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Developing a STEM Teacher Recruitment Pipeline

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Developing a STEM Teacher Recruitment Pipeline

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Abstract

The Columbus Region Academy of Future Teachers of STEM (CRAFT-STEM), a Phase I Robert Noyce Teacher Scholarship Program, combines internships and scholarships, an exciting summer STEM Honors Camp, a new Teaching Connections Seminar, and an impressive array of existing resources to recruit, prepare, and graduate an increasing number of STEM teachers committed to serving high need high schools.

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STEM Education at CSU

- Currently, CSU educates at least 60% of the area's teachers.
- However, Georgia produces very few teachers in certain areas of STEM, consistent with national trends.
- CSU has mirrored this trend.
- High teacher attrition rates exacerbate the problem: over half leave within 5 years.

- What can CSU do to change this equation?

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CRAFT-STEM

The Columbus Region Academy of Future Teachers of STEM (CRAFT-STEM) is an NSF Robert Noyce Teacher Scholarship program (funded with grant number 1136356). Program components include a STEM Honors Summer Camp engaging high school juniors and seniors in STEM research and activities, $4500 summer internships for CSU freshmen and sophomores, and scholarships worth $10,000-13,000. This five year grant is worth approximately $1.2 million.

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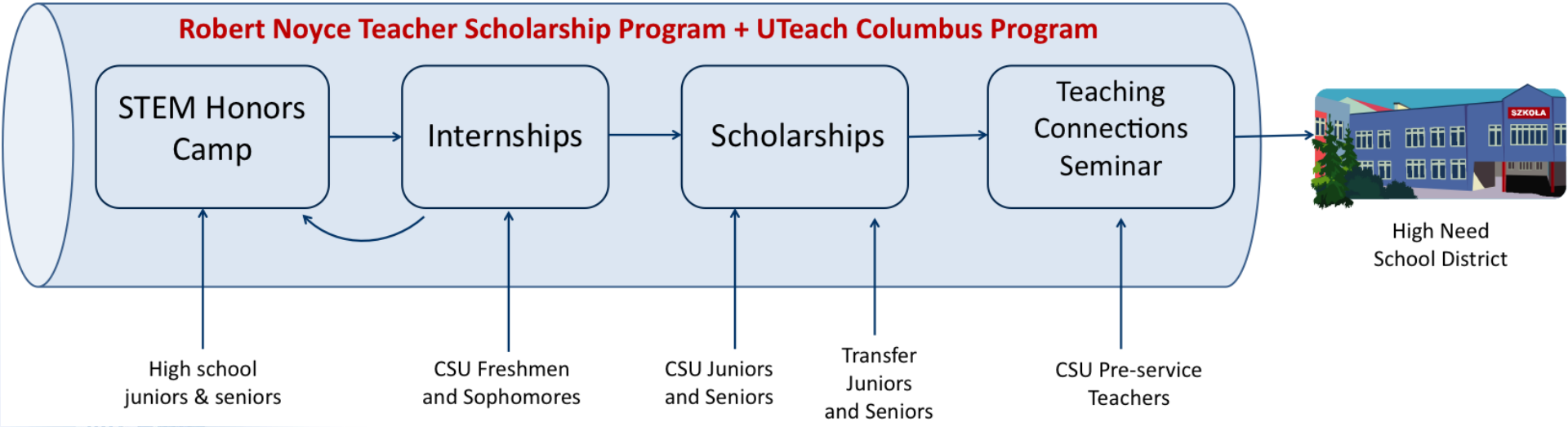

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STEM Honors Camp

- Two week experience, competitive nomination process for rising high school juniors and seniors. Vehicle to recruit talented students to STEM majors at CSU.
- Participate in authentic research with faculty and interns
- Experience life on CSU campus
- Speaker series – Careers or issues in STEM
- Field trips
- Student colloquium – students present their research projects to other camp participants, parents and faculty.
- Loosely based on successful Academy of Future Teachers camp held several years ago
- Directive from Dr. Mescon – make it a residential camp!

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What is UTeach?

