

**Recommendations from the Academic Futures Working Group on
Interdisciplinary Education, Research
and Creative Works**

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I. Background and Philosophy

A. Defining Interdisciplinarity and Why It is Important for Us

The Academic Futures process made it clear that the campus endorses interdisciplinary education, research, and creative work as a priority for the campus. The report states that the AF committee found that the campus does “Affirm[s] interdisciplinarity as a key value in our teaching, research, and creative work” and calls upon all parties to “Expand our status as a dynamic center for interdisciplinary teaching, research, and creative work by eliminating impediments to that work and by clearly rewarding these efforts” (web link). Since the 1960s and the formation of its first institutes, CU has built an international reputation for knowing how to do interdisciplinary work in original, productive ways. The AF process celebrated this success but insisted that we cannot rest upon our laurels. We must strengthen and broaden our interdisciplinary efforts. We affirm that we need to empower our campus to more easily engage in interdisciplinarity through education, scholarship and creative work.

Interdisciplinary research, creative work, and education have been distinctive strengths at CU for decades and have increasingly become important goals for universities globally in the last decade. In part, this is due to the importance of interdisciplinary approaches for contributing to new knowledge and to creative problem solving. However, interdisciplinarity is a supple term, meaning different things to different people in different disciplines and combinations of disciplines. How interdisciplinarity operates, the nature of the questions it addresses, and the expected outcomes of that work vary across paradigms. In some areas, individuals themselves can do interdisciplinary work, while in other areas, researchers from a dozen disciplines come together to approach a large complex problem. Although the motivation for an interdisciplinary approach is often identified as arising from the fact that “problems such as climate change are complex” or that “key problems such as the nature of the good life are perennial,” in many other instances, interdisciplinary approaches are simply what’s needed next in the discovery process. Some efforts—theatrical productions, say—have always by necessity been interdisciplinary. Other scientists, scholars and artists only come to interdisciplinarity after they have established themselves as disciplinary specialists.

If interdisciplinarity is going to be a hallmark of our campus, then we much support and celebrate this work in all of its differing forms. We have been charged by Academic Futures to explore ways of taking all of the interdisciplinary strengths at CU to a broader, more encompassing level, to strengthen what is already a competitive advantage for research into a hallmark of the campus as a whole. We endorse the full range of interdisciplinary efforts, from the work of the individual scholar conducting an

interdisciplinary inquiry (for example, an expert in the history of labor law) to teams of experts bringing together a large number of people from different disciplines to tackle a common problem. We must recognize that there are long-standing disciplines that are inherently interdisciplinary (classics, for example) and also new practices that emerge as we consolidate various points of view into an emergent intellectual framework. If interdisciplinarity is going to be a hallmark of CU, then we must support and celebrate interdisciplinary work in all its differing formations.

Our goal is to achieve innovative solutions and advance knowledge to explore uncharted problems and questions. The process and practice of interdisciplinarity is intentional, often communal, and deeply rooted in the important foundations of the contributing disciplines. Some researchers have argued that, additionally, interdisciplinary work creates a change in the scholarly framework itself, leading to fundamentally new approaches, though others argue that this simply means that some interdisciplinary efforts become organized as new disciplinary research. M

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public CU serves. Interdisciplinary work is one key way of addressing problems that society finds most relevant.

- 2) Recognize and affirm that education itself is a public service: The public

that have develop crucial methodologies for investigating particular kinds of questions and challenges. We want to make sure that we embed our interdisciplinary educational work and training, in particular, within this context. We have an obligation to ensure that there is rigor and to make sure that what our students will and will not be qualified to do at the end of their course of study is understood by all- students, employers, and faculty. It is not only critical that we identify a core set of skills and capabilities at the end of our students' time here, but that we also recognize that this is an opportunity for those doing disciplinary work to bring that work into the interdisciplinary arena.

That said, the Committee has become well versed in the many ways that existing policies, practices, and overall operations may block or limit interdisciplinarity. From faculty recruiting to teaching schedules to resources needed to team teach, our model of working is geared towards the unit of the separate department, school, or college. Ownership for promoting interdisciplinarity begins with faculty, supported by their departments. If those who vote on promotion, tenure and awards don't fully appreciate interdisciplinarity and understand its value, then faculty are less likely pursue interdisciplinary work, particularly early in their career. Additionally, departments and their faculty control curriculum; control course offerings, their sequencing, and their required prerequisites; are the ones to recruit and hire faculty (both tenure track and non-tenure track), who may or may not be capable of or interested in engaging in interdisciplinary work; and serve as the core units for annual review and promotion and

Membership could include representatives from each school, college and institute, as well as other key units on campus.

The unit champion will work with the network to establish a strategy for bringing about shifts in culture and operational changes within their unit.

Membership could include operations and budget experts from administrative units (e.g., enrollment, budget and finance, OIT, facilities operations).

