

UNIVERSITY of
NORTHERN COLORADO



*College of Natural and Health Sciences
School of Earth Sciences and Physics*

Dear Academic Structure Working Group of NHS,

The School of Earth Sciences and Physics proposes to split into two departments with two independent department chairs: a Department of Earth Sciences and a Department of Physics and Astronomy. We believe such a structure will enhance the faculty and academic offerings, as well as enhance formal access to the NHS Deans Office and personnel. Implementation target date for the proposed restructure is July 1, 2010.

The following addresses the items requested in the NHS Procedures for Developing Proposals for Academic Restructuring.

Does the proposal maintain academic program quality?

The department structure will serve to enhance program quality, not just maintain it. The complexity of Earth Sciences and Physics, in addition to their separate locations in Ross Hall, makes management within a school structure challenging and this directly impacts program quality. At present, the School is led by a director who is housed in Physics. The Director also serves as the Program Coordinator for Physics. Local management for Earth Sciences is provided by its Program Coordinator, but the Coordinator does not have signature authority or direct access to the Dean. The remoteness of the Director from Earth Sciences, the lack of recognition and authority for the role of the Program Coordinator, and the reduced attention to Physics resulting from the multiple responsibilities of the Director, all contribute to a less effective structure. Both programs would be better served by becoming stand-alone departments that are chaired by individuals who are in-house and who have a history with and expertise in those areas. Tasks requiring discipline expertise that are still performed at the program level include, but are not limited to:

- Determination of course offerings and course scheduling
- Initiation and implementation of curriculum and catalogue changes
- Program assessment
- Publicizing program and recruitment of students
- Hiring and evaluating adjunct faculty
- Hiring plan requests
- Coordinating the faculty evaluation process

- Convening faculty meetings
- Resolving student-faculty differences
- Web page oversight
- Daily trouble-shooting
- Leadership in the discipline

Communication is also negatively impacted when the unit's needs and goals are filtered through a school director from outside the unit. The most effective representation comes from an individual in the unit who interacts with the faculty, staff and students on a daily basis.

Is the proposal consistent with the University's Academic Plan?

The proposal supports Goal 1 of the Academic Plan, "Create an exemplary teaching and learning community", by providing effective, focused, and informed leadership at the discipline level. It also aids the recruitment and retention of a "superior faculty of teacher-scholars" (Goal 2). The faculty and staff believe the departmental structure more closely matches the actual functioning of the units in all important respects—and that a departmental structure will significantly improve morale. Recruitment and retention of new faculty and technical personnel is also hampered by the "program" designation, since a "program" is viewed as being less rigorous than a "department." The department structure will increase unit visibility in the academic and public communities (supporting Goal 5) and will remove potential detriment to undergraduate student recruitment and external peer review of publications and proposals. Students and parents have expressed concern that degrees from a "program" will not be given the same consideration by employers and graduate schools as degrees from a department. Creating separate and independent departments will give the proper and appropriate impression to outside parties, and will conform to the **widely adopted and accepted norm for the organizational structure in the sciences within a university.**

Other considerations

Despite the organizational structure implemented for Charting the Future, the culture of larger schools has not effectively replaced the strong and passionate culture of departments based on the two disciplines (indeed, students, faculty, staff, and all external constituencies routinely refer to departments and largely ignore the school structure). The academic programs in the two disciplines continue to be independently scheduled, offered, administered, and reviewed. Each has its own mission and goals. The unit facilities are separate and include instructional and research labs, office spaces, equipment, and materials. The budgets of Earth Sciences and Physics are completely separate with different organization numbers, but currently only the Director has signature authority for the two units. The administrative assistants in the two former departments have continued to manage the two separate offices during the academic year. When CEP was dissolved, the Physics assistant's time was spread out over the fiscal year in order to provide coverage for the School during the summer. The only commonalities are a

staff position -- a half-time Laboratory Coordinator and a small school budget. The Lab Coordinator position was created prior to the formation of the school and is still supported by NHS funds channeled through both budgets. The supervision of the coordinator was formerly shared by the department chairs and currently is shared by the Director and the Earth Sciences Program Coordinator.

The FTE in the two programs is shown in Table 1. According to the Provost's Restructuring Guidelines, it is sufficiently large to support two stand-alone departments.

