

UNIVERSITY OF FLORIDA

# The Grand Challenges Core

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Transforming UF's General Education

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The Preeminence Bill SB 1076 allows UF to require 9 – 12 credits of unique coursework in all undergraduate programs that cannot be earned through any acceleration mechanism. This document describes how these courses will be incorporated into UF's General Education Program and includes a call for proposals from undergraduate-degree-granting colleges.

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## Introduction

In our continued efforts to improve the educational experience for all undergraduate students, the University of Florida is developing an outstanding, distinctive, unique General Education Program (GEP). A focused cohesive GEP plays a crucial role in providing every UF student with a liberal education that complements rigorous disciplinary programs.

We are transforming our GEP into one of the highest quality, woven into the fabric of the UF experience and serving as a bridge between, an introduction to, and an integrator of, seemingly disparate disciplines. This program should be focused, cohesive, interesting, lively, engaging, and reflect the institutional focus on research and creative works, knowledge creation, and the mission of educating people from diverse backgrounds to “address the needs of the world’s societies”<sup>1</sup>. The current cafeteria-style GEP that allows students to take practically an infinite number of course combinations from a list of over a thousand courses, is fragmented with little relationship to institutional goals, and is furthermore diluted by credits that are taken at other educational institutions, including high schools<sup>2</sup>. A large percentage of our students complete less than a half of their general education credits at the university so are missing important components of a university-level liberal education. They also lack common experiences that play an important role in developing a cohesive intellectual community with institutional culture and goals. In addition, the UF Task Force on Undergraduate Education found that the courses in the GEP consisted mainly of courses that double-counted as prerequisites for disciplinary majors with little regard to the goals of general education. These findings were echoed in the concerns of state legislators in 2012 leading to a statewide revision of the general education requirements that mandates a common core of courses from which five courses must be chosen<sup>3</sup>. The university also responded to this report by developing a single Humanities general education course required for all students.<sup>4</sup> To continue the transformation to meet institutional educational goals, the university is developing a discrete number of thematic, interdisciplinary bundles of courses around substantive and timely topics. These courses will be used to transform the General Education Program by requiring all UF students to take a set of three general education courses (nine credits) that are unique to UF and cannot be replaced by any accelerated mechanism or from courses from other postsecondary institution. Only transfers with an AA degree will be exempt from these courses due to the statewide articulation agreement.

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<sup>1</sup> <https://catalog.ufl.edu/ugrad/current/uf-mission/Pages/home.aspx>

<sup>2</sup> “Task Force on Undergraduate Education Report”, UF, Jan. 2010.

<sup>3</sup> <http://gened.aa.ufl.edu/statewide-gen-ed-core-project.aspx>

<sup>4</sup> <http://undergrad.aa.ufl.edu/hum-course.aspx>

## Grand Challenges Courses

The “Grand Challenges” were U.S. policy terms set in the 1980’s to describe “fundamental problems of science and engineering with broad applications, whose solution would be enabled by high-performance computing resources ... Today, the Grand Challenges are interpreted in a much broader sense ...”<sup>5</sup> In fact, today there are many “Grand Challenges” that have nothing to do with science or engineering - such as “Securing Water for Food, All Children Reading, and Making All Voices Count”<sup>6</sup>. We believe that Grand Challenges should also include big questions, both contemporary and enduring, of importance in understanding the human condition, human cultures and society, and the natural and physical worlds. Thus, we believe that a course that engages students to consider the basic question of “What is The Good Life?” through the lens of a cluster of Humanities disciplines is suitably characterized as a grand challenge.

## The Grand Challenges Core

Making “What is The Good Life?” a mandatory Humanities course for all UF students effective 2012, was the first step towards transforming our GEP. We now seek to extend that structure to the Natural and Social Sciences general education areas to complete the transformation.

The goal is to develop a general education program with courses specifically designed to achieve the goals of the program, not simply service courses for majors, and not driven by interests of specific colleges or majors. The courses will be unique to UF and cannot be substituted for by any other courses from outside the institution, thus creating a set of common experiences for our students that will set them apart from graduates of other universities. The new GEP should include an introduction to disciplines that are often not included in high school curriculums, as an introduction to the so-called “found majors”; a feature of the existing GEP that should be maintained. Therefore, these courses should allow participation from a broad cross-section of faculty in most (if not all) disciplines. The goal is to develop a GEP that

1. Is cohesive with a clearly identifiable focus and having a systematic approach to achieving the goals of a liberal education
2. Creates common experiences for all undergraduates, unique to UF
3. Develops an intellectual community through the study of important, timely issues

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<sup>5</sup> “A Report of the National Science Foundation Advisory Committee for Cyberinfrastructure Task Force on Grand Challenges”, NSF, March 2011.