Drawing upon the campus-wide network and pursuing collective goals, members are charged by their units with the local implementation of the campus interdisciplinary strategy and coordination of interdisciplinary work.

Additionally, representation from Research and Innovation, the Graduate School, Faculty Affairs and other leadership entities could ensure continued coordination and support from campus leaders.

Together, the Champion and the Operational Interdisciplinary Network represent campus in all aspects and at all levels. They can comprehensively and deliberately overcome campus challenges, by, for example, creating a model for effectively crediting team teaching, establishing approaches for ensuring spots for non-majors in courses that are included in interdisciplinary programs and certificates, or identifying necessary infrastructure to support interdisciplinary work throughout the campus. They can also take on some of the more foundational campus challenges, such as integrative team teaching spaces, the interface with online and distance education opportunities, and solutions to challenges with scheduling and enrollment.

B. Creating the Continuum of Interdisciplinary Education

In general, when we talk about this cross-campus venture, we are looking at an overlay of two or more disciplines in the context of a course, a program or a degree. How particular courses are taught ranges from a single faculty member bringing in

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Environmental Studies, Applied Mathematics, Classics, Ethnic Studies and others have interdisciplinarity at the center of their work. We would anticipate their engagement across this continuum as it already speaks to their core values.

5) Academies [See Below]

Big Idea: Teaching Academies, a counterpart to our Research Institutes

Recommendation: The campus should establish Academies, the education equivalent of research institutes, to serve as a hub and community home for large

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Offers advice and support to students searching for disciplinary majors, homes for interdisciplinary majors and offerings, and research opportunities.

Becomes a community for students (both disciplinary and interdisciplinary), as well as non-degree learners, alumni, professional learners, etc.

An important tenet of Academies is that there wouldn't be very many of them-- Academies are reserved for large interdisciplinary educational efforts, supporting an integrated array of educational programs, degrees and tracks that cannot be provided for in other ways (e.g., through individual certificates, majors and minors). They are not designed to replace or crowd out interdisciplinary programs or degrees. Academies are approved by a process created by the Champion that will include regular reviews including external evaluators.

What do Academies need?

- Leadership (e.g., Director, Co-Directors)

- Faculty Advisory Committee

- Staff dedicated to serving our students and helping the community overcome campus obstacles

- Faculty service, time, and buy-in

- Incentives for departments and other units to participate: access to resources, tuition credits, staff, degree-granting abilities, and teaching hours with faculty and instructor lines

Big Idea: Creating a Marketplace for Student Credit Hours

Recommendation: The Provost should change the student credit hour (SCH) model for campus to allow faculty, both tenure track and non-tenure track, to retain a fraction of those hours as currency to

C. Interdisciplinary Research and Scholarship: Building on our Existing Interdisciplinary Strengths

The University of Colorado Boulder is internationally recognized for its interdisciplinary research, based largely - though not exclusively - on the success of its research Institutes and centers. The success of the Institutes, in particular, sometimes with the ongoing support from an anchor federal agency, has become a recognized model for promoting interdisciplinary scholarship by other universities. In particular, it should be noted that most of the research institutes on campus fall in the area of the natural science and engineering, driven in part by the requirements and directions created by federal funding opportunities. There is increasing interest and activity in interdisciplinary offerings across the entire campus, reaching well beyond the research institutes.

Our goal is for the university to support the entire array of approaches and paradigms to interdisciplinary research and creative works, highlighting and broadcasting the success of the entire continuum. Additionally, the campus should work to codify and transparently communicate how interdisciplinary entities can be established. While there has been substantive work in the area when it comes to campus centers, thanks to the work of RIO and the Graduate School, more work could be done when it comes to forming Institutes and perhaps other kinds of configurations. Likewise, the committee supports regular review of centers and other interdisciplinary entities, including identifying criteria and mechanisms for sunseting programs.

Big Idea: Creating an Interdisciplinary Incubator

Recommendation: CU should create an interdisciplinary incubator, a physical space where teams of faculty could be co-located for 12-24 months to catalyze progression a targeted theme of research, scholarship, or creative work. The definition of interdisciplinary would have to be very carefully constructed to include multiple paradigms from across the campus, particularly ensuring that areas of study that do not have significant

that the interdisciplinary project would be jump started during the incubation, with faculty returning to their home departments at the end of the period to continue the work with their team going forward. However, there will be room for time-limited projects that will have an impact on faculty and students moving forward without there being an ongoing administrative structure. Team selection and participation would be competitive.

Criteria for consideration could include:

What is the challenge, the question, or need?

Why does it require an interdisciplinary approach?

Why is now the right time to pursue this work?

What are the opportunities as a result of this work (e.g., funding calls, impact on scholarship, public research opportunities)?

What is the benefit to CU (e.g., increased reputation in an area)?

How could the work being proposed tie into our educational enterprise? Does it feed existing interdisciplinary educational efforts, including the Academies?

