

**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 must 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 formations.

This committee reaffirms the AF recommendation that, at CU Boulder, we embrace and celebrate interdisciplinarity in all its aspects as a major way to improve both our scholarship and teaching. Rather than dictating one notion of interdisciplinary activities, we recommend steps to ensure the university offers an educational and research climate where different individuals and teams can find their own exciting and productive ways to advance knowledge and education.

B. Interdisciplinarity, the Public University, and Serving the Public Good

The Academic Futures report has, as its cornerstone, a recommitment of our university—as a public research institution—to the public or common good. This is a goal for all our work on campus, and the Committee believes that many kinds of interdisciplinary scholarship and education can help us move toward that goal. Committee discussions emphasized the importance for our university ***to develop and promote individuals who can work for social good in innovative ways***. How we do this emerged in several broad themes:

- 1) Engage the public through our scholarship and creative work: The professional work we do within and for our academic communities can be brought a step forward by connecting and translating that work to the public, through deliberate community engagement. There are myriad forms of public scholarship, but interdisciplinary efforts that bring together individuals in research communities to co-create new knowledge provides one important way to work with and for the

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 university has a mission of supporting the education of our citizenry. This will be as true of interdisciplinary education as it is of other learning efforts on campus.
- 3) Finding solutions for socially relevant problems: Working on societal problems is a critical gateway to the public.
- 4) Instilling in our students social responsibility as a core tenet. Again, while this is true of our educational goals as a whole, it is important to reassert them as part of our interdisciplinary efforts.

Interdisciplinarity has a central role to play in all of these themes, but it is equally important to remember that there can be disciplinary components as well. For example, many of our greatest societal challenges require an interdisciplinary approach to find solutions - and yet, sometimes a single disciplinary discovery can transform knowledge and uncover a solution. Moreover, it is important to remember that many forms of vital interdisciplinary work may not necessarily take place in the public eye.

C. Campus Perspectives on Interdisciplinarity

The Committee acknowledges a core reality of our university at this juncture: namely, there are differences across our campus in perspectives towards and priorities around interdisciplinarity. A key challenge for the university, then, is to create cross-unit policies, approaches and opportunities that promote, facilitate, and celebrate new interdisciplinary work. In the process, the campus needs to ensure that it continues to support and develop current disciplinary and interdisciplinary opportunities and approaches.

Additionally, beyond the discussion of interdisciplinarity, there is a recognition that, like many large institutions, our campus has a tendency towards being risk averse. The committee recommends fostering opportunities for short-term exploration of truly novel and innovative ideas with transformative impact, along with their necessary associated risk of potential failure. We recommend that the campus provide a safe framework for experimentation that allows for the possibility of failure in the interests of the ultimate progress of knowledge.

The committee wants to stress that it recognizes the importance of supporting and celebrating disciplinary work as we build interdisciplinary connections. Throughout our conversations, we have continued to return to the theme that at the core of interdisciplinary scholarship and teaching is a set of disciplines, focused modes of inquiry

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 tenure. Any plan for promoting and supporting interdisciplinary work on campus must include engagement of faculty and departments. The Committee recognizes the balance in all of this work to allows interdisciplinarity to flourish alongside disciplinary excellence. The Committee recommends that a deliberate and thoughtful process be taken on by the entire campus to ensure that we can achieve our goal.

II. Interdisciplinarity in Teaching and Research

A. Bringing Interdisciplinarity Front and Center

The Academic Futures report calls for the campus to affirm and revitalize an integrated liberal arts education to serve all our students and to form the basis of other projects including interdisciplinary education. Education in the liberal arts provides a ready context and a comfortable intellectual home for interdisciplinary courses and programs, both ones that already exist and ones to be proposed in the future. Interdisciplinary education at CU could allow students (and educators) to move fluidly between departments and colleges to engage in tailored, meaningful educational experiences.

Enhancing our interdisciplinary educational offerings allows the campus to create a range of both disciplinary and interdisciplinary experiences, placing all of our classes in a broader context.

Society faces multidimensional and complex challenges in the 21st century. We have a responsibility to prepare our students with a spectrum of knowledge and to equip them with the skills they need to be successful in addressing these challenges. By deliberately creating educational pathways that focus on the integration and synthesis of ideas and paradigms, we can imbue our students with respect for and an ability to engage with scholars from other disciplines, allowing them to gain perspective on their own work in the process. Interdisciplinarity can develop student agency and provide the education that students (and their future employers) want. Interdisciplinary training facilitates the ability to see a problem from more than one viewpoint and to recognize how these viewpoints can complement and strengthen our understanding. Additionally, interdisciplinary education promotes diversity and inclusion of thought, creates intellectual flexibility, and helps our students develop a set of skills (e.g., collaboration, knowledge integration, communication, creativity, problem-solving, risk-taking, and listening).