- Collaborative effort by College of Letters and Sciences, and College of Education and Health Professions
- Replication of nationally recognized Texas program for STEM teacher preparation
- Focus on strong content knowledge, exposing students to research in their field
  - Graduates have majors in math or science, and are eligible for teacher certification.
- Re-design/streamline of education courses to focus on STEM
- Aggressively recruit students to teaching math and science
- Critical to success: Master Teachers, to teach/co-teach field experience classes and mentor students

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Student Recruitment

- Publicity
  - Logo, bookmarks, brochures, fliers, letters, e-mails, give-aways
  - Posters around campus
  - Articles/ads in Ledger-Enquirer, Saber, Impact
  - Word of mouth
  - Web site: http://uteach.columbusstate.edu/
  - Facebook page: http://www.facebook.com/UTeachColumbus
- Visits to introductory math and science courses and Freshman Learning Communities
- Freshman orientation activities, Visitation Day
- Meetings with high school principals
- STEM Honors Camp
- Tuition rebates for Step 1 and Step 2 classes!

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Early and Intensive Classroom Experiences

Step 1: Inquiry Approaches to Teaching

Step 2: Inquiry Based Lesson Design

Classroom Interactions

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Streamlined Courses – Rollout Plan

UTeach Course	First Semester Offered	Instructor
Step 1: Inquiry Approaches to Teaching	Spring 2012	Master Teachers
Step 2: Inquiry-Based Lesson Design	Fall 2012	Master Teachers
Knowing and Learning in Math and Science	Fall 2012	Hrepic or Peker
Functions and Modeling	Spring 2013	Howard and Jones
Classroom Interactions	Spring 2013	Gober and Sinkule
Perspectives in Math and Science	Summer 2013	Van Kley
Project-Based Instruction	Fall 2013	
Research Methods	Fall 2013	Shaw
Apprentice Teaching	Spring 2014	

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UTeach Columbus Enrollment Targets

Based on conservative assumptions, we developed the following enrollment targets for students entering the UTeach Columbus program, as well as targets for enrollment in Step 1 and Step 2 courses.

At the *end* of	Enrollment target	Actual enrollments to date
2012	39	40
2013	80	56 students 72 seats
2014	138	
2015	209	
2016	251	

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Enrollment Updates

• In Fall 2012, we had 40 students enroll in UTeach courses, meeting our target.

• In Spring, we have approximately 56 individual students enrolled in at least one class, and 70 “seats” filled in classes.

- Step 1 class: 35 enrolled
- Step 2 class: 16 enrolled
- Knowing & Learning: 10
- Functions and Modeling (Math Ed only): 5
- Classroom Interactions: 4

•There are also several students not enrolled in a UTeach class who intend to enroll in another next term.

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Student Demographics

- Gender:
  - 21 males, 35 females
- Ethnicity
  - 33 white, 20 black, and 3 Asian
- Majors
  - 16 math
  - 20 biology
  - 4 chemistry
  - 8 earth and space science
  - 2 middle grades
  - 1 pre-nursing, 1 early childhood, 1 computer science, 1 marketing, 1 engineering, 1 information technology

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CRAFT-STEM Scholarships

- CSU students in STEM Education majors in their junior or senior year are eligible for scholarships.
  - Minimum scholarship $10,000. Can award up to $13,000, based on financial need and merit criteria.
  - For each year of scholarship, students commit to teaching STEM in a high-needs school district for two years, within eight years of graduation.
- Awardees required to participate in the “Teaching Connections Seminars”
  - Participants have been exploring connections between high school curricula and college math and science courses.
  - This semester, we are also discussing the opportunities and challenges of teaching in high needs schools.

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UTeach Scholarships

- Each semester, we have a few $1000 scholarships to award
  - Must have completed Step 1 class
  - Only eligible once per calendar year
- Funded by
  - Race To The Top grant
  - Private donations
  - Gift from AT&T

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CRAFT-STEM Internships

- Any CSU freshman or sophomore can apply for *summer* internships.
  - Preference given to STEM and STEM education majors.
  - Competitive application process.
  - Students will work to design and organize STEM Honors Camp, carry it out with supervision from mentor faculty.
  - Afterward, will work on research, on tutoring or peer instruction, in outreach facilities and with other STEM related camps.
- Internship pays $4500 over the summer.
  - Interns expected to work ~ 400 hours.

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- Work with outreach centers (such as Oxbow Meadows) in STEM education efforts
- Work on PR for UTeach and CRAFT-STEM programs

- Future efforts?
  - Tutoring programs in local after school programs

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Homeschool Internships

- Middle School students in Columbus area
- Attend lab-only class every week, or every other week, at CSU
- Labs designed as 5E inquiry lessons

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Any Questions?