Table 1. FTE by discipline

	Earth Sciences	Physics**
FACULTY/TA FTE*		
Tenure/tenure-track	7	6 (if Willis is replaced with a tenure-track hire)
Part-time	2-3	1
TAs	1.8	0.4
STAFF FTE		
Administrative assistant	0.56	0.83
Laboratory coordinator	0.25	0.25

**Detailed listings of faculty are included in Appendices A and B.*

***Total instructional FTE has ranged from 7.1 – 6.5 since fall 2005 because of an open line and sabbatical leaves.*

Physics and Earth Sciences each offer B.S. degrees, minors, and elementary education degree concentrations. In addition, Earth Sciences has M.A. program and Physics a pre-degree program for prospective engineers. These programs and the emphases for the B.S. degrees are listed in Table 2.

Table 2. Degree programs by discipline

	Earth Sciences	Physics
B.S. emphases	Environmental Earth Sciences Geology Meteorology Secondary Teaching	Astronomy Engineering Physics Liberal Arts Mathematical Physics Secondary Teaching
Pre-degree program		Pre-engineering

M.A.	Earth Sciences	
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The numbers of majors and degree recipients for each program for recent years are included in Appendices A (Earth Sciences) and B (Physics). In addition to teaching courses in the degree programs, both Earth Sciences and Physics provide other significant instructional support by teaching LAC and service courses. SCHR data by course level (lower and upper) are also found in the Appendices.

Details of Proposed Structure and Cost Analysis

A. Leadership

Using the Provost’s Restructuring Guidelines, a Department of Physics and Astronomy is a Tier I unit (one degree program and fewer than ten individuals in the unit). A Department of Earth Sciences is a Tier II unit since it offers two degree programs (a B.S. and an M.A.) and includes more than 10 individuals (including faculty, staff, and graduate students). Each unit would be led by a department chair having faculty status. The chairs’ compensation will include:

Chair Compensation	Earth Sciences	Physics
Instructional reassignment	2 courses per year	1 course per year
Monthly stipend for length of contract	\$150.00	\$0.0

The ESP Director has a 3 course reassignment which will be split between the department chairs.

The summer chair appointments present a challenge to maintaining cost neutrality. The Director’s 1.5 month summer appointment and the one course reassignment for the Earth Sciences Program Coordinator must fund two summer chairs as well the monthly stipend for Earth Sciences. We offer two alternatives, in order of preference, to address this challenge.

- 1) The summer appointment terms for the chairs are adjusted to fit the available dollars. Though NHS stipulates a minimum 1.2 month appointment for chairs, we ask that the College leadership reconsider this minimum in light of the fact that summer workload is task, not time driven. It is understood that chairs need to be available for advising, recruiting, budget management, salary issues, contracting, etc. during the summer. A contract between the University and the chair could be written to hold chairs to these duties. The length of the summer contracts would be based on the ratio PHYS/ESCI = 0.75. This ratio approximately reflects the ratio of contracted FTE for the departments as well as the OCE budgets. This results in summer appointments of 0.6 months and 0.8

months for the Physics and Earth Sciences chairs, respectively. (Note: These terms do not total to 1.5 months, in part, because of the need to fund the Earth Sciences monthly stipend).

- 2) A 1.2 month summer appointment is alternated between the academic year chairs of the two departments. The chair with this appointment would be responsible for management of both units during the summer. The chair not holding the appointment would receive a stipend equivalent to 0.2 – 0.3 months for consultation, signing of documents and orders, and attendance at Leadership Team meetings. This model maintains the independence of the units during the academic year and provides administrative summer support that satisfies the minimum set for the college. It also avoids issues with chairs needing to hold signature authority on accounts in both departments.

Though not ideal, both alternatives support the department structure without violating cost neutrality. Calculations demonstrating neutrality (actually, a small amount of savings) using the salaries of the likely candidates for the chairs are included with this proposal. Once budget conditions permit, each chair summer appointment should convert to the 1.2 month minimum.

B. Staff

The 0.5 FTE Technician/Lab Coordinator I person would continue to work 0.25 FTE in Earth Sciences and 0.25 FTE in Physics (contract split between Earth Sciences and Physics and supervised/evaluated cooperatively in Earth Sciences and Physics). Each department would retain the FTE assigned to administrative assistance (0.83 FTE for Physics and 0.56 FTE for Earth Sciences). To provide summer coverage for Physics, its assistant will continue her current schedule of four half-days each summer week. The assistant in Earth Sciences currently works from mid-August to mid-May, but some of her hours will be reallocated to the summer to provide two hours of coverage three days a week. Proposed schedules for both assistants are included. Both Physics and Earth Sciences have used their student hourly allocations to pay summer office assistants and, budgets warranting, will continue to do so.

C. Budgets

Since the OCE, Foundation, Research Incentive, and course/participation fees budgets are attached to the programs and not the school, the re-creation of two departments will have no impact, other than the need to have signature authority for Earth Sciences accounts reassigned to its chair. There is a small budget for the operation of the school (\$1625.00) which will be split evenly between the departments. The travel funds allocated to the Director (\$1000) will reappear as travel funds allocated to the Physics OCE account as part of the Provost's faculty travel support.

