uC⁴f: CREATIVITY + CRITICAL THINKING + COMMUNICATION + COLLABORATION → FUTURE CAREER
University of Central Florida
Quality Enhancement Plan Concept Paper

I. BACKGROUND

uC⁴f will broaden and enhance current initiatives to ensure UCF's place as a leading institution for undergraduate education and community partnerships by increasing creativity, critical thinking, communication, and collaboration throughout the curriculum. These four Cs will be integrated into the curriculum through increased hands-on research, scholarship, and creative projects. This Quality Enhancement Plan (QEP), *uC⁴f* will offer more meaningful, mentored classroom experiences led by our outstanding faculty to better prepare the kinds of citizens and employees that will be needed to face 21st century challenges.

Figure 1: The proposed *uC⁴f* model.
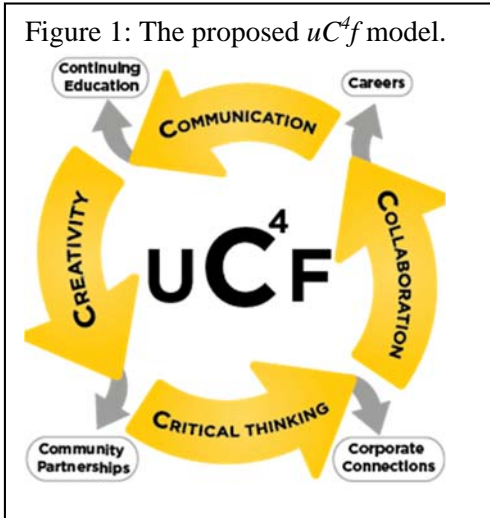
Recently, hiring managers were asked their perception of college graduate skills as they relate to the workforce (Bridge that Gap, 2013). This survey reported that graduates were very or completely prepared to: (1) incorporate information to develop strategic insights 46% of the time; (2) write to communicate ideas 49% of the time; and (3) give a presentation 43% of the time (Bridge that Gap, 2013). A similar survey found that employers want workers who can contribute to innovation in the workplace, with 93% of respondents agreeing that a candidate's ability to think critically, communicate clearly, and solve problems is more important than their major (AACU LEAP, 2013).

Additionally, the spring 2014 UCF Graduating Student Survey (GSS) reported that many undergraduates feel they lack excellent undergraduate experiences to prepare them for the critical thinking, communication, and problem solving skills that employers seek (see Table 1; UCF GSS, 2014). Overall, only about one-third of graduating seniors felt they had received excellent academic preparation on three of the four C's (creativity was not documented). While 84.7% of the spring 2014 GSS respondents are entering the workforce or continuing to work upon graduation, 79.1% also plan to continue their education beyond their bachelor's, confirming the importance of C⁴ skills for entrance into graduate programs as well as the workforce (UCF GSS, 2014).

Table 1: UCF GSS 2014 responses regarding how well UCF prepared them in *uC4f* areas.

UCF GSS	Excellent
Critical thinking	38.4%
Oral communication	33.8%
Written communication	30.3%
Collaboration	38.1%.

The success of graduates is increasingly being tied to the funding model for Florida's public universities, and strategic emphasis on C⁴ will improve student success (Florida Board of Governors, 2014). An integrated undergraduate curriculum infused with opportunities to think creatively and critically, collaborate with others, and communicate ideas will move our graduates beyond an outdated discipline-specific skills-based workforce model into becoming members of the new professional 'Creative Class' ready for graduate education and the workforce (Florida, 2002).

Not only does this *uC⁴f* proposal strongly support President Hitt's strategic goal of offering the best undergraduate education available in Florida, it directly relates to the goal of increasing retention, as noted in his 2014 "Welcome back to UCF" address (UCF Office of the President, 2014). A burgeoning body of research indicates that one way to accomplish increased retention is by engaging students in *uC⁴f* related activities early

in their academic careers (Nagda et al., 1998; Bauer & Bennett, 2003; Foertsch et al, 2000; Craney et al, 2011). The literature also supports this proposal's premise that students involved with research and inquiry leads to gains in C^4 skills (e.g., Lopatto, 2007; Kardash, 2000; Bauer & Bennett, 2003; Hunter et al., 2006; Seymour et al, 2003). In sum, research suggests that uC^4f will make our students more likely to graduate in a timely manner and become effective contributors to our communities and industries.