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Race To The Top funding levels

Funding periods	Potential grant amounts	Funds for Institute Technical assistance	Total funds awarded
Sept – Dec 2011	Up to $100,000	$100,000	Up to $200,000
2012 operations	Up to $250,000	$100,000	Up to $350,000
2013 operations	Up to $350,000	$100,000	Up to $450,000
2014 operations	Up to $350,000	$100,000	Up to $450,000
2015 operations	Up to $350,000	$100,000	Up to $450,000
Total	Up to $1,400,000	$500,000	Up to $1,900,000

Long-term Goal: Build an endowment that, together with University and grant support, will make this program self-sustaining when this grant funding ends.

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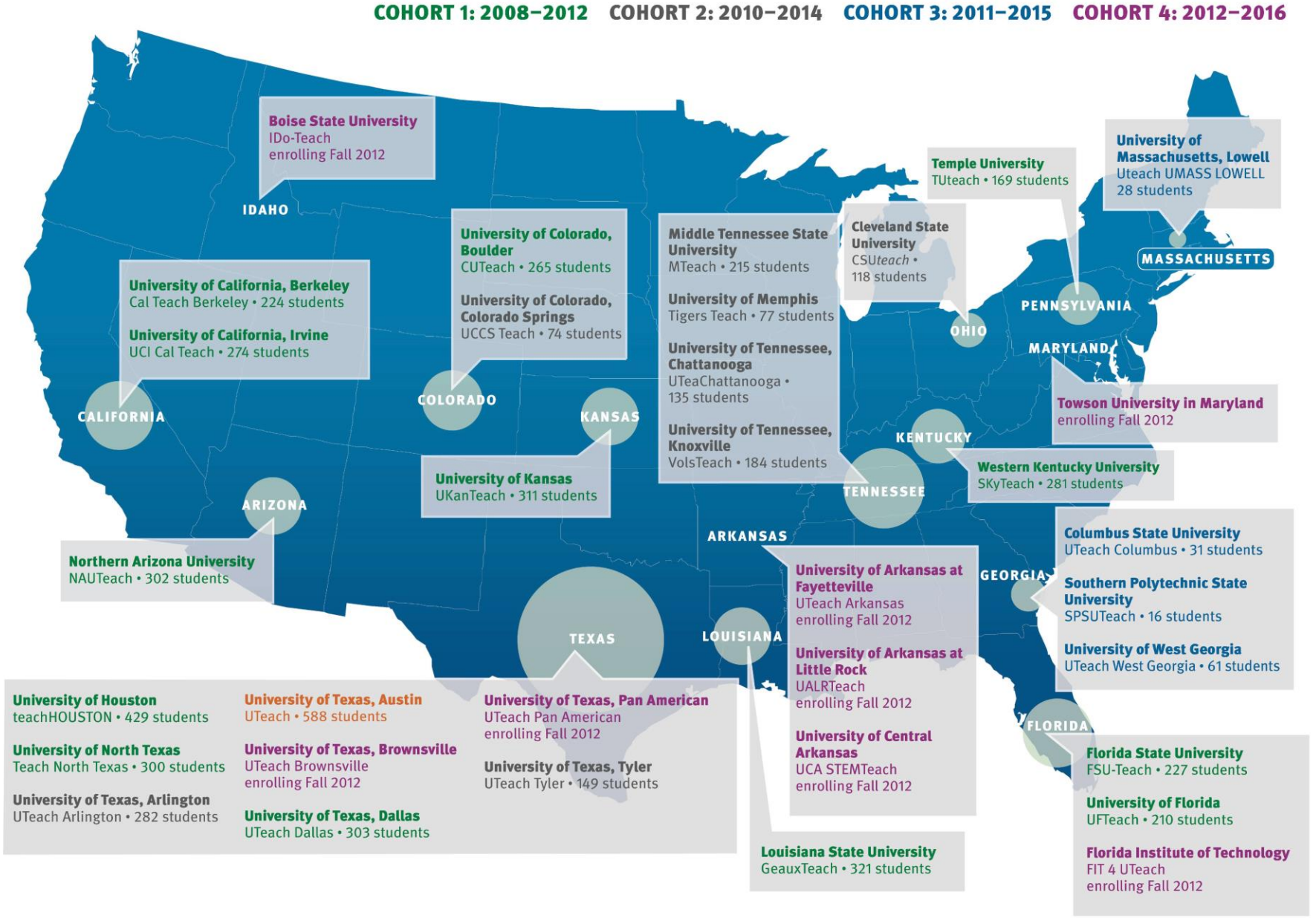
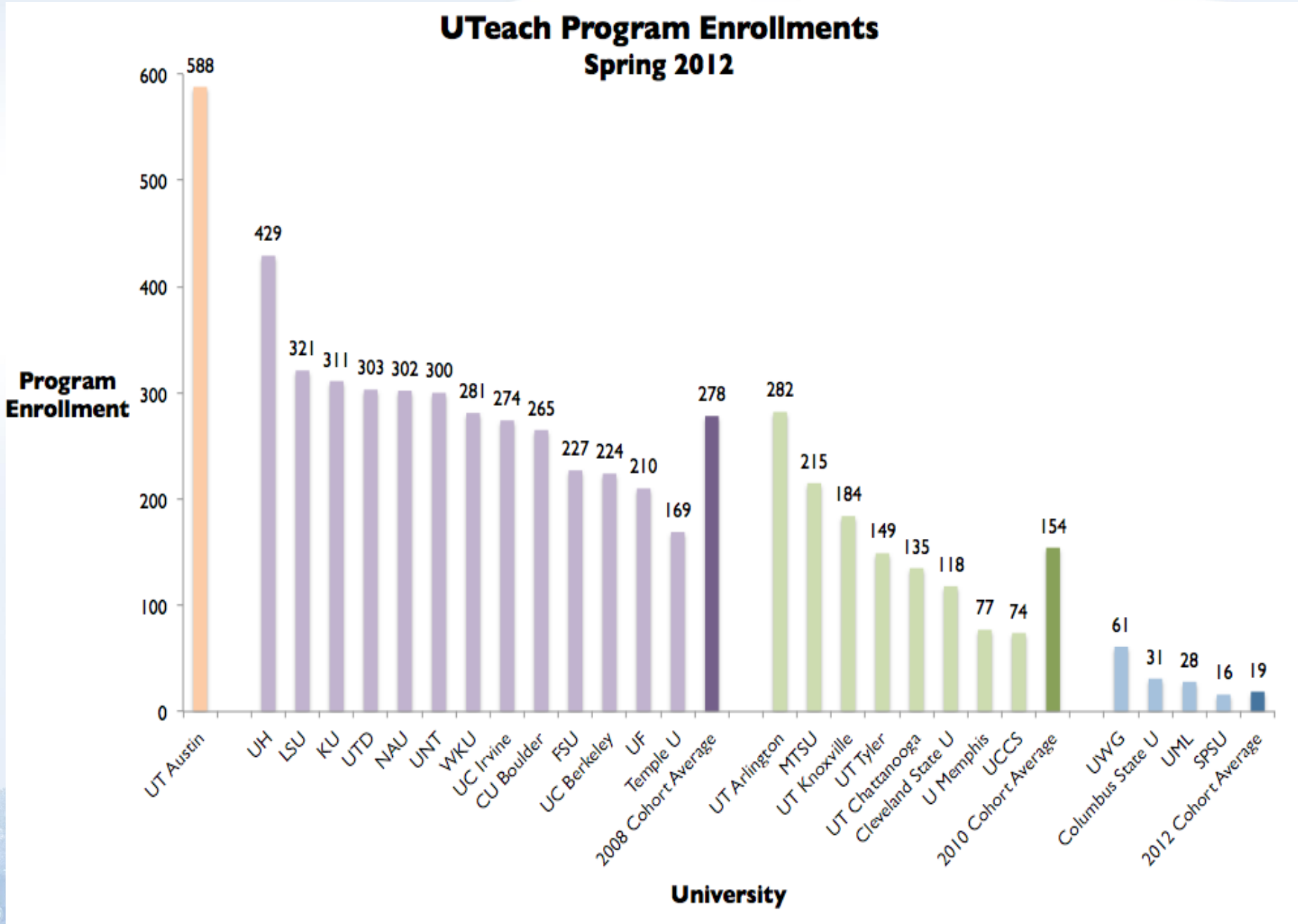
Universities Replicating UTeach

Spring 2012 enrollment nationwide (5,574 students)




UTeach Program Enrollments
Spring 2012
Program Enrollment
University
600
500
400
300
200
100
0
588
429
321
311
303
302
300
281
274
265
227
224
210
169
278
282
215
184
149
135
118
77
74
154
61
31
28
16
19
UT Austin
UH
LSU
KU
UTD
NAU
UNT
WKU
UC Irvine
CU Boulder
FSU
UC Berkeley
UF
Temple U
2008 Cohort Average
UT Arlington
MTSU
UT Knoxville
UT Tyler
UT Chattanooga
Cleveland State U
U Memphis
UCCS
2010 Cohort Average
UWG
Columbus State U
UML
SPSU
2012 Cohort Average