By elevating interdisciplinary education as a hallmark of CU Boulder, we create the educational equivalent of what our interdisciplinary research enterprise already achieves – a powerful and influential educational institution that develops students' ability to confront global problems skillfully, creatively, and flexibly. It is our hope that growing our reputation as an outstanding home for interdisciplinary studies will help attract new students and faculty for whom interdisciplinarity is a core value, will enable us to pursue grants and opportunities in new areas, and will strengthen our relationship with alumni. Additionally, we can provide faculty and staff the freedom to broaden their teaching so that it authentically reflects their intellectual pursuits, supporting their personal and professional growth. Lastly, elevating and facilitating interdisciplinary education on campus begins an important cultural transformation that embraces both disciplinary majors but increasingly more broadly educated students.

Big Idea: Designate an Academic Officer as the Campus-Level Interdisciplinary Coordinator/Champion and Create an Operational Interdisciplinary Network

Recommendation: The Provost should appoint and provide resources to an Academic Officer as a Campus Champion for interdisciplinary work.

A critical need that has been clearly and often identified when it comes to interdisciplinary teaching and scholarship is the need for a **Campus Champion**, one with

the clear authority and resources to support, coordinate, promote and grow interdisciplinary efforts on our campus. The Committee recognizes that the Research and Innovation Office is playing a significant role in interdisciplinary research on campus and perhaps the Vice Chancellor for Research and Innovation can be the champion in that area. The need is perhaps greater on the education side of our enterprise, though clear points of intersection exist. We suggest that a Champion be named who would promote interdisciplinarity in all its aspects, elevate the campus approach to interdisciplinarity in promotion and tenure, work with the Research and Innovation Office on supporting interdisciplinary research across the campus, and lead our interdisciplinary educational efforts. Key responsibilities of the Champion could include:

- Engage campus at all levels to support a shift in culture around excellence in research, creative work and education in the interdisciplinary context.
- Communicate and coordinate interdisciplinary opportunities across campus and market externally
- Work with key stakeholders to develop guidelines, oversight and faculty support for interdisciplinary tenure and annual review, both for education and scholarship. Ensure advocacy for interdisciplinary perspective is brought to bear.
- Support the development of guidelines for rapid and flexible approval processes for new interdisciplinary degrees, minors and certificates, including customized degree programs that may involve multiple departments, schools and colleges.
- Ensure smooth coordination of multiple course offerings of popular foundational courses for interdisciplinary programs (such as Statistics and Introduction to Programming).
- To avoid duplication, compile an initial baseline of current interdisciplinary approaches and coursework underway, as an important data set accessible by all.
- Work with key stakeholders to create targeted recruiting strategies for interdisciplinary faculty, as well as to create mentoring and faculty development capacity in interdisciplinarity in units across campus.
- Lead the Operational Interdisciplinary Network (see below) to help the campus overcome institutional challenges to interdisciplinary teaching and working.
- Work with the Office of Industry Collaboration, Deans' and Chancellor's advisory groups and others to gain insight into the needs of employers in specific areas.
- Promote pathways for institute researchers to engage in interdisciplinary teaching.

Recommendation: Charge the Champion with working with schools, colleges and other campus entities to develop an Operational Interdisciplinary Network, an integrated faculty and operations working group to help develop supportive infrastructure and collectively address key campus challenges.

Key aspects of the Network:

- 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 more than one discipline to bear on an issue to large coordinated teams sharing teaching responsibilities. At the heart of the offerings, regardless of the type, is a sense of deliberate development on an interdisciplinary perspective on the content of the course with specific and well-founded educational aims, reviewable and justifiable. In some cases, the offerings may be tied to career or employer objectives, but more importantly, they should embody a significant intellectual center of gravity that effectively integrates for students the ideas and approaches that range across the multiple disciplines and their paradigms.

