



# UTeach

Training the Next Generation of Skilled, Effective Math,  
Science, and Computer Science Teachers

at

The University of Texas at Austin

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# Outline

- Overview of UTeach.
  - ❖ Quality, quantity, & retention.
  - ❖ Master teachers.
  - ❖ Important threads throughout several classes.
- Role of Earth/space scientists in UTeach.
  - ❖ Surprisingly diverse and cross-disciplinary.
- Broader roles of (Earth/space) scientists.
  - ❖ Generate interest within the administration.
  - ❖ Model effective teaching styles in content classes.
  - ❖ Work with master teachers.
  - ❖ Grad students & postdocs.

# Hallmarks of UTeach

- Collaboration: natural science, education, local schools.
- Active recruitment of college undergraduates.
  - ❖ 4-year prog. for Science, math, comp. science majors.
- Flexible program: multiple entry points.
- Customized program.
  - ❖ Streamlined professional education sequence.
  - ❖ Early & ongoing field experience.
  - ❖ Individual teaching portfolios.
  - ❖ Experience with scientific inquiry & technology.
- Support: Advising; paid internships; scholarships.
- Post-graduation support: induction & master's degree.



# Collaborative Academic Program

## University Provider

College of Natural Sciences

College of Education

College of Liberal Arts

## Professional Development Courses

One-hour Courses: *STEP 1, 2*

*Research Methods*

*Student Teaching*

*Major in Science or Mathematics*

*Knowing & Learning*

*Classroom Interactions*

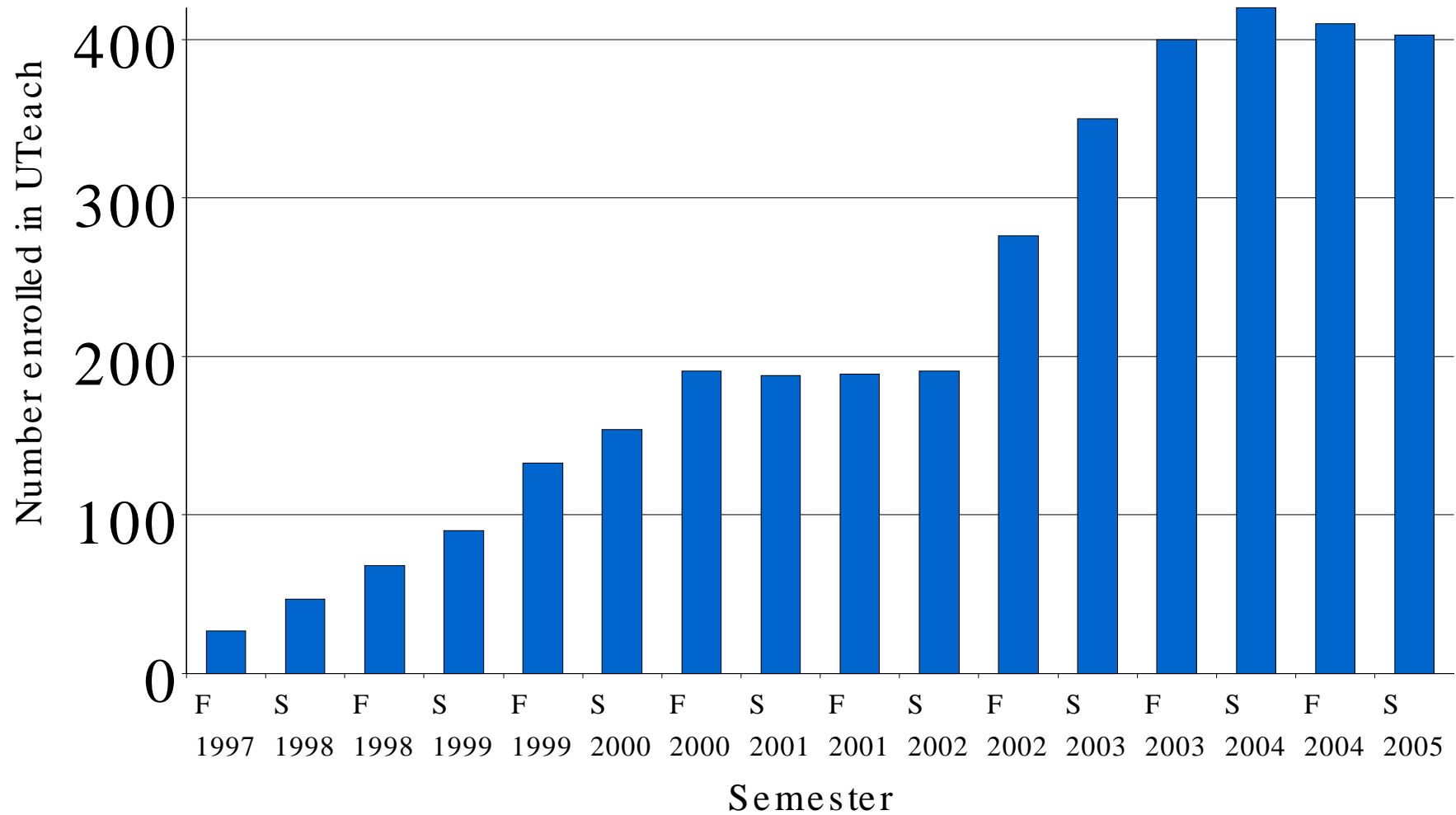
*Project-Based Instruction*

*Student Teaching*