Interdisciplinary incubator teams run as two phases:

Phase 1: Support offered for 3-6 months to pursue question development and team integration [est. \$25k-\$75k per team, depending on size]. Some groups, anticipating a forthcoming call or because of the nature of their questions/needs, could choose to stop after Phase 1. Alternatively, groups could continue on to propose for space in the Incubator (Phase 2). Groups not successful in moving to Phase 2 could receive additional support and the opportunity to resubmit at a later call.

Phase 2: 12-24 months of support while the team works together (and interacts with other teams) in the incubator [est. \$200-350k per year per team on average with some teams needing much less and others perhaps more], with the associated budget and support outlined above.

Expectations of teams in the Incubator

- a) Campus leadership, at all levels, should firmly, clearly and consistently articulate the value of interdisciplinary efforts across the campus. Campus leaders need to empower those charged with supporting this work to be able to effectively carry out this vision.
 - b) Interdisciplinarity is an additional lens through which many university processes need to be viewed. Whether we are talking about new space and facilities or developing campus communication strategies, thinking about how we support interdisciplinary communities is key.
 - c) We need to recognize that strong interdisciplinary training may require **more time**—it will impact retention goals and creates funding challenges for students. One could envision developing one-year fellowships for students to take extra time, for example, or a process by which departments look at majors to pare down the pre-requisites or develop tailored versions for interdisciplinary programs, without degrading necessary depth of knowledge.
 - d) As part of moving towards a more interdisciplinary friendly campus, leadership needs to embrace and communicate a path that promotes a philosophy worthy of an R1 university, challenging campus to find academic stars of interdisciplinary work.
 - e) We should create a funding model for new interdisciplinary education offerings in the form of loans from the Provost and Deans to get new programs started that can be paid back from future earnings, based on increasing enrollments.
 - f) We should create a pathway for research faculty, once vetted, to authentically become part of our educational mission.
 - g) We must develop critical rewards structures by acknowledging and revisiting a faculty member's interdisciplinary interests at the time of hiring and during review and evaluations
 - h) We should coordinate and support development of new degrees and certificates. Champions, colleges and schools need to facilitate and provide support for the development and implementation of interdisciplinary education opportunities.
 - i) The campus should create funding for interdisciplinary research activities that are not able to secure external support. CHA and CARTSS are two possible vehicles for distributing such funding.
- 2) **Disciplinary unit control:** We are very good at doing our disciplinary-based work and have been effective at building structures that support it. Those same structures and cultures have a tendency to impede our progress on interdisciplinary efforts, particularly in terms of education. Examples of these challenges include:

a)

This approach could have an interdisciplinary TA pool and training grants. We should consider the first year as a campus project, rather than one taken up only by local units.

- c) Interdisciplinary work requires too many department-level negotiations by those proposing new programs. Colleges and schools need to facilitate interdisciplinary educational opportunities, both within and between units and across campus.
- 4) **Creating the best interdisciplinary campus for our students.** Many conversations of campus barriers came from the student point of view.
 - a) Student Awareness: It's a challenge to find the "right" populations of students, as we do not have clear mechanisms for getting the word out about new programs in order to gauge interest. We could harness RAPS and first-year seminars to raise awareness among students. Academies can have a role to play here as well.
 - b) Finding out what students want: Through surveys, interviews and data analysis, find the most common combinations of degrees, majors, minors, certificates.
 - c) Effective advising: We need to make sure that advisors are fully informed on interdisciplinary opportunities so they can encourage students to take courses outside their primary unit or that can be usefully linked to primary unit classes. Champions must create better communications between relevant units to facilitate interdisciplinary work.
 - d) Flexible admissions and major declarations: For example, consider an Integrated Cognitive Sciences (ICS) student admitted into Computer Science (CS) to do research on machine learning methods for brain imaging who decides he/she wants to move over to Psychology to put more emphasis on the brain imaging. Currently, they must resign their admittance in CS and reapply to Psychology, but the entire time they are students within ICS.
 - e) Personalized coursework and flexible breadth requirements. Interdisciplinary students may be supported by different breadth requirements, for example, emphasizing research methods from different departments.
 - f) Promoting interdisciplinary thesis committees. We should build models that go beyond the lone "external" reviewer.
 - g) Promote pathways for students to find their own interdisciplinary education. As indicated above, it would be relatively easy to find linked or clustered groups of courses that students could take at the same time or in the same year to create interdisciplinary connects—for example, a course on the history of slavery and a political science class on human rights.

- 5) **Overcoming operational challenges.** Beyond problems on the academic end, various processes emerged as the core of many campus barriers.

There are too many budgetary (and other process-related) obstacles to creating interdisciplinary programs—from certificates to degrees—that lie outside departments at both the graduate and undergraduate levels. It is even more difficult to broker relationships between different schools and colleges. Overall, funding distributions around student credit hour production reward one kind of dit hou M buvedM “