To support 21st-century interdisciplinary education, the Committee suggests that our campus needs a flexible continuum of offerings, tailored to meet emerging needs. As we

currently imagine it, the continuum contains the following range of teaching configurations, but others may have additional ideas:

- 1) **Single courses:** Interdisciplinary courses can be taught by a single individual but often require two or more experts to cover the necessary facets. However, there are significant barriers on campus limiting co-teaching and team-teaching. Again, these offerings sometimes stand alone but are often part of other groupings (e.g., minors, majors, or certificates.). This category also includes capstone experiences, often project-based in STEM fields, where students learn collaborative engagement.
- 2) **Tracks and clusters:** Tracks, groups of linked courses, and activities that are more informally connected can be used to create deliberate intellectual paths for students, often across schools/colleges, divisions and departments. Faculty can easily link related classes by taking up the same issues or using a shared reading; one could also imagine cross-teaching opportunities or joint extra-curricular work. This is a case where advising might play a major role to steer students towards, for example, taking courses in environmental science, environmental policy, and literature of the environment at the same time.
 - a) These tracks/clusters need not be sequenced, but could be simply an array of offerings that, together, provide a more tailored interdisciplinary experience for students. For example, a student might take nineteenth-century European history at the same time as a nineteenth-century French literature class. Institutional Research has data on courses that students already take at the same time, and we could easily build links between those courses where appropriate.
 - b) Tracks and clusters are collaboratively designed by faculty, based on their knowledge of student needs. They are coordinated around similar questions, bases and common experiences.
 - c) Such clusters could support interdisciplinary majors and certificates, ensuring that student interests are captured through their coursework early on, readying them for success in likely degree areas. Clusters also support non-degree students as well in finding a more coherent path through the curriculum. [Note: These are not the same as self-designed majors; these are limited clusters designed by the faculty.]
- 3) **Degrees and related programs (majors, minors, certificates, professional credentialing and degrees, MS, PhD)**
- 4) **Interdisciplinary Departments:** We would be remiss if we did not recognize that many of our departments and programs are, by nature, inherently interdisciplinary.

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 interdisciplinary themes.

CU Boulder has built a major part of its research reputation on the development of its institutes, centers of intellectual interdisciplinary engagement where researchers find community and collaboration. The Committee proposes an educational counterpart, the Academies, that will serve similar functions for our interdisciplinary educational communities. Academies don't tenure or fully roster faculty but create a community of engagement and sponsored activities that support students and educators on campus. They bring together interdisciplinary activities around a specific theme (e.g., computer science, environmental science). Sometimes an Academy may be tightly aligned with and integrated into an existing research institute; in other cases, they might be free standing. Many models of how Academies fit into the research enterprise of the campus. In all cases, they should be driven by a student-centric philosophy and address a critical set of interdisciplinary educational needs. The Academies become a community for everyone (first-year students, transfers, upper class students, professionals in the workforce, and life-long learners).

Key attributes of an Academy and its theme:

- Offers large interdisciplinary themes, reflective of current interests and deeply tied to the scholarship on our campus.
- Stands as a multi-disciplinary unit, often crossing colleges and divisions. Academies are intended as homes to interdisciplinary themes to prevent duplication across campus, which can result in confusion and inefficiencies.
- Defines a clear hub for students to explore broad educational themes, allowing them to find the right path within the theme (or learning that it's not for them).
- Creates a space where the intersection of multiple facets of the theme can generate unique and emergent interdisciplinary opportunities.
- Provides a sustainable resource that supports participating departments (e.g., classrooms, teaching labs, technology, seed money).

- 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 be used to pursue individual faculty goals and to support innovative programming, including interdisciplinary education.

By giving faculty control over a certain portion of their SCH, the campus would create a marketplace where faculty could invest their SCH currency to teach in new and innovative ways, as long as they demonstrably meet the needs of students. One critical new vector for the marketplace would be the ability to team teach, to teach outside the home department, or to teach in an interdisciplinary program. This idea, endorsed by Academic Futures, supports innovative education beyond the sphere of interdisciplinarity.

Key aspects of this approach include, among other things:

- Mechanisms for approval and quality control of interdisciplinary offerings. For example, if someone wishes to teach in another department, that department must invite the faculty member to do so. We must make sure we are not creating unnecessary redundancies. Priority should be given to teaching opportunities that serve larger campus goals such as interdisciplinarity or fielding first-year seminars.
- An accounting system (but a relatively simple one, perhaps using the FRPA).
- Flexibility, at the department level, for opting out of the marketplace for specific reasons and for a specific time period to ensure that core teaching continues uninterrupted. Departments will also need support as they shift their teaching models to include more interdisciplinary education options, including time to review their major offerings for criticality.
- Where there is high demand for interdisciplinary courses, this could provide a case for increased faculty hiring and other resources.

The Committee recognizes that this new model of funding teaching will create challenges, particularly for departments, that will have to be addressed. But without creating a path for teaching flexibility, we will not be able to meet the needs of both our students and our educators.