UCF enjoys a history of sustained initiatives that promote and support co-curricular research and creative projects with faculty mentors. Examples include our 25-year old Honors in the Major program, as well as our 12-year old Research and Mentoring Program and Showcase for Undergraduate Research Excellence. Currently, between 1600 and 2000 students are documented as being involved each year in out-of-class research and creative work with UCF faculty, through structured programming, research credits, and paid positions. These existing faculty-mentored research and creative experiences promote the C^4 skills and increase student success. uC^4f proposes increasing student involvement in research and creative experiences by providing faculty with resources to enrich student's classroom experiences. Our proposal promotes scaffolding research and creative experiences, focused on the C^4 skills, into undergraduate courses through faculty incentives and formal student development. uC^4f is a university-wide program that would increase undergraduate participation in research and creative activity by at least 100%.

An important and exiting by-product of the proposal would be the increase of student interface with *external* industry and *community* partners. And, with the development of our new downtown campus, meaningful classroom research and creative activity will be more easily cultivated through community-based activity. Therefore, uC^4f students and faculty will be encouraged to bring *external* challenges into the classroom, involving not just local industry, but also community agencies and government leaders.

Students who participate in uC^4f will become more involved in hands-on research and creative projects in the classroom which will enable them to:
- Tackle problems creatively, finding multiple possible solutions, imagine novel solutions, or create new products or experiences.
- Think critically by analyzing, synthesizing, and evaluating existing disciplinary or area knowledge.
- Collaborate effectively with peers, faculty, and external partners to produce projects or products.
- Communicate knowledge to peers and the community orally and in writing.

II. STUDENT LEARNING OUTCOMES AND ASSESSMENT METHODS

Goals and Objectives

Through this QEP, students will learn content knowledge through research and creative experiences while increasing their ability to solve problems, synthesize information, draw appropriate conclusions, work as a team, and communicate ideas effectively. This QEP will support faculty to leverage content knowledge into transferable and marketable skills. The specific objectives and goals of uC^4f:

1. STUDENTS. UCF Students will participate in research and creative projects through uC^4f to develop marketable skills for graduate success.
   a. Involvement. Students will see increased opportunities to participate in mentored research and creative experiences in their **classrooms** and within the community.
      i. Increase student participation in curricular and co-curricular research and creative learning activities.

ii. Increase student participation in university-wide and external professional development, public presentations of projects, and documented involvement with **community** partners.

b. Student Learning. Increased involvement will lead to documented student learning in C^4 areas of emphasis. Specifically, students will be stronger in:

i. **Creativity** by exploring alternatives and proposing multiple solutions to disciplinary research questions and community problems.

ii. **Critical Thinking** by reviewing existing disciplinary knowledge, approaches, or methods; posing appropriate questions that explore gaps in existing knowledge; and synthesizing disparate concepts, approaches, or methods to create new knowledge or products.

iii. **Collaboration** by working together in teams, within and between disciplines, communities, or industries, to create new knowledge or products.

iv. **Communication** by presenting digital, oral, or written results of their problem solving, knowledge creation, or product development activities to diverse audiences.

2) FACULTY and INSTITUTIONAL change. UCF faculty will be provided resources, "peer coaches," training, and collaboration opportunities to enhance current courses or create new courses to strengthen C^4 areas. UCF as a whole will become more integrated in working to strengthen curricula and co-curricular student opportunities.

3) PARTNERS. Employers, community partners, and graduate program directors will be invited to work with faculty in teams to target C^4 areas through their course curriculum design. Additionally, community partners will mentor students and provide experiences for hands-on projects. Community partners will be especially relevant for courses hosted at the new downtown campus.

Outcomes and Measures

A mixed-mode approach of qualitative and quantitative assessment strategies will be used in collaboration with Operational Excellence and Assessment Support (OEAS) and Institutional Knowledge Management (IKM).

