

**TOPIC: RECOMMEND APPROVAL OF MASTER OF SCIENCE AND DOCTOR OF PHILOSOPHY IN INFORMATION SCIENCE AT UNIVERSITY OF COLORADO BOULDER**

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**I. SUMMARY**

This item recommends approval for University of Colorado Boulder (UCB) to offer a Master Science and Doctor of Philosophy in Information Science.

**II. BACKGROUND**

**COMMISSION AUTHORITY**

The Colorado Commission on Higher Education's role and responsibility in the review and approval of new academic programs at institutions operating under a performance contract is defined in §23-5-129(6)(b), which states that new and modified program proposals shall be reviewed and approved only on the basis of fit with the institution's statutory role and mission.

**III. STAFF ANALYSIS**

**OVERVIEW OF PROPOSED PROGRAM**

The following is summarized from UCB's proposal:

The Department of Information Science is home to a new discipline that unites a number of interdisciplinary approaches for understanding and shaping a future characterized by pervasively available digital information and communication technology (ICT). Information Science considers the relationships between people, places and technology—as well as the information or “data” those interactions themselves then yield. The Internet is a broad example of a socio-technical system that is comprised of hardware and software, but in daily life is better understood as a constantly changing social infrastructure upon which complex forms of human-human and human information interaction rest. Scholars and students of Information Science develop new methods to study these socio-technical phenomena, and translate those findings to the design and development of useful and meaningful technology.

The Department takes as a core idea that *data* sit at the primary point of interaction between social and computational systems. By focusing on the transformation of data

across “systems” of people, places, and technology, we can continuously invent what new things society can do with technology, and what technology can do for society. Because of this view, rather than only imagine what today’s technology makes possible, information scientists innovate new ways of supporting new socio-technical connections by considering the enduring fundamentals about how people and technology interact. Information Science draws on knowledge from social science, humanities, and computer science to support the study and ongoing innovation of socio-technical systems. Cultural, historical, and organizational factors are among the many creative tensions that productively drive the discipline. The disciplinary yield is the creation of new technology, ideas, and theory—and a workforce that understands the dynamic processes and potentials that underlie socio-technical interaction. The department will equip students with the conceptual machinery to succeed in a future characterized by new ways of:

- working with ICT and highly distributed and changing information spaces;
- coordinating with people, ICT, and the information behaviors to which they together give rise;
- envisioning occupational, personal, and civic goals as enabled by new ICT
- opportunities and the information they mediate.

The informational opportunities that arise from technological innovation will be vast and varied. The Department therefore wants students to see themselves as participants in a future with dynamic opportunities that they themselves can influence and create. To these ends, we broadly cast the conceptual machinery that people must have as supporting new, innovative forms of entrepreneurship—both social and commercial, both personal and collective—in a world where all forms of information are the continuous and dynamic inputs and outputs of such endeavor. The skills required to be a citizen of the future are fundamentally highly analytical, creative, and interdisciplinary, and in constant interaction with information that is generated, manipulated and transformed within and across domains. Students will acquire skills in *multiple forms of analysis of information*, from small data to big data, from quantitative to qualitative, and including information integration, ontology creation and data visualization—because to work with information artifacts, industries and populations means to interact with data inputs and outputs. It means having an analytical eye on trends, markets and social behaviors as they manifest themselves in digital traces.

Additional information on these proposed degrees, unrelated to fit with statutory role and mission, is in Appendix A.

#### **ROLE AND MISSION SUPPORT**

These degrees support UCB’s statutory role and mission, which states:

*(a) The Boulder campus of the university of Colorado shall be a comprehensive graduate research university with selective admission standards. The Boulder campus of the university of Colorado shall offer a comprehensive array of undergraduate, master's, and doctoral degree programs. The Boulder campus of the university of Colorado has exclusive authority to offer graduate programs in law. The Colorado commission on higher education, in consultation with the board of regents, shall designate those graduate level programs that are the primary responsibility of the Boulder campus of the university of Colorado. The university has the responsibility to provide on a statewide basis, utilizing when possible and appropriate the faculty and facilities of other educational institutions, those graduate level programs. The commission shall include in its funding recommendations a level of general fund support for these programs. [§ 23-20-101, C.R.S.]*

Pursuant to Colorado Revised Statutes 23-5-129(6)(b), department staff finds that UCB's proposed degree is consistent with the institution's statutory role and mission. University of Colorado's Board of Regents approved the program at its September 11, 2014 meeting.