Additional Recommendation on Graduate Education

Recommendation: Institutionalize a campus-wide pathway for interdisciplinary graduate degrees at the Masters and Ph.D. level. Creating clear processes for creating and approving interdisciplinary graduate degrees or coursework beyond those already in existence is vital to supporting the aim of preparing graduate students whose aspirations demand deep knowledge in more than one discipline. These opportunities will encourage also students and faculty to develop and deepen interdisciplinary research relationships. Graduate students in good standing in any thesis-based Masters or Ph.D. program would be able to apply to earn an interdisciplinary degree that involves a second academic unit. Degree requirements might modestly relax course requirements in both disciplines while still ensuring that core competencies are met. The Graduate School should institute a diverse committee of faculty members from multiple divisions and colleges to provide oversight and official approval of such degrees. We believe that the institutionalization of an interdisciplinary Masters and Ph.D. option will instigate exciting new research opportunities across disciplines while building synergistically on the traditional strengths of individual departments.

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 opportunities for external funding are not marginalized.

The interdisciplinary incubator would include administrative and physical infrastructure to support 2-4 rotating teams of scholars at a time. Team support could include administrative, budgeting and technical writing support and communications and event planning, as well as financial support for the team members (including course buyouts, GRA/Post Doc support, travel, and visitor support). The expectation, in most cases, is

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

- Regular (e.g., daily) face time and work time in the co-located space
- Professional team building support and development, as well as organizational design based on the science of team science (with the support of RIO) or other work as appropriate to the fields involved
- Strategic development of research plan with internal and external stakeholders, including explicit pathways for co-production of knowledge, where appropriate
- Development of a public engagement strategy to bring their work out to other communities and to bring the needs and interests of the community into their work, when and where it is possible and appropriate.

Additional Recommendations

Recommendation: Use the Center for Humanities & the Arts (CHA) and the Center to Advance Research and Teaching in the Social Sciences (CARTSS) as beacons and known entities for arts and humanities faculty and social sciences faculty, working within their structures to strengthen and incentivize interdisciplinary efforts both within arts and humanities and between arts and humanities and the rest of campus, as well as within social sciences and between social sciences and the rest of campus. Given that not all arts and humanities programs see themselves fitting into an incubator model, we propose to establish a task force involving the new directors of the CHA and of CARTSS to re-articulate the identities of these organizations, including their relationships to both disciplinary and interdisciplinary scholarship, and that makes room for work that spans the arts and humanities or the social sciences to connect with other divisions or colleges.

Recommendation: Develop a campus-level advocacy group for interdisciplinary scholarship that supports researchers through promotion and tenure, housed in the Office of Faculty Affairs. The Vice Provost and Associate Vice Chancellor for Faculty Affairs should form a group that will provide advice on and models for tenure-related materials that articulate the context of the interdisciplinary work for the candidate and the department. This might include how to select external reviewers, how to address journals that are in interdisciplinary fields and thus not on lists of “top” disciplinary journals, and how to write various documents within the tenure process. The goal is to ensure that interdisciplinary work receives the same weight as work within the disciplines. This could be a defining characteristic of the university.

III. Creating sustainability and taking on our challenges

Interdisciplinary education and scholarship emerged often as a theme in Academic Futures, in part, because many faculty, staff, and students across campus have encountered significant and persistent barriers to accomplishing this work. The budgetary model for education on campus is one critical challenge and is addressed in a separate section below. The additional many challenges (and some solutions) can be grouped along several themes:

- 1) **Campus culture and ethos:** While many parts of campus embrace interdisciplinary scholarship and teaching, its reception is by no means uniform. To move our campus to become more inclusive of interdisciplinary ideas and approaches, we need several things:

- 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) Curriculum control at all levels, including teaching assignments. We need to encourage and incentivize departments to create and participate in interdisciplinary curriculum pathways, allowing us to pursue broader campus interdisciplinary efforts not just unit-specific ones.
 - b) Ensuring spots for non-majors in courses. To provide interdisciplinary classes for all we need to make sure that non-majors that are included in interdisciplinary programs and certificates that reside within departments. Additionally, we need to ensure that prerequisites—including for upper division interdisciplinary offerings—are not being used to limit the ability of non-majors to enroll. In some cases, some upper-division disciplinary courses may need to be designed with interdisciplinary majors in mind.
 - c) Recruiting, hiring, and supporting faculty capable of and interested in interdisciplinary work. Interdisciplinarity should be a valued consideration for hiring, where appropriate, for both tenure track and non-tenure track faculty.
 - d) Tenure and annual review: We need to develop guidelines and oversight for interdisciplinary tenure and annual review, both for education and scholarship. Faculty don't always get credit for interdisciplinary teaching and aren't always acknowledged for doing it as part of their merit review, even though such teaching is often more time consuming than regular departmental offerings. FRPAs could be modified to enable people to report and get credit for these activities.
- 3) **New roles for schools and colleges:** There is a growing sense that schools and colleges play a key role for interdisciplinarity that will require some rethinking of roles, responsibilities and resourcing. Examples include:
- a) We currently see the challenges associated with housing interdisciplinary degrees and certifications at the department level, as opposed to the college or school (or occasionally the campus). There are often no resources to support interdisciplinary programs within departments. If a department administers an interdisciplinary program, other departments are less likely to engage, given the limited reward. If interdisciplinary programs could be housed at the school or college level (or within an Academy), it would help set the cultural tone within the unit. By elevating the responsibility of interdisciplinary programs, we could have coordinated marketing to students, comprehensive student advising and mentoring (including career paths), and a unified approach for addressing scheduling and space challenges as well as recruiting and hiring.
 - b) We should review and, if necessary, realign graduate funding, including how TAs are distributed. Perhaps, in some cases or as part of the Academies, we might transition to a model where first year students are funded from general funds, allowing them to explore and then choose.