1. Measures of STUDENT Improvement
   a. Involvement
      i. Courses with hands-on experiences will be designated as uC^4f through this QEP and the number of students participating in these courses will be tracked through IKM. This work should increase the number of students involved in hands-on research and creative experiences by over 100%.
      ii. The number of students participating in on-campus research and creative presentations and showcases will be tracked in collaboration with OEAS. Students in uC^4f courses are predicted to have more professional experiences than non- uC^4f course students.
      iii. Student involvement in uC^4f activities and perceived learning gains (see below) will be tracked through current and additional questions on the Graduating Senior Survey (GSS) and the National Survey of Student Engagement (NSSE) in collaboration with OEAS. For example, uC^4f will look for student perception gains of reporting 'excellent' in the GSS C^4 questions (see above).
   b. Student Learning
      i. **Creativity** will be measured on a statistically significant selection of students using the Torrence Test of Creative Thinking or other appropriate standardized measure of creative thinking given as a pre-& post-test in uC^4f courses. Common rubrics will be embedded within courses.
      ii. **Critical Thinking** will be measured through the number of papers, presentations, showcases or knowledge products produced by students in uC^4f courses. These will be tracked through a

review of uC^4f course syllabi for assignments that require critical thinking skills such as analysis, synthesis, evaluation, and counting the number of students receiving an A or B grade in uC^4f courses. Common rubrics will be embedded within courses. Specific courses will be offered the opportunity to use the Critical Thinking Assessment Test.

    iii. **Collaboration** will be measured through a review of uC^4f course syllabi. Common rubrics will be embedded within courses.

    iv. **Communication** experiences will be measured through the number of papers, presentations, showcases or public presentations by students in uC^4f courses. This will be tracked through syllabus review and common rubrics embedded within courses.

2. Measures of FACULTY Involvement and INSTITUTIONAL Change. Faculty will serve as a link between course material and student learning. Their involvement will be measured through participation in uC^4f training programs, number of faculty offering uC^4f courses, and number of conference, professional, or workshop presentations given by faculty at the UCF conference and off-campus. Degree programs will be more involved with C^4 initiatives documented through Institutional Effectiveness plans, students involved in each program will be tracked through IKM, and courses designated as C^4.

3. Measures of PARTNERSHIP. Partnerships with external community, professional, and graduate schools will be measured through uC^4f course syllabi, faculty surveys, community surveys using standard rubrics to evaluate these artifacts. Integration will be reviewed through projects completed and presented at curricula showcases.

III. PROJECTS, IMPLEMENTATION, AND SCOPE

Scaffolded Coursework

uC^4f will provide the curricular and experiential framework from which UCF students can respectively develop marketable skillsets for employment and/or graduate careers, cultivate more effective teaching strategies and forge lasting, collaborative relationships. Through uC^4f a course integration model will be created to bring C^4 into the curricula (modeled after UCF service-learning) through hands-on research, scholarship, and creative projects. Courses will be scaffolded to three levels (adapted from Chamely-Wiik et al. 2014): (1) *Exposure*, (2) *Skill-Building and Professional Development*, and (3) *Intensive and Experiential Inquiry*.

(1) Exposure. Exposure courses will be designed to expose students to the process of research and scholarship early in their curricular sequence. These courses will lay the foundations of our proposed scaffolding method of integrating research and creative processes into UCF curricula. Examples of activities that could be embedded in lower-level courses include: using literature (e.g., literature review); profiling and interviewing researchers, professionals, or master artists; learning tenets of ethics; or attending seminars, performances, or exhibitions.

(2) Research Skill-Building and Professional Development. Skill-building courses will be designed to put initial C^4 skills into practice. Faculty will embed the following activities into these mid- to upper-level courses: developing research questions or community problems, writing a proposal, learning how to use equipment, collecting data, analyzing results, writing a business plan, and/or creating products. These specific topics will grant the students opportunities to apply *Exposure Course* information and activities in extended classroom experiences.

(3) Intensive and Experiential Inquiry. Intensive and experiential courses will be designed so that students can demonstrate research and creative abilities for projects and course assignments learned in #1 and #2. Through capstone courses, students will develop a final project (e.g., poster, product including creative activity, document, presentation) and present their work. Collaboration with internal or external partners will be emphasized. These advanced-level intensive and experiential courses can be either disciplinary or inter-disciplinary, both in which the student will directly participate in knowledge and product creation.

Projects and Implementation: UCF Student, Faculty, and Community Development

Undergraduate Student Development. Student classroom experiences will shift from exam-focused to knowledge and product creation-focused. These courses will be designed to explore and synthesize current issues, theories, information gaps, and models to create knowledge while expanding students' abilities to critically think, analyze, apply information, create products, and disseminate results. Through this work students will build skills and, subsequently, their resumes and portfolios.

