

**DEGREE/PROGRAM CHANGE
FORM C
Form Number: C1087**

Fields marked with * are required

Name of Initiator:	Sarita Jo Cargas	Email:*	cargas@unm.edu	Date:*	08-25-12
Phone Number:*	505 277-4211	Initiator's Title*	Lecturer III: UC University Honors Program		
Associated Forms exist?*	Yes ▼	Faculty Contact*	Rosalie Otero	Administrative Contact*	Lee Clark
		Department*	U Honors	Admin Email*	laclark@unm.edu
		Branch		Admin Phone*	277 4211

Proposed effective term:

Semester	Fall ▼	Year	2013 ▼
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Course Information

Select Appropriate Program	Undergraduate Degree Program ▼
Name of New or Existing Program	* University Honors - Phys/Nat Sci Core Course
Select Category	UG Core Course ▼ Degree Type
Select Action	New ▼

Exact Title and Requirements as they should appear in the catalog. If there is a change, upload current and proposed requirements.
See current catalog for format within the respective college (upload a doc/pdf file)

[Phys:Nat syll.docx](#)

☒ **Does this change affect other departmental program/branch campuses? If yes, indicate below.**

Reason(s) for Request * (enter text below or upload a doc/pdf file)
It is expected that this change will be implemented by all branch campuses who offer honors courses.

Upload a document that includes justification for the program, impact on long-range planning, detailed budget analysis and faculty workload implications. *

[Form C core course Science.docx](#)

Honors College Core Course in Physical and Natural Sciences

Science in the 21st Century

HONS 211 4CH

Brief Description for Catalog

This course introduces principles from scientific fields such as biology, chemistry, physics, geology, and astronomy. It will familiarize students with scientific inquiry and an understanding of the role of the sciences in society and culture.

Course Description

Science in the 21st Century will introduce students to important elements of the scientific method and scientific inquiry in one or more of the basic sciences. It will also introduce students to the interdisciplinary nature of scientific inquiry. The “theme” may change from year to year allowing for a diverse set of faculty to participate and to offer different foci over time through the honors curriculum. In this way, students could take more than one segment of this course. The theme outlined here is “Origins”. This topic is very broad and so, can encompass a variety of sciences. This core class will include a laboratory component and will provide students with important hands-on and field experience. Students will be required to take the lab segment, and so the course is designed as a 4 unit, single class. While several labs will take place on campus, there will be required field trips. It is intended that, as an Honors course, labs will be taught by the faculty conducting the seminar portion of the course, and this course is intended to be team taught by specialists in the areas covered.

Student Learning Outcomes: Once students successfully complete this course, they should be able to:

- Demonstrate an understanding of the scientific method and how it is practiced in the disciplines represented in this theme
- Be familiar with the practice of science as a whole, such that they can use this understanding to operate as informed citizens and leaders of the future
- Be familiar with maintaining appropriate lab documentation
- Be familiar with the fundamental principles that inform each of these topics
- Be able to design and carry out a scientific experiment

Required Texts and Materials:

Students will use both established texts and primary literature relevant to the field under study. These will vary depending on the field of study. Examples from biology of these may include

A review paper from the geological literature

A paper on the topics from astrophysics

Origin of Species

Mendel’s experimental paper

An experimental paper from the natural selection literature—Bill Rice’s paper on selection

Sample Requirements and Assignments:

- Students will read various texts, primary literature and other supplemental readings.
- Students will discuss, debate, and deliberate ideas based on reading assignments.
- Students will be able to identify, describe, and explain the scientific method and the practice of science in the fields represented
- Students will articulate how belief, assumptions, and values influence the practice of science.
- Students will articulate the major theories currently accepted and/or debated as to the origins of the universe and life on the planet in the 21st century.
- Students will apply the knowledge base of the physical and natural sciences to identify, describe, explain, and critically evaluate these major theories
- Students will maintain lab notebooks that will record all lab work conducted both in the lab setting and during field trips observe the natural world through field trips
- Students will apply the appropriate documentation methods used by practitioners

Course Calendar

Module I	Week	<u>Introduction and How Science is Done (1-4 weeks)</u>
	1	Introduction and the scientific method
	2	Science and Pseudoscience
	3	How to think about Science
	4	Student Projects
Module II	Week	<u>Formal Analysis: Origins of our Solar system and our planet (5-7 weeks)</u>
	5	Solar System Formation and Evolution
	6	The Earth-Moon System
	7	The Geological Record
Module III	Week	<u>Formal Analysis: Origins of Life (weeks 8-13)</u>
	8	How did life begin?— <i>Revealing the origins of life</i> video
	9	The microbial world—the origin of complex life
	10	The history of life on Earth--phylogenetics
	12	Adaptation and Natural Selection
	13	DNA and the concept of the gene
	14	Moving to a synthetic understanding of origins
Module IV	Week	<u>Building Presentation and Writing Skills (15 week)</u>
	15	Student presentations
Lab	Week	<u>Skills and the process of science:</u>
	1	The scientific method—designing an experiment
	2	How to evaluate the outcomes of experiments
	3	Reading of seminal papers—how to and how to evaluate
	4	Writing science—what is an experimental paper and what is a review?
	5+6	Astronomical Field Trip—evening field trip required
	7	Geological Field trip—Examples of different geologic epochs in New Mexico
	8	Field trip to the Natural History Museum—Origins
	9	The cell and its parts
	10	Microscopes and the microbial world

