



Nuclear Engineering Programs: Challenges and Opportunities

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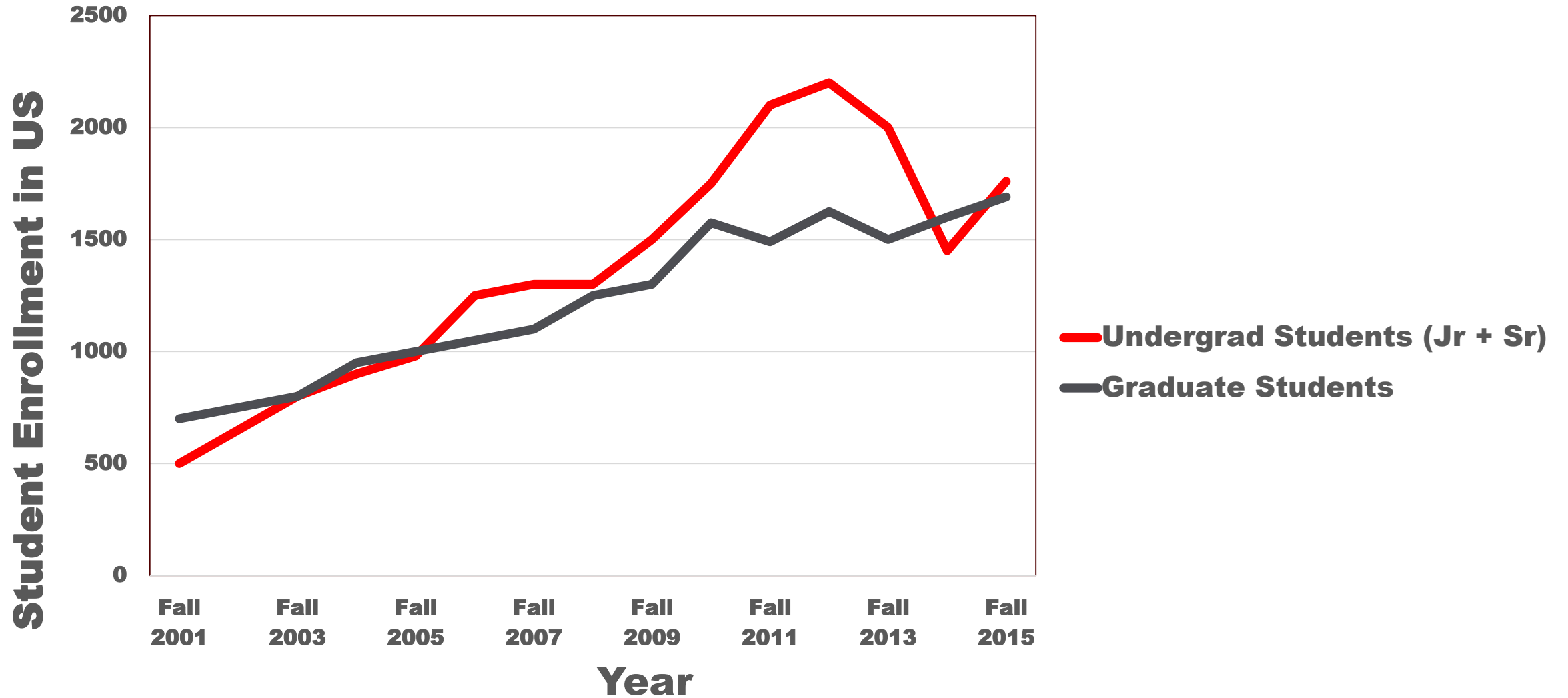
Department of Nuclear Engineering