#### **IV. STAFF RECOMMENDATION**

**Staff recommends that the Commission approve University of Colorado Boulder's proposals to offer a Master of Science and Doctor of Philosophy in Information Science.**

#### **STATUTORY AUTHORITY**

C.R.S. §23-5-129 Governing boards - performance contract - authorization – operations

(6) While operating pursuant to a performance contract negotiated pursuant to this section, the governing board of a state institution of higher education:

(b) Need not consult with nor obtain approval from the Colorado commission on higher education to create, modify, or eliminate academic and vocational programs offered by the institution, so long as such creations, modifications, and eliminations are consistent with the institution's statutory role and mission. Institutions shall submit information to the department demonstrating that the creation or modification of an academic or career and technical education program is consistent with the institution's statutory role and mission. The Colorado commission on higher education shall have the authority to override the creation or modification of an academic or vocational program if the change made by the governing board is inconsistent with the institution's statutory role and mission.

## APPENDIX:

Appendix A: Supplemental Information

### APPENDIX A: SUPPLEMENTAL INFORMATION

This supplemental information is unrelated to the proposed degrees' fit with the institution's statutory role and mission. The following is summarized from the institution's proposal:

#### EVIDENCE OF NEED

**Employer Demand:** Growth in workforce is anticipated to be large. The number of Master's graduates in ISchools averages ~100 per year per school, as described in Computing Research Association's 2013 Taulbee Survey Report (to review a copy of the Taulbee Survey, please go to the following link:

[http://cra.org/uploads/documents/resources/crndocs/2012\\_taulbee\\_survey.pdf](http://cra.org/uploads/documents/resources/crndocs/2012_taulbee_survey.pdf)). Among the current career prospects, we anticipate job opportunities in data analytics, business analytics, systems analytics, program manager, product manager, user experience designer, information architect, information assurance, cybersecurity that cross a range of fields including energy, biology, medicine, safety-critical systems, health and medicine, transportation, and more.

**Student Demand:** Our projection for demand and enrollment for the MS and PhD in Information Science is based on the Computing Research Association's annual Taulbee Survey, which measures enrollments, among other variables, across I-Schools. The CRA Taulbee Survey is an annual report generated by Computing Research Association to document trends in student enrollment, degree production, graduate employment, faculty salaries, and resource allocation by computing- and information science-related units in North American universities. The Taulbee is recognized as providing the "best workforce statistics in all of science" (Jim Austin, of *Journal of Science*). With origins as early as 1970, the remit of the Taulbee has grown as the field of computing has grown. In addition to the original Computer Science and Computer Engineering fields, the Taulbee now includes "Information" as a discipline that it surveys. While the PhD program will start as early as Year 1, we recommend that the MS come on-line once the BS program has been going for 2 years; that is, when BS students enter the upper-division phase. The lower level (first year) MS classes might be taught in coordination with upper division BS. Other MS and PhD courses can be combined.

#### DUPLICATION

There are no Colorado members in the ISchool Caucus (ischools.org), the international professional society that governs Information programs. In fact, if CU joins the Caucus, it will be the only such department/school in an 800-mile radius, putting the program in advantageous position. Of the 52 members of the I-School Caucus, 26 are in the US. The new degree programs offered by the I-Department will fill high demand in the mountain west

and beyond, and will allow the University of Colorado Boulder to enter into the I-School Caucus. The articulation of the program around commercial and social entrepreneurship brings a unique focus among the I-schools.