- Research-Center Course Designation. uC^4f courses will be officially designated, noted on transcripts, and a **C^4 Certificate** will be developed. Students may apply for a C^4 certificate if they have taken 12 credits in uC^4f designated courses, independent research credits, and/or Honors in the Major thesis credits (note: 60% of HIM students are transfer).
- Classroom Showcase. C^4 courses will participate in a new university-wide, "Showcase of Classroom Scholarship: Celebrating Student Achievements." Student research projects, creative projects, business plans, products, etc. will be invited to participate.
- Travel Funds*.* Funds will be available for professional development opportunities related to student C^4 courses.
- Undergraduate Research Commons. UCF will subscribe to this open-access database that allows students to upload and archive multi-media, creative work, posters, written manuscripts, etc. for reference outside the university, during job interviews, scholarship opportunities, or graduate school applications (http://undergraduatecommons.com).
- Transfer Student Success. Through pre-research preparation (e.g., Research Academy) transfer students will be provided an easy transition and quick integration into the C^4 track and UCF culture.

Graduate Student Development. Graduate students will be recognized for their experience and ability to connect with undergraduates. As such, they will serve as "Peer Coaches" within the uC^4f courses*.* Peer Coaches will especially support large classes with C^4 integration. Additionally, they will serve as judges of undergraduate student work for the Classroom Showcase.

Faculty Development. Faculty will be valued for providing these experiences for students, bringing their expertise into the classroom. Work with the uC^4f will enhance promotion files and opportunities for current (e.g., TIP, RIA, SoTL) and new awards.

- Course Innovation Funds. Three levels of grant funding will be offered: faculty, departments, and colleges. These grants will be for current course improvement or new course development. Grant funds may include: (1) summer salary for faculty course development, (2) enhancement funds for the courses, including supplies, guest speakers, or field trip travel for hands-on experiences, or (3) incentive funds for graduate student "Peer Coaches" who would be volunteers in the courses to help with research projects, writing, statistics etc. Peer Coaches will receive professional development funding to work with instructors (adapted Pukilla et. al., 2013).
- FCTL Conference Tracks. Winter and summer conference for faculty working on uC^4f courses.

- C^4 Faculty Fellows. Projects related to uC^4f including, expanding the *What IF?* Modules (i.e., elevator talks, poster presentations, teamwork), finding community partners and collaborators, or QEP assessment.
- Conference Travel Funds. Faculty funding to disseminate the curriculum developed through uC^4f.
- Faculty Awards and Recognition. For exceptional work integrating C^4 into their classroom.
- Southeastern Conference on Engaging Students in Research, Scholarship, and Creativity. Expansion of the current UCF sponsored *Florida Statewide Symposium: Engagement in Undergraduate Research*. The Symposium will expand to invite the entire southeast with a new specialized curricular track.

Partners: Employer Collaboration and Community. Employers and community partners will be invited to be part of committees, collaborate with faculty during FCTL conferences, collaborate on projects, and encouraged to participate in classroom activities. Certificates, letters of appreciation, and recognition plaques will honor community partners who work with our faculty and students to make uC^4f a success.

Resource Requirements

FUNDING
- Scholarship funds for the classroom showcase
- Travel funds for faculty and students
- Access to the Undergraduate Research Commons (open-access) to upload student work
- Professional development funds for peer coaches
- Course innovation funds for faculty
- Award funds and uC^4f fellow funds for faculty
- Funding for FCTL conference tracks
- Assessment needs including tests, access to resources, etc. (e.g., Critical Thinking Test)
- Furniture and computer equipment for collaborative student work/presentation in the Center for Undergraduate Research, Scholarship, and Creativity

PERSONNEL
- Organize and implement grant and travel program
- Coordinate activities
- Work with community partners
- Training for peer coaches
- Develop and implement detailed assessment plan in collaboration with UCF formal partners

SPACE
- Creation of the "Center for Undergraduate Research, Scholarship, and Creativity"
- Space for presentation practice space, group and collaborative work, and poster printing
- Expand on and integrate already available spaces such as The Idea Lab, The Starter Lab, and the Maker Lab

PARTNERS
- Discipline specific development and review committees

- (Arts, Humanities, Social Sciences, Life Sciences, Physical Sciences, Engineering, Computer Science, Business)
- UCF formal partners (fundamental to success): Office of Undergraduate Research, Libraries, Faculty Center for Teaching and Learning, Writing Center, Office of Excellence and Assessment Support, Institution Knowledge Management, and all UCF Colleges including the College of Graduate Studies and the Burnett Honors College
- External partners: Community, employers, etc.

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