Texas A&M University

***NRC Strategic Plan public meeting
July 27, 2016***

Nuclear Engineering Enrollment Trends

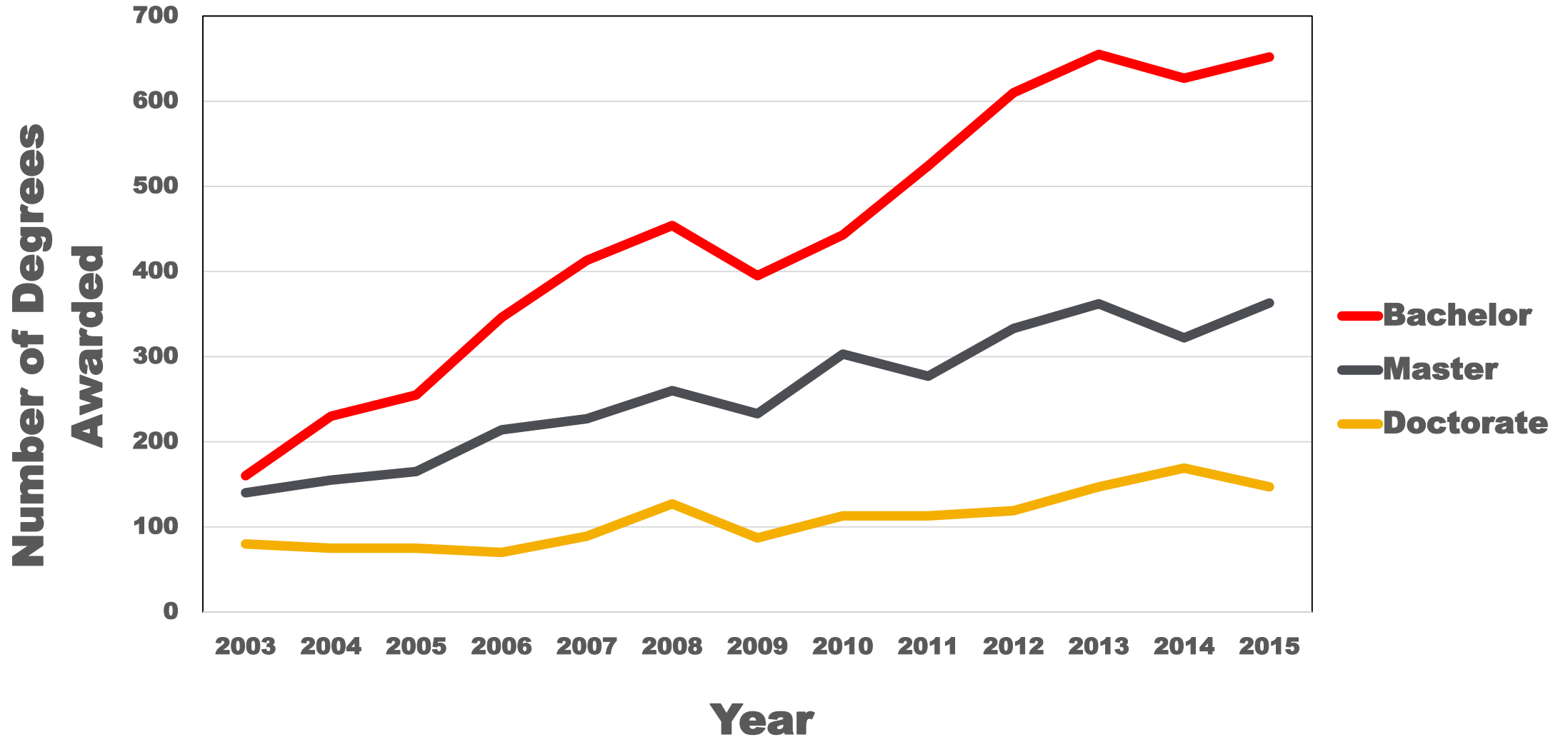
Total Student Enrollment in US



Number of Nuclear Engineering Programs in US: 35

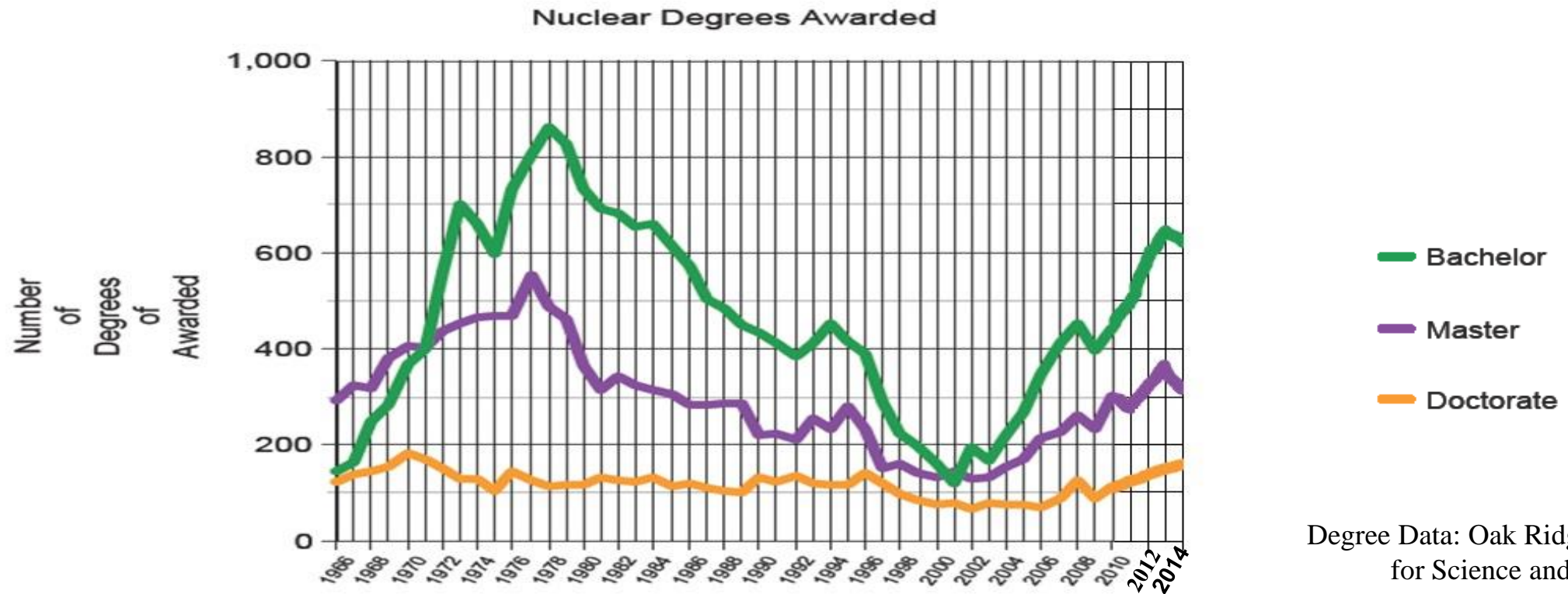
Source: Oak Ridge Institute

Nuclear Engineering Degrees, 2003-2015

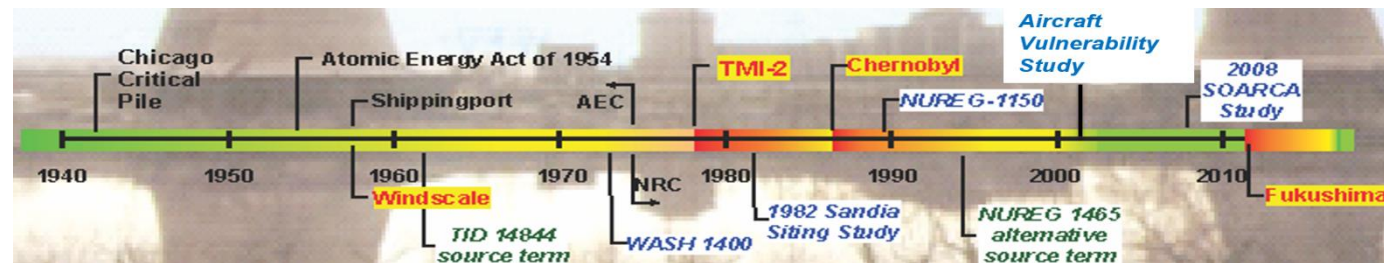
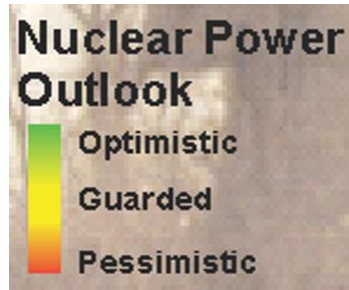


Source: Oak Ridge Institute for Science and Education

Nuclear Engineering Degrees Awarded (US)



Degree Data: Oak Ridge Institute for Science and Education



Challenges:

Attracting and Retaining Qualified Students in Nuclear Engineering Programs

- **Having a well prepared workforce is key to safe, secure and sustainable utilization of nuclear energy**
- **NRC programs are instrumental to assuring this critical capability for safety, both within the Agency and more broadly across the industry**

Examples of high impact programs:

- **Internships**
- **Junior faculty support**
- **Scholarships that provide an excellent opportunity to recruit outstanding students**
- **Development of Specific Disciplinary Programs**
- **Establishment of diversity fellowships**
- **NRC initiatives to facilitate avenues for faculty to participate in NRC research**
- **Retention of students in the nuclear field.**

