

Nuclear Science & Engineering @ Virginia Tech



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A banner image showing a campus scene with trees and buildings under a blue sky. The text "Virginia Tech" is in black and "Nuclear Engineering Program" is in white, both centered over the image.

Virginia Tech Nuclear Engineering Program

History

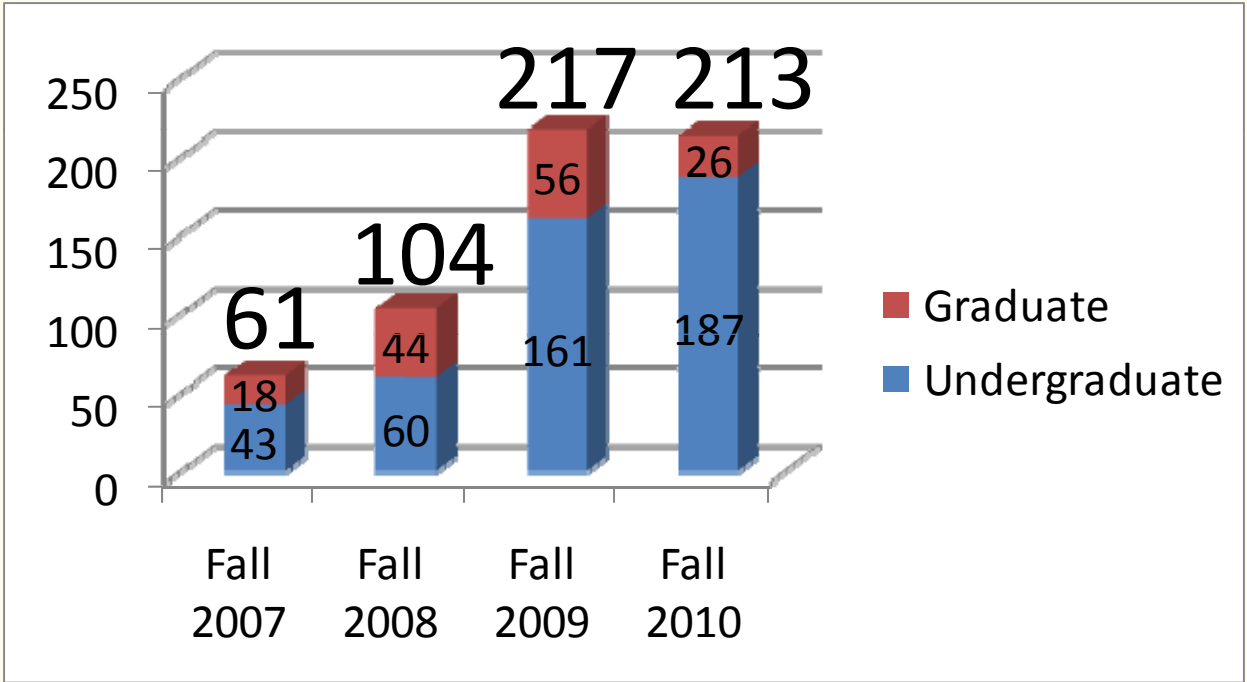
- Formerly a nuclear engineering program at VT with a research reactor in the Physics building (started in 1956)
- Program was shut down in the late 80's after Three Mile Island accident and down turn in industry
- Restarted the program in Fall 2007
- Nuclear Engineering program is part of the Mechanical Engineering Department
- Vision to expand to a School of Nuclear Science & Engineering

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Virginia Tech Nuclear Engineering Program

Educational Program

- Undergraduate Minor in Nuclear Engineering (pending Spring 2011)
- Graduate Nuclear Engineering Certificate (pending Fall 2010)
- M.S./Ph.D. in Nuclear Engineering (pending university & state approval – Fall 2011)
- Eventually a B.S. in Nuclear Engineering once enough faculty and resources in place



Very strong growth despite no degrees offered yet

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Virginia Tech Nuclear Engineering Program

Indicators of Activity

- American Nuclear Society (ANS) Student Section
 - over 75 student members with semi-monthly meetings
- \$1.2M in Nuclear Regulatory Commission grants
- Currently hiring 3 additional full-time nuclear engineering faculty to start in Fall 2011
- Virginia Tech authorized as one of 42 recognized nuclear engineering programs nationwide to receive Dept of Energy-Nuclear Energy scholarships and fellowships (3 scholarships/1 fellowship received to date)

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Indicators of Activity (cont'd)

- About \$1M in CAER-related (Center for Advanced Engineering and Research, Lynchburg, VA