	11	Diversity—how it is measured and described
	12	Experiments that demonstrate adaptation and natural selection—students must find and recommend
	13	DNA extraction, models and genes
	14	Student projects (experiments designed and carried out)
	15	Student projects (experiments designed and carried out)

Assessment:

Class participation (Both Seminar and Lab)

Students will read and discuss seminal papers in each field

Students will work collaboratively to lead a discussion on the differences between the sciences and junk science

Working collaboratively, students will present the basics of experimental design and evaluation

1 end of semester research project—written and presented orally

1 in-lab experiment—students will work collaboratively to lead the lab for one experiment or field trip

Plan for Assessment of Courses in the UG General Education Core Curriculum
Template

Department Name: *Honors College*

Dept. Assessment Contact:

I. Course Number and Title: #211 *Science in the 21st Century*

A. Course Goal #1: Knowledge

SLO 1: Demonstrate an understanding of the scientific method and how it is practiced in the disciplines represented in this theme

Addresses UNM/HED Area III , Competencies, 1 , 5 ,

SLO 2: Be familiar with the fundamental principles that inform each of these topics

Addresses UNM/HED Area III , Competencies, 1 ,

B. Course Goal # 2. Skills

SLO 1: Be able to design and carry out a scientific experiment

Addresses UNM/HED Area III , Competencies, 1 , 2 , 3 , 4 ,

C. Course Goal #3: Responsibility.

SLO: Be familiar with the practice of science as a whole, such that they can use this understanding to operate as informed citizens and leaders of the future

Addresses UNM/HED Area III , Competencies, 2 , 3 , 5 ,

II. How will evidence of learning be gathered?

1. What: For each SLO, identify one or more data collection points in the course. Preferably these are samples of student work already in the syllabus.

2. How: For this course, describe:

a. Will the assessment include evidence from all sections of the course, or some subset of sections? Address the validity of any proposed sample of sections.

All sections will be included

b. Will the assessment include evidence from all students in the assessed sections or a sample? Address the validity of the proposed sample of students.

All students will be included

- c. Will all student learning outcomes for this course be measured every time? If not, how will the complete set of SLOs for the course be subset for measurement a chunk at a time?

SLOs will be individually assessed on a 3-year cycle (one course goal per year)

3. When:

- a. Is assessment of student learning outcomes already underway in this course? If not, in what term (e.g., Fall 2007) will assessment of student learning outcomes commence in this course?

No, assessment will begin once this course is being taught.

- b. With what frequency (e.g., every term, a different term each year, etc.) will assessment of student learning outcomes take place in this course?

SLOs will be individually assessed on a 3-year cycle (one course goal per year).

- c. On what cycle will the complete set of SLOs for the course be assessed (e.g., all outcomes every term, a subset of outcomes each term with all outcomes every academic year,...)?

3 years

4. Who:

- a. Who will administer the measure or collect the student products?

The faculty of record each semester

- b. Who will review/mark the products relative to the SLO statements and established qualitative criteria?

Faculty of record

- c. Where rubrics (or evaluative criteria) have been developed for assessing student learning for a given outcome, please enclose a copy of the rubric/qualitative criteria.

Rubrics will be developed by the faculty of record. Since this core course is intended to be team taught and to be designed around a theme such as that mentioned here, it is appropriate that the team set the rubric.

D. What process will be used to analyze/interpret the assessment data for this course?

1. Who will participate?

An Honors College faculty committee

2. How will recommendations be communicated?

a. In a memo to the faculty

- b. *Included in the annual report*
- c. *At a semi-annual meeting of Honors faculty addressing assessment and pedagogy*

3. When will interpretation and recommendations take place?

In the weeks immediately following the end of the term

E. How will results of assessment in this course be used for improvement?

Note: This process may be different for each course or the same for all courses in the dept.

1. Describe the process for consideration of the implications of assessment for change:

- a. to assessment mechanisms themselves,

As the number of offerings and section change, assessment mechanisms may need to change (evidence from students, sections and assessment scheduling).

- b. to course design, and/or

Those assessing the course may suggest changes in course features:

Length of class sessions.

Frequency of class meetings

The allotment of time to course topics

- c. to pedagogy

Those assessing the course may suggest changes in teaching methods

Reading requirements

Discussion facilitation methods

Number and nature of assignments and oral presentations

The configuration of class activities (field, lab, short lecture, small group discourse, writings, etc.)

