the physical sciences.
- Use mathematical models and computational thinking to understand the physical world.
- [Additional Student Learning Outcomes for PS DLAB courses](#)
- Communicate scientific information effectively in written and oral formats.
- Summarize, analyze, and evaluate scientific data.
- Explain how hypotheses are tested or rejected.
- Master appropriate laboratory and field techniques commonly used in physical science.

## Social Science

The social sciences investigate human beings and their societies from the smallest bands of hunter gatherers to huge nations and global institutions. Everything from marriage and kinship to law and crime, from ceremonial gift giving to mortgage derivatives, from witchcraft to health insurance, from ancient ritual to modern communication, is a subject of a social science. Courses under this category will explore different theories,

methods, and data-gathering techniques as they apply to different social issues. They also will examine how individuals create, interact with, and are shaped by social groups and institutions, including those associated with politics, economics, religion, family, the arts, health, and education.

#### **Student Learning Outcomes - Social Science (SS)**

- Apply quantitative and/or qualitative data to investigate the dynamics of social interactions.
- Develop testable hypotheses regarding the social and cultural world they examine.

### **World Cultures**

Living in a world of many cultures has created both cooperation and conflict across borders, between and within nations. This category, which includes intermediate language courses and approved study abroad programs, encourages students to become cosmopolitan citizens by gaining knowledge and understanding of cultures other than those of the United States. Students will learn to recognize others' values and, ultimately, accept the many ways in which we all are human. They are thus encouraged to see their own culture with fresh eyes and know the sheer diversity of human outlooks.

#### **Student Learning Outcomes - World Cultures (WC)**

- Explore human diversity by studying societies and cultures outside the United States.
- Recognize the diversity and validity of unfamiliar cultural values.

### **Discovery Lab (DLAB)**

A course that fulfills the laboratory requirement in the Discovery Program should provide students with hands-on experience that reinforces, supports, and/or augments the material presented in other formats throughout the course. It should teach them how the discipline uncovers and validates knowledge; how phenomena are understood through observation, experimentation, and quantitative analysis; how data are collected and interpreted; and how hypotheses are created, tested, modified, confirmed, or invalidated. These experiences also are likely to provide insights into how scientific theories and models are constructed. A significant portion of specified course time must be devoted to laboratory and laboratory-related activities. For example, a conventional model for a 4-credit laboratory course consists of three 50-minute (or two 75-minute) weekly lecture periods plus one 80-minute weekly laboratory period. However, courses may include different and/or innovative laboratory experiences provided the total amount of course and laboratory time is comparable.

#### **Student Learning Outcomes - Discovery Lab (DLAB)**

- Explain phenomena through observation, experimentation, and quantitative analysis.
- Collect and interpret data.
- Create, test, modify, confirm or invalidate hypotheses.
- Master appropriate laboratory and field techniques used in the biological and physical sciences.

- Communicate scientific material effectively in written and oral formats.

## **Discovery Program courses**

The complete list of Discovery courses can be found on the [Registrar's Office website](#).