<sup>6</sup> <http://www.usaid.gov/grandchallenges>

4. Engages students in the search for knowledge: changing their attitudes from that of a knowledge consumer to a knowledge producer
5. Enables students to transfer knowledge between disciplines – to see how different disciplines interact in complex problem-solving
6. Links with the research mission and faculty of the university, encouraging students to pursue research opportunities
7. Provides the foundations of a liberal education for lifelong learning and meaningful careers and lives.

To meet these conditions, the new GEP will include a limited number (at most five) of courses in each general education area focusing on multidisciplinary Grand Challenges. To distinguish these new Humanities, Natural and Social Sciences courses from other general education courses, including the newly developed statewide core, we will refer to them collectively as the “Grand Challenges Core”. This terminology also serves to set our program apart from “signature experiences” at other universities – branding this signature program as one that seeks to develop the learning outcomes of a liberal education within the specific, but not restrictive, context of the recognized set of “Grand Challenges”. A few universities<sup>7</sup> have specialized programs that engage undergraduates (primarily engineers) in looking at Grand Challenges, and Princeton University<sup>8</sup> has an impressive research program, but to our knowledge this is the first time the Grand Challenges have been made a mandatory component of a general education program

We are now requesting proposals from colleges that grant undergraduate degrees for multidisciplinary general education courses that focus on “Grand “Challenges”. These proposals MUST be submitted and supported by deans of undergraduate-degree-granting colleges<sup>9</sup>. A few (maximum of 10) of these proposals will be chosen for full course development with the goal of being included in the GEP effective 2015. Specifically, as of 2015, the university’s GEP will require every student to take one of a small number of Grand Challenges courses in the Natural and Social Sciences. To be clear, the Natural Sciences consist of courses in the Biological (B) and Physical (P) Science areas as defined in the general education program<sup>10</sup>.

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<sup>7</sup> E.g. University of Iowa, University of Rhode island, Western New England College

<sup>8</sup> <http://www.princeton.edu/grandchallenges/>

<sup>9</sup> These colleges are: Agricultural and Life Sciences, Business, Design Construction and Planning, Education, Engineering, Fine Arts, Health and Human Performance, Journalism and Communications, Liberal Arts and Sciences, Nursing, Public Health and Health Professions

<sup>10</sup> See <http://gened.aa.ufl.edu/program-area-objectives.aspx>

## The 2015 UF General Education Program

Implementation of the Grand Challenges Core and Statewide Core, will result in significant changes to the UF General Education Program effective 2015. As a result, all undergraduate degree programs will need to be revised to incorporate these changes. We include an overview of the resulting program to allow for advance planning. Both core programs are still being developed so all details of the courses are not currently available, but we hope this overview will still provide useful information for planning purposes. A comparison with the current general education requirements<sup>11</sup> may prove useful.

The 2015 general education program will require students to complete a total of 36 credit hours of general education courses in five areas of: Composition (C), Mathematics (M), Humanities (H), Natural Sciences (B/P), and Social Sciences (S). These credits must be obtained by taking 15 credits in the Statewide Core; 9 credits in the UF Grand Challenges Core; and an additional 3 credits in Mathematics. An additional 9 credits is to be distributed across the areas of Humanities, Natural Sciences, and Social Sciences, with a maximum of 6 credits from each of these areas. These 36 credit hours must also include 3 credit hours of courses with the Diversity designation and 3 credit hours with the International designation. The current Writing Requirement of 24,000 words will remain in effect.