APPENDIX A - EARTH SCIENCES DATA

Table 1. Earth Sciences faculty members in order of rank and then seniority (2009-2010)

William Hoyt	Tenured	Professor	Oceanography
Steve Anderson	Tenured	Professor	Geology /MAST Director (one course assigned per semester)
Denise Battles	Tenured	Professor	Geology / NHS Dean (Non-Teaching)
Gary Huffines	Tenured	Associate Professor	Meteorology
Joe Elkins	Tenure-Track	Associate Professor	Geology / Science Education
Lucinda (Cindy) Shellito	Tenure-Track	Assistant Professor	Paleoclimatology
Paul Nutter	Tenure-Track	Assistant Professor	Meteorology
Emmett Evanoff	Tenure-Track	Assistant Professor	Geology / Paleontology
Graham Baird	Tenure-Track	Assistant Professor	Geology / Tectonics
Rita Leafgren	Non-Tenure-Track	Instructor	Elementary Science Education
Libby Prueher	Non-Tenure-Track	Instructor	Geology
Ken Hopkins	Non-Tenure-Track	Emeritus Professor	Geology / Glaciology

Table 2. Number of degrees awarded in Earth Sciences

Type	Emphasis	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	Average
Bachelor	Environmental	9	7	7	10	5	7.6
	Geology	0	2	3	4	5	2.8
	Meteorology	10	13	11	8	7	9.8
	2 nd Ed.	1	4	3	5	1	2.8
Graduate		7	4	4	0	2	3.4

Table 3. Earth Sciences student credit hour production and course FTE

		2004/2005		2005/2006		2006/2007		2007/2008		2008/2009	
		Credits	Student FTE	Credits	Student FTE	Credits	Student FTE	Credits	Student FTE	Credits	Student FTE
Undergrad	Lower	5,847	195.0	5,645	188.2	5,843	194.5	5,566	185.5	5,498	183.3
	Upper	933	31.1	960	32.0	825	27.5	861	28.7	727	24.2
Graduate		247	8.2	191	6.4	169	5.6	184	6.1	196	6.5

Table 4. Earth Sciences majors by year

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
# of majors	132	134	155	133	112	123

APPENDIX B - PHYSICS DATA

Table 1. Physics faculty members in order of rank and then seniority, 2009-2010

Richard Dietz	Tenured	Professor	Astronomy/Physics
Robert Walch	Tenured	Professor	Physics
Cynthia Galovich	Tenured	Professor	Physics
Ruwang Sung	Tenured	Professor	Physics
Jan Chaloupka	Tenure-Track	Assistant Professor	Physics
Willis replacement?	Tenure-Track	Assistant Professor	Physics/Physics education
Matthew Semak	Non-Tenure-Track	Instructor	Physics
Dennis Agosta	Non-Tenure-Track	Instructor	Astronomy/Physics
Courtney Willis	Non-Tenure-Track	Emeritus Professor (pending)	Physics/Physics Education

Table 2. Number of degrees awarded in Physics

	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	Average
Physics B.S.	10	16	10	11	7	10.8

Table 3. Physics student credit hour production and course FTE in AST and PHYS prefix courses

		2004/2005		2005/2006		2006/2007		2007/2008		2008/2009	
		Credits	Student FTE	Credits	Student FTE	Credits	Student FTE	Credits	Student FTE	Credits	Student FTE
Undergrad	Lower	1845	61.5	2102	70.1	2253	75.1	2200	73.3	2075	69.2
	Upper	976	32.5	911	30.4	2200	21.8	653	19.3	578	19.3

Table 4. Enrollment and student credit hour averages for SCI prefix courses, 2005-2006 to 2008-2009.*

Course	Course Title	Average enrollment per offering	Average SCHR per offering	Average SCHR per year
SCI 106	Introduction to Spaceflight	120	360	720
SCI 109	The Cosmos	197	591	1182
SCI 265**	Physical Science Concepts	96	192	384
SCI 465	Principles of Scientific Inquiry	28	84	168
TOTAL			1227	2454

*OBIA data for these courses were not available by year. The data were inaccessible since they were mistakenly included in the University College database, not the College of Natural and Health Sciences database. The results shown were derived from workload summaries. They should be added to the lower level SCHR in Table 3.

** Instruction is split with Chemistry

Table 5. Physics majors by year*

	2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
# of majors	86	83	67	61	60	65

*The decline in majors from 2004-2005 to 2005-2006 reflects that the fact that pre-engineers were no longer being counted as physics majors.