



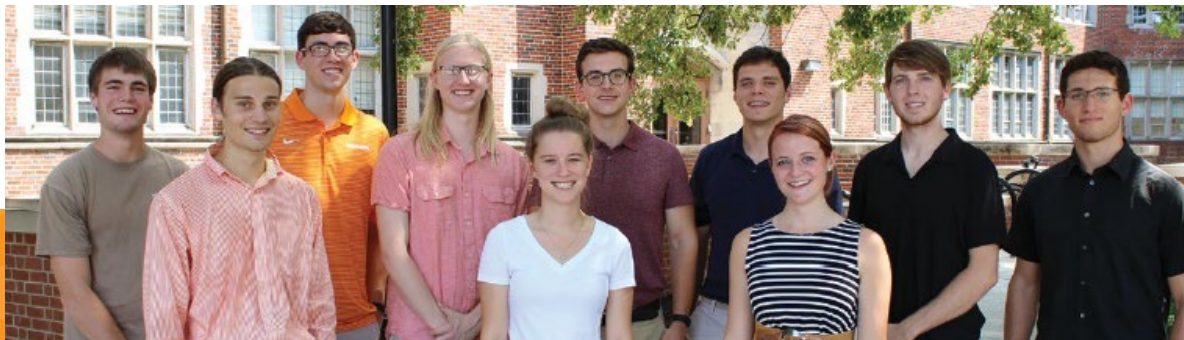
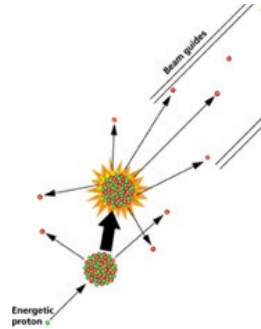
THE UNIVERSITY OF  
**TENNESSEE**  
KNOXVILLE

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DEPARTMENT OF  
NUCLEAR ENGINEERING

# Nuclear Engineering Department History

- Department **founded in 1957, oldest NE Department.**
  - Produced over 1200 graduates in past 56 years
- Offer BS, MS, PhD degrees in two tracks
  - Traditional nuclear power engineering
  - Radiological engineering (health physics and medical physics)
- Offer three graduate certificates
  - Nuclear Criticality Safety
  - Reliability and Maintainability Engineering (RME)
  - Nuclear Security Science and Analysis
- Close collaboration with nearby nuclear complex in Oak Ridge
- High Quality Students: Most DOE NEUP Scholarships for last 6 years running



# Transformation of a Department

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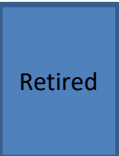
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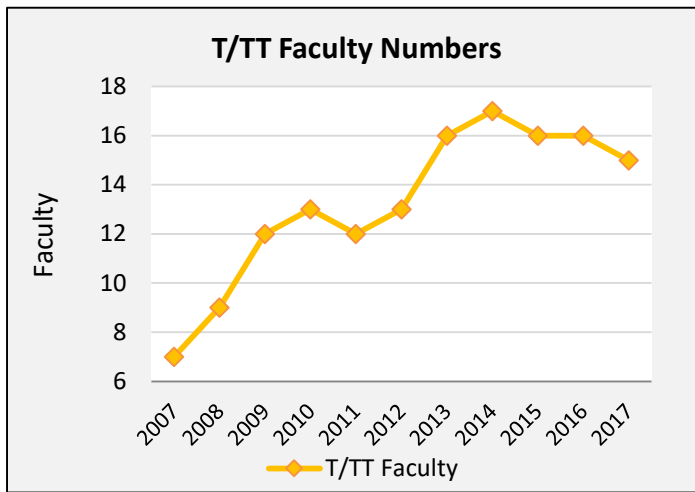
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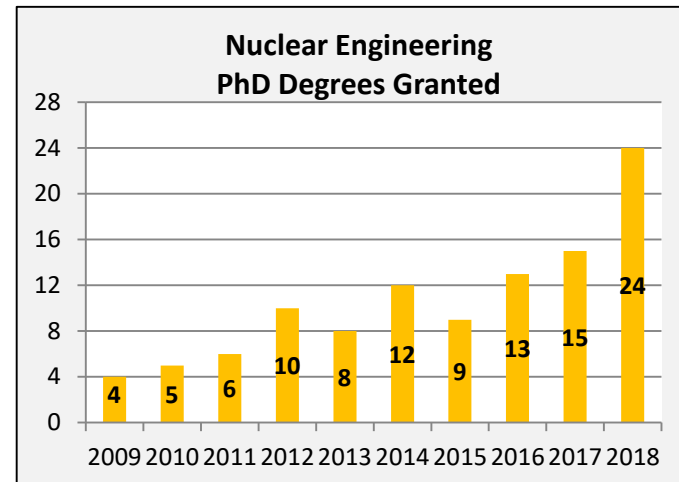
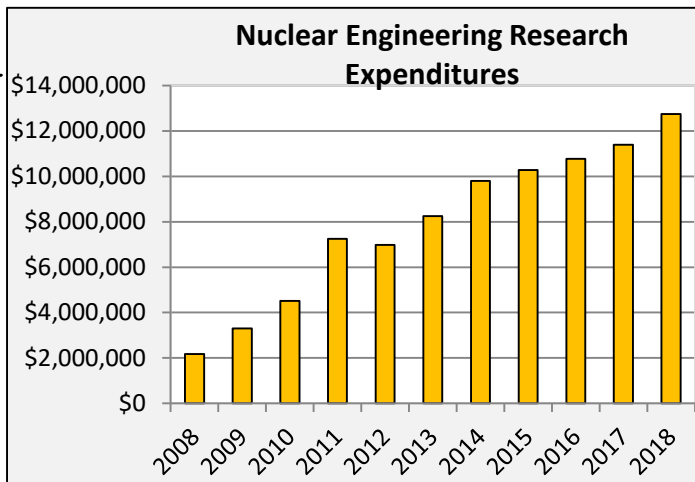
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Retired