### Objectives for Grand Challenges Courses

Courses submitted for consideration for inclusion in the Grand Challenges Core must meet the following objectives. Each course should

1. Be interdisciplinary; involving participation from faculty in at least three undergraduate-degree-granting colleges, in three distinct disciplines.
2. Meet the objectives for the Social Sciences (S) or Natural Sciences (B or P) general education (GE) designation (see <http://gened.aa.ufl.edu/program-area-objectives.aspx> for area objectives).
3. Focus on a topic/problem of major current global interest that can be analyzed using the tools/methods/skills developed in the course. Examples include identified “grand challenges” such as:
  - a. 21<sup>st</sup> Century Grand Challenges  
(<http://www.whitehouse.gov/blog/2012/04/09/21st-century-grand-challenges>)

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<sup>11</sup> <http://gened.aa.ufl.edu/gen-ed-requirements.aspx>

- b. Grand Challenges for Development (<http://www.usaid.gov/grandchallenges>)
- c. Grand Challenges for Engineering ([www.engineeringchallenges.org/](http://www.engineeringchallenges.org/))
- d. Grand Challenges in Global Health  
(<http://www.grandchallenges.org/Pages/Default.aspx>)

The course does not need to be included on a recognized list of “grand challenges” but the topic should be of such importance that it could be considered a “grand challenge”.

- 4. Include a critical analysis of the problem from various perspectives including those that are relevant to the area of the applicable General Education designation(s).
- 5. Require students to explore possible solutions, or ideas that are significantly related, to some component of the identified problem. Ideally, students should be required to create or design a product or develop an idea, process, or system related to some aspect, or effect, of the problem of interest.
- 6. Require students to design solutions to multidisciplinary problems. The students may not have the technical skills or knowledge required to tackle any aspect of the particular challenge, but there must be some related problem that the student is required to address in a meaningful way.
- 7. Develop students’ creative thinking skills.
- 8. Develop students’ ability to communicate knowledge, ideas, and reasoning clearly and effectively in written and oral forms.

### Prerequisites

The statewide core requires students to complete five general education courses, one in each of the five areas of Communication, Computation, Humanities, Natural Sciences, and Social Sciences. All of these courses are lower division without prerequisites so can be completed early in the first year of postsecondary education. In fact, most students enter UF with credit for these courses through acceleration mechanisms. In order to guarantee a necessary degree of intellectual maturity and ability to handle the material, some courses in the Grand Challenges Core may require students to complete all or part of the statewide core as prerequisites. The prerequisites can only include courses in the statewide general education core. For example, another grand challenge course cannot be used as a prerequisite. Furthermore, prerequisites cannot require specific courses in the statewide core; they can only require completion of the statewide core in a specific general education area. For example, “Completion of the Statewide Core in Social Sciences and Communication” could be used as a prerequisite for a course in the Grand Challenges Core.

## Call for Proposals for Grand Challenges Courses

The Office of the Provost is inviting undergraduate-degree-granting colleges to submit proposals for general education courses in the Natural and Social Sciences areas for the Grand Challenges Core.

Proposals do not need to include a complete syllabus but must include the following information.

1. State the “grand challenge” that is addressed in this course and provide a justification for your claim that this problem should be regarded as a grand challenge.
2. What disciplines are covered in the course?
3. How will faculty in the different disciplines be incorporated in the course?
4. State the course objectives and explain how they align with the grand challenges courses.
5. What General Education designations will you request for this course? Explain how the course meets the objectives for these areas.
6. What are the required texts?
7. List the weekly course schedule of topics to be covered.
8. How will the students be graded? Include a brief description of the types of assignments (homework, quizzes, tests, papers). Indicate if the tests/exams will be done online, or in face to face environment, proctored, or un-proctored.
9. Describe the structure of the course. For example large lecture with small discussion sections, 100% online with no discussion sections, hybrid with 50% online and 50% face to face, etc. Will the course be taught using any innovative pedagogy or technology? What enrollment will the course be able to handle?
10. Describe the administrative and management structure of the course. Will there be a course coordinator?
11. Proposals must include a budget with details for course development.
12. State all colleges that will contribute to this course. Include the names and signatures of college deans indicating agreement to offer, manage, and support this course.
13. Designate a single contact person for this proposal. All communication from the Provost’s Office regarding this proposal will be sent to this contact which will be responsible for maintaining communication with the colleges involved.

**Deadline:** Completed proposals must be received by midnight, March 31, 2014. Please submit all proposals by email to Ann Greene in the Office of Undergraduate Affairs at [agreene@aa.ufl.edu](mailto:agreene@aa.ufl.edu). Please call 352-846-1761 for additional information.

President Machen will make the awards by late April 2014 and colleges are expected to develop the courses during Summer 2014. The courses must be piloted in small sections in the 2014-15 academic year. Experience gained from the pilot program should be used to improve the courses to make them suitable for offering in 2015-16.