FY 2016 Grant Funding

NRC Integrated University Program (IUP)

- **Scholarships (Undergraduate and Graduate)**
- **Fellowships**
- **Trade School/Community College Scholarships**
- **Junior Faculty Development**

\$0 for Curriculum Development Grants

NRC continued support of this program has been critical to nuclear engineering academic programs and has succeeded in reversing enrollment decline that dominated the nineties decade.

Challenges:

Attracting and Retaining Qualified Students in Nuclear Engineering Programs

Achieved through:

- **Research opportunities on Non-LWR and LWR technologies**
- **NRC support for development of curriculum and courses in areas such as *decommissioning, Non-LWR systems, security (physical and cyber), regulatory and licensing process, etc.***
- **Encourage NRC support of grant programs and students/faculty participation in NRC research programs**
- **Continue with NRC Integrated University Program (IUP) scholarships**

Challenges:

Maintaining US Science and Technology Leadership through Support of Nuclear Engineering Education and Training

- **Provide opportunities for Nuclear Engineering Academic Programs to participate in the NRC international initiatives and missions**
- **Instrumental in sharing U.S. standards and practices, and spreading best practices**
- **Help nuclear newcomer countries to develop a safety culture**
- **Can contribute to building networks across national boundaries of students and young professions who will become the future leaders of the international nuclear industry over decades to come**

The National Organization of Test, Research, and Training Reactors (TRTR)

TRTR Remarks

- The Community appreciates the effort at license renewal streamlining, but the license renewal and license amendment process remain overly burdensome. Even simple license amendments can take months to years.
- NUREGs and Standards have become de facto regulation over the actual regulations in Part 50.
- The regulator must remain cognizant of the very low risk to the public health and environment presented by non-power reactor and utilization facilities.

Challenges and opportunities ahead for Nuclear Engineering Academic Programs

- **Delivering and refining the mission**
- **Evolving infrastructure and services**
- **Coordinating with NRC and other partners to achieve sustainability**
- **Developing and maintaining quality education and training for the next generation of nuclear engineers (vital important task).**

These are critical for NRC regulatory work on advanced technologies and to assure innovation of technologies for Non-LWR and LWRs to support economic development.