2. Who participates in this discussion/decision making.

Honors faculty members

3. How will recommendations be communicated? *Orally and in memo form*

4. When will this discussion/decision making take place? *Following the meeting held to discuss*

Required attachment for adding core course as required by the instructions,
“Criteria for adding core curriculum courses”

- a. Statement of the core area course will fit in, rationale: how will course benefit UNM students, why does it belong in the core curriculum:

This new core course in the Physical and Natural Sciences area will benefit honors students by helping them remain and complete the Honors College curriculum. Currently too many students are forced to drop the program due to scheduling difficulties and problems fulfilling all their university graduation requirements including those for their major, minor, honors, and university core requirements. Allowing them to count a number of specific honors core courses towards their honors requirements will alleviate one of the more common problems for honors students. The honors version of the core course will also enhance the university core curriculum because it will introduce intense foci on interdisciplinarity and primary source materials.

- b. Impact statement on effect course may have on other departments/courses currently in core:

“This new core course will minimally affect the number of students who take a pre-existing university core course. Honors students only make up approximately ten percent of the university population. Furthermore, Honors students are likely to take many of their core courses in the disciplines because those courses are prerequisites for courses in the students’ majors.

- c. Current and predicted enrollments for the next 3 yrs.

We predict these courses will fill at the Honors class maximum size of 17 students per course.

- d. Budget/Faculty Load Statement: budget impact statement, resources (faculty/facilities) that the department has for teaching the course, memo from Dean or College Curriculum Committee regarding financial support for 5-10 yrs.

Budget impact statement:

See below.

Resources (faculty/facilities) that the department has for teaching the course:

The current honors full-time and adjunct faculty are prepared to teach these courses. The projected budget for the new Honors College projects hiring 3-6 new faculty over the next several years and they also will be a resource to teach the new core courses.

Memo from Dean or College Curriculum Committee regarding financial support for 5-10 yrs: See below.

For "Budget Impact Statement"

APPENDIX E



APPENDIX E Cost Estimation and Sources of Funding

COST ESTIMATION

Faculty	
Dean	\$ 160,000
Associate Dean - SAC and course buy-out	40,000
T/TT Faculty(1)	75,000
T/TT Faculty	75,000
T/TT Faculty	75,000
Honor Fellows (6) - 4 course buyouts/year @ \$7000/course (2)	168,000
Lecturer (1)	45,000
Part Time Instructors - 12 courses/year @ \$3,800/ course	45,600
	<u>\$ 683,600</u>
Staff	
Accountant I	\$ 40,000
Admin I for Deans Office	27,000
Development Associate	54,000
Admin I for Scholarship Office	27,000
CAELD, NISF Program Specialist	45,000
Academic Advisors (4)	144,000
	<u>\$ 337,000</u>
Benefits	
Fringe Benefits (29%)	\$ 289,134
Total Salary and Benefits	<u>\$ 1,309,734</u>
Other	
Recruitment Budget	\$ 25,000
Supply and Equipment Budget	50,000
	<u>75,000</u>
Total	<u>\$ 1,384,734</u>

Tuition & Funding Formula Assumptions

Assumptions:

- 90 new students to the University that graduated within the top 25% of their class.
- Each student averages 26 credit hours per year to graduate in 5
- 85% retention rate
- Half of a student's credit hours are lower division/half upper
- Instruction/Instructional Support Expenditure calculation used by the State Funding Formula.

Gross Tuition & Formula Revenue

Freshman Year 90 students * 26 ch * \$151.48 = \$354,463
 Sophomore Year 77 students * 26 ch * \$151.48 = \$303,263
 Junior Year 65 students * 26 ch * \$242.96 = \$410,602
 Senior Year 55 students * 26 ch * \$334.44 = \$478,249
 5th Year Senior 45 students * 26 ch * 334.44 = \$391,295

Total Gross Tuition & Formula Revenue = \$ 1,937,872

Notes: (1) Market Salaries for tenure stream faculty vary widely depending on discipline; \$75000 is an estimated average that would include humanities, physical and social sciences
 (2) Course buy-out costs will depend on current college policies. For example, A&S is moving to a policy that charges 1/8 of annual salary for one course buy-out.



MEMO

TO: Faculty Senate Curriculum Committees
FROM: Kate Krause, Interim Dean, University College
RE: Support for Core Courses in Honors
Date: July 10, 2012

Last spring the Faculty Senate approved the creation of an Honors College. One component of the proposal was the establishment of courses in Honors that satisfy Core Curriculum requirements by delivering content that addresses the learning outcomes established for each disciplinary area. The Honors faculty have developed this course to allow Honors students to satisfy a core requirement in [the social and behavioral sciences]. The long-term plan for the Honors College is to develop courses in each of five (?) core areas.

These courses will be taught by current tenure stream Honors faculty, new hires in Honors, adjunct faculty with special expertise in the area and Honors Fellows whose tenure homes are in a specific discipline. The budget established for the Honors College is sufficient to compensate these faculty members and, in the case of Honors Fellows, to compensate their home departments.

University College is committed to supporting this course now and as the Honors College grows.