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. For example:
- a) Listing Courses. Currently cross-listing is required for courses to work in two units. Ideally, we can have a flexible approach to creating and managing the identification of interdisciplinary courses and programs that are sustained over time. There is also a need for more flexibility in listings.
 - b) Scheduling courses. Interdisciplinary programs need the ability to manage location and enrollment of interdisciplinary courses. They currently are not allowed to manage these directly and must work through the departments where the course is cross-listed; typically one is designated to be the “host” unit. There have to be better ways of doing business.
 - c) Textbook adoption. The book store’s software is exceedingly challenging to use for cross-listed courses. Each section must be entered separately.
 - d) Web grading. This is also a nightmare for cross-listed sections, where each must be entered separately and it is easy to make mistakes, particularly when you have more than 10 sections with variable numbers of students per section.
 - e) Applying for a course code designation. Research institutes do not have a “college or school” that they report to and therefore fall through the cracks.

IV. Creating a Budgetary Model for Campus that Supports Interdisciplinarity

The committee recognized early and often that current budgeting practices were one of the roadblocks facing the expansion of interdisciplinary education and scholarship. Still, establishing a view of a new budget model was outside the scope of the Committee’s work (and its expertise). There is a general sense that current budgeting—where most of our funding is locked into historical budgets controlled by particular units, offices, schools, and colleges and where a good part of any marginal increase is distributed by a student credit hour and major model that emphasizes departments and disciplines—works against experiments, innovation and even day-to-day feasibility of interdisciplinary research and education. While we recognize that resource allocations are more complex than common perceptions allow, the committee still calls upon leadership to convene a campus conversation with subject matter experts on both the academic and operations side of the institution on how we might pursue a better distribution of our limited resources.

The difficulties identified by the committee occur at different levels and probably require different kinds and sizes of solutions. For example, our student credit hour model, whether intentionally or not, leads many unit leaders to discourage team teaching or other kinds of interdisciplinary education that take resources away from unit offerings.

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 productivity but not others. While the institutes have provided one powerful way to encourage interdisciplinary research, not all sectors of the campus are served by these vital institutions—and there is no equivalent mechanism to encourage interdisciplinary education.

Without endorsing any complete budgeting model, the committee did have some ideas. Deploying ‘The Marketplace Big Idea,’ faculty could invest a certain percentage of their teaching strength to interdisciplinary (or other innovative) educational projects. The Committee also suggests that some centralized blocks of funding be allocated for core ideas in this report such as the interdisciplinary education Academies and the interdisciplinary research, scholarship, and creative work Incubator. More generally, as a public *research* university, the budget model needs to recognize and reward the wide range of contributions made by our faculty and staff.

V. Conclusion

The Academic Futures Working Group on Interdisciplinary Education, Research and Creative Works was charged with developing out-of-the-box transformative ideas for our campus. The Committee fervently believes that interdisciplinarity represents a critical vector for both our scholarship and our educational enterprise. Our campus has loudly and consistently expressed their desire to expand our efforts in this arena. In our Big Ideas and recommendations, we have encapsulated our best ideas of how to build upon our existing strengths and to support our students and faculty in this critical work. Some of our recommendations represent common-sense approaches to facilitating interdisciplinarity; other represents sea changes that will touch every part of campus and require significant investment.

We recognize the complexities of effectively designing and implementing much of what is presented here, and we do not underestimate the challenges the campus will face as we move forward. However, if we are successful, the benefits for our students, faculty and staff are also clear. To be successful as an institution of higher education ready for the future, we must start down this path.