- 15 T/TT Faculty and 2 searches
- 2 Full Time Research Faculty
- 11 Full Time Research Scientists
- 6 Post-doctoral Fellows
- 2 ORNL Joint Faculty
- 1 Y-12 Joint Faculty
- 13 Part Time Research Faculty
- 28 Adjunct Faculty



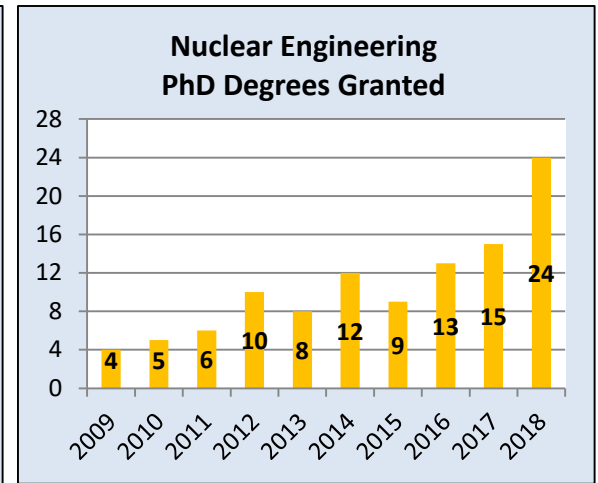
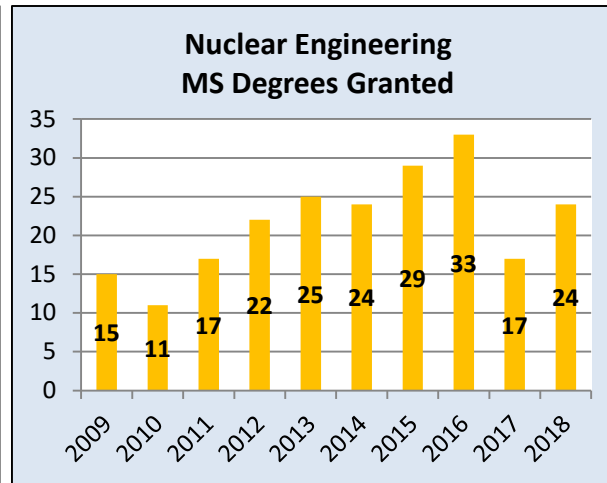
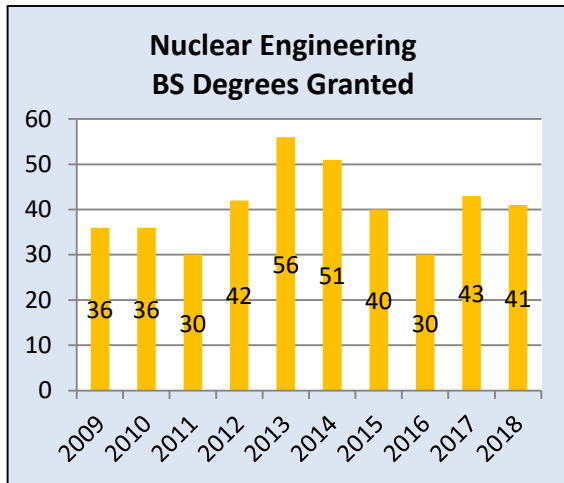
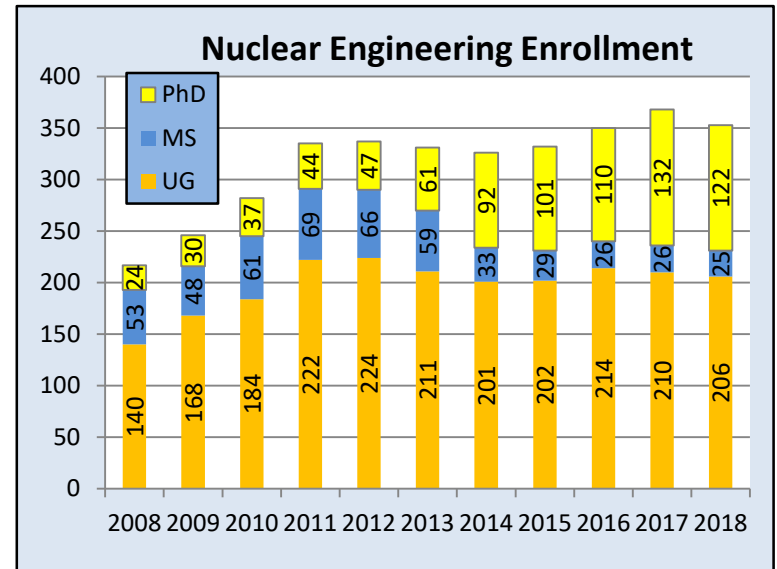
In 2007

Full Time Research Faculty

Tenure/Tenure Track Added Since 2007

# Student Data

- Fall 2018 enrollment: 353 students
  - 206 BS, 25 MS, and 122 PhD
  - **Largest PhD program in the history of the US!**
  - Second largest NE program in the U.S. based on total enrollment
  - 95% U.S. citizens; 17% female
  - Graduate students
    - 84% PhD students, 16% MS students
- FY 2018 graduates: 89
  - (BS: 41, MS: 24, PhD:24)



# NE Research Focus Areas

- **Nuclear Reactor Fuels and Materials**

- Accident tolerance

- **Nuclear Security**

- Institute for Nuclear Security

- **Radiological Sciences and Health Physics**

- Space radiation

- **Nuclear I&C, Reliability, and Safety**

- Advanced reactors

- **Nuclear Fuel Cycles**

- Cradle to grave

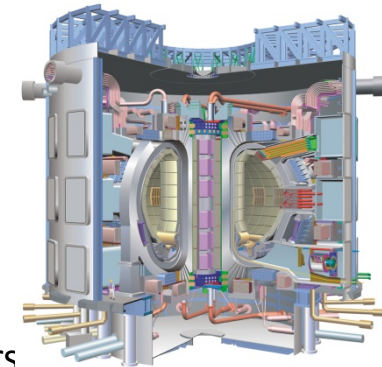
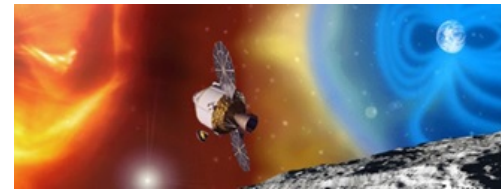
- **Nuclear Fusion Technology**

- Plasma–Material Interaction

- **Advanced Modeling and Simulation**

- The Consortium for Advanced Simulation of Light Water Reactors

- **Radiation Detection and Measurement**



# New Engineering Complex

- \$129M estimated cost
- May, 2021 completion date
- New complex will house
  - Nuclear Engineering: 38,000 NASF
  - Engineering Fundamentals: 43,740 NASF
  - Additional Research Labs: 43,540 NASF
- NE goes from 18,000 NASF to 38,000.

## 23 New Nuclear Engineering Laboratories

1 Materials Characterization Lab	13 Secure Work Space (SCIF)
2 Industrial Wet Lab	14 Fast Neutron Source
3 Industrial Dry Lab	15 Treaty Verification Lab
4 High Bay (30' ceiling)	16 General Laboratory
5 Secure Human Factors	17 Radioactive Material Storage
6 Instrumentation Development I	18 Graphite Pile
7 Instrumentation Characterization II	19 Linear Accelerator Room
8 Materials Testing and Assessment	20 Instrumentation Teaching
9 Department Radiation Instrumentation	21 Computer Server Laboratory
10 Department Wet Chemistry	22 Radiochemistry Teaching
11 Neutron Detection	23 Rx Simulator Lab
12 Nuclear Forensics Mass Spec	