*Perspectives in Math & Science*

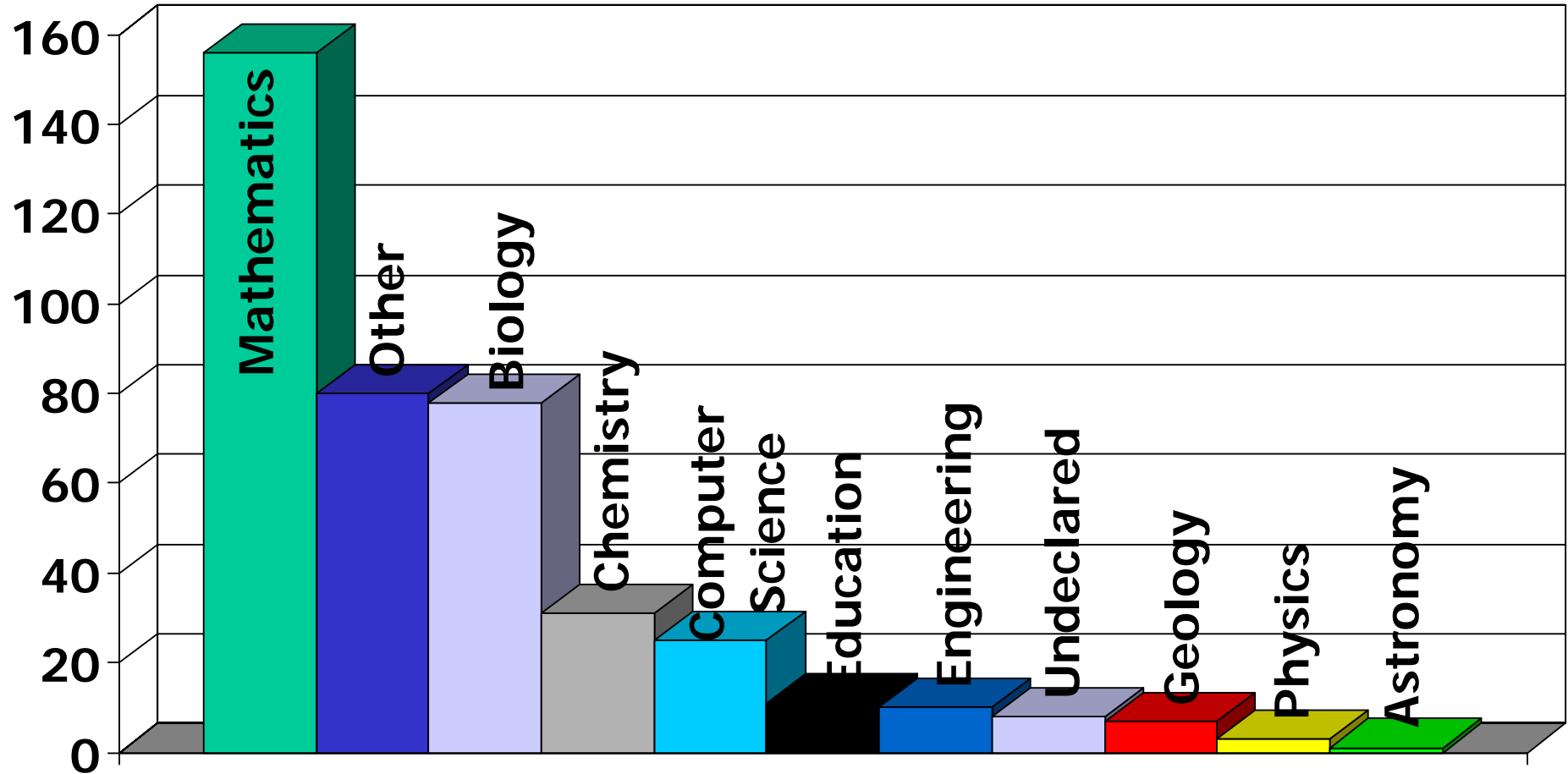


# UTeach Enrollment



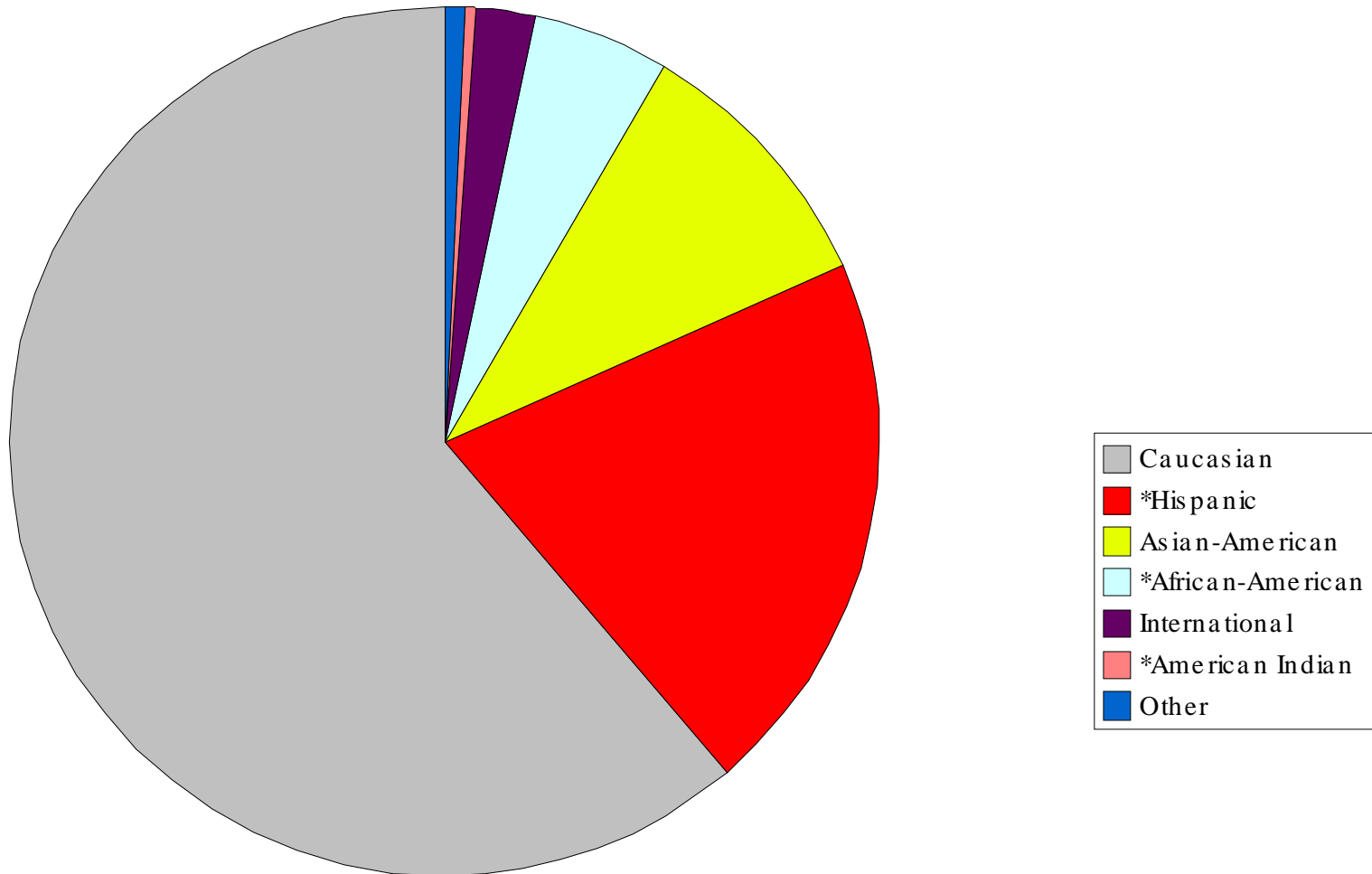


# UTeach Student Majors



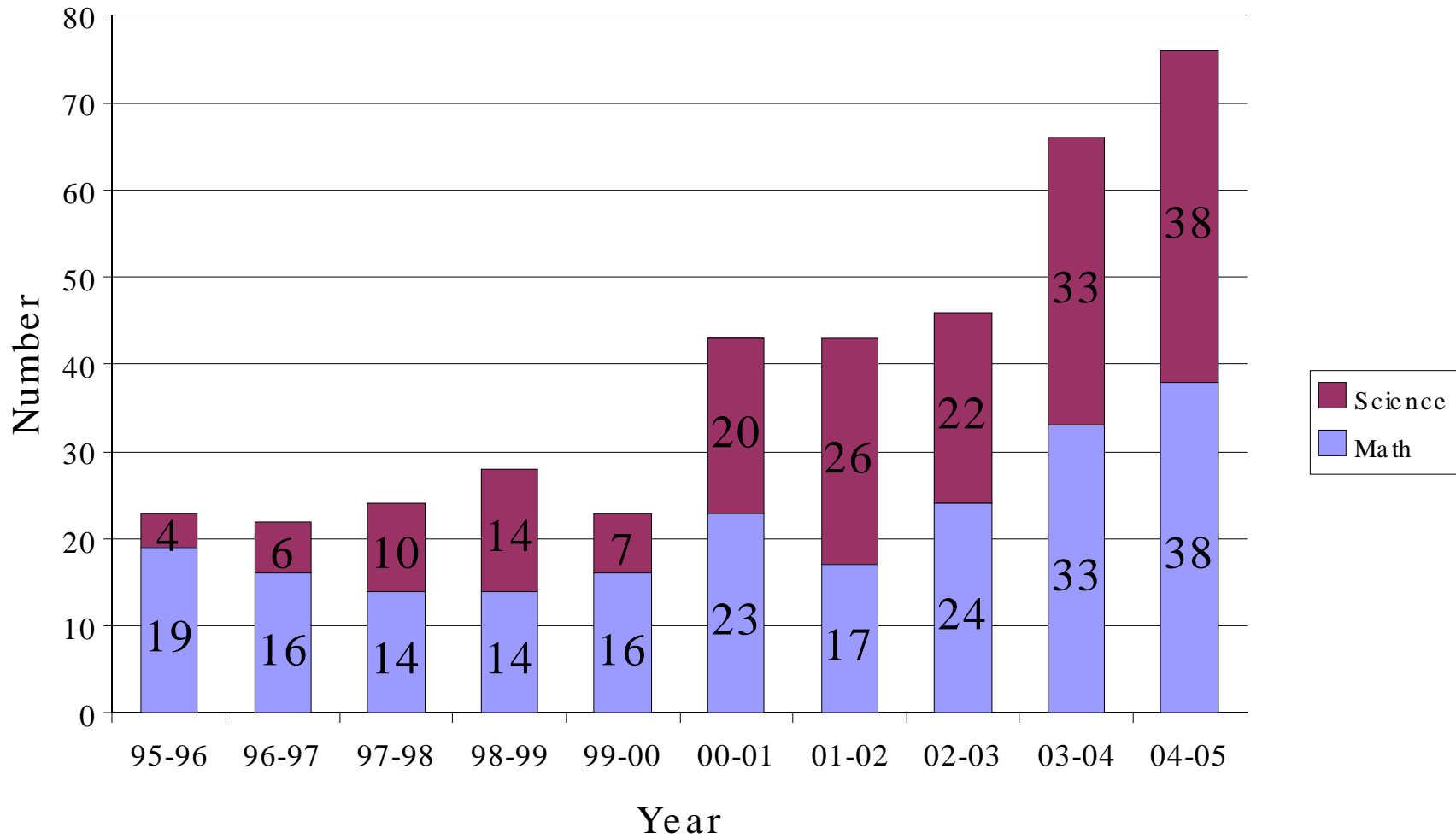


# UTeach Demographics



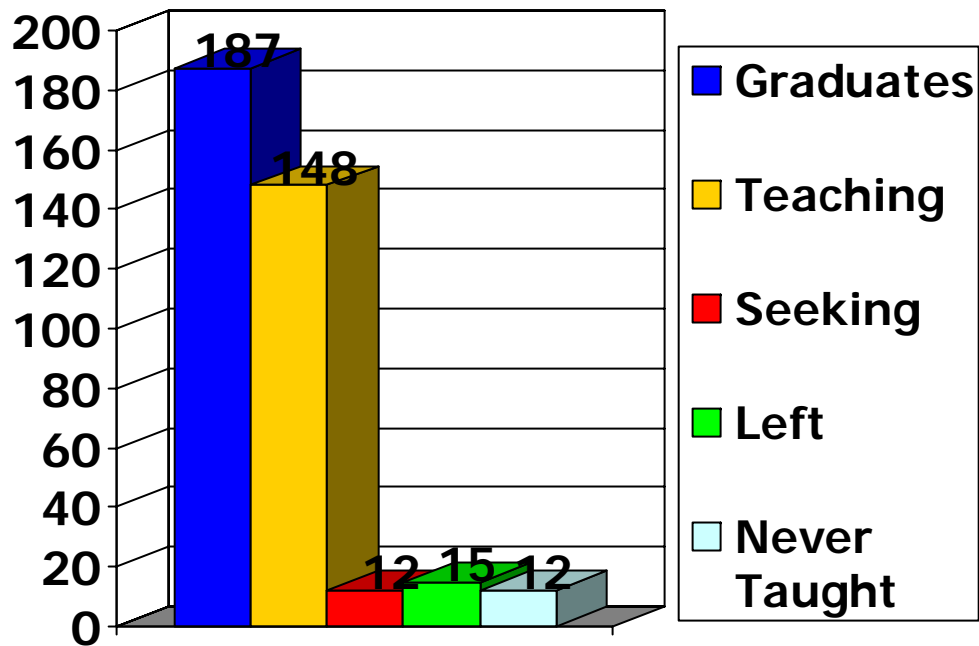


# Student Teaching





# UTeach Graduates



- **79% Teaching**
- **6% Seeking to Teach**
- **8% Left Teaching**
- **6% Never Taught**



# The UTeach | Dell Center for New Teacher Success

- Teacher attrition a serious problem.
  - ❖ 10-30% after first year, depending on demographics.
  - ❖ 40% after 3 years in Texas.
- Induction program for all new teachers in Austin.
  - ❖ On-Site Support from Master Teachers.
  - ❖ Lending Library (calculator-based labs & equipment, lab equipment, manipulatives, kits, etc.).
  - ❖ Professional Development (Saturday Mini-Courses).
  - ❖ Scholarships for summer institutes or professional conferences.



# Induction Support by Master Teachers

- Model lessons.
- Instructional planning.
- Classroom observations.
- Reflective conferences.
- Classroom & collaborative group management.
- Drop-off/Pick-up & demonstrate Resources.
- Analyze student work & assessments.
- Assistance with writing grants or identifying professional development opportunities.
- Emotional support.



# U'Teach MA in Science or Math Education

- Create next generation of master teacher leaders.
- New program.
- Fit a busy teacher's schedule.
  - ❖ Most of the work during 3 summers.
  - ❖ 6 hours course work across 2 academic yrs – online.
- Custom curriculum.
  - ❖ 3 UTeach courses.
  - ❖ 3 courses in discipline.
    - Newly designed or under construction in math, biology, physics, chemistry, earth science, computer science.
  - ❖ Participation in research group & master's report.

# Some Keys to UTeach Success

- Early positive experience **teaching** in classrooms.
- First two courses offered at **no cost** to students.
- Financial support: internships and scholarships.
- **4-year program** is more attractive than 5-6 yr option.
- **Master and mentor teachers** as faculty & advisors.
- New courses combining content and pedagogy.
- External recognition increases **prestige** of program.
- **Cohort** experience creates bonds between students & teachers.
- **Induction** support for new teachers



# Earth/Space Scientists & UTeach

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- Two astronomers. Teach program courses.
  - ❖ Research Methods.
  - ❖ Project Based Instruction.
  - ❖ Some of the work is in the discipline, but most is outside. Interesting interdisciplinary roles.
- Two geologists.
  - ❖ Short field course popular with UTeach students.
  - ❖ GK-12 program includes UTeach students.
  - ❖ Examples of utilizing existing good courses/programs to help preservice training.

# Research Methods

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- Inquiry course; partially modeled on grad school.
- Very few astronomy projects.
- Use general skills of a scientist.
  - ❖ Sensible experimental design.
  - ❖ Statistics to interpret results.
  - ❖ Emphasis on written & oral communication.
  - ❖ Deep review of student work.
- Instructional staff work as a team. Safety issues.
- Occasionally draw on outside expertise.
- Class was ported outside of UTeach.

# Project-Based Instruction

- Field experiences with high school students.
  - ❖ First offering at U. Texas Marine Science Inst.
  - ❖ Added astronomy for math/physical science majors.
- Build Dobsonian telescopes (Mary Kay Hemenway).
  - ❖ Work with high school math classes.



# Scientists in Preservice Training

- Strong administration involvement.
- Cooperation: Nat. Science; Education; Schools.
- Use scientific discipline: hook & part of curriculum.
- Learn & model effective teaching styles.
  - ❖ Encourage colleagues & institutional reform.
- Utilize master teachers (including in content courses).
- Labor intensive.
- Rewarding.
  - ❖ The leveraging is strong motivation.
- Opportunities for grad students & postdocs.

# Summary

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- UTeach has evolved into a comprehensive set of programs.
  - ❖ Preservice teacher training & certification.
  - ❖ Induction support for new teachers.
  - ❖ Masters program for continuing prof. development.
- Earth/space scientists, an interdisciplinary role.
  - ❖ Within discipline for UTeach & other courses.
  - ❖ Exercise skills of a scientist in many topic areas.
- Scientists can take direct responsibility for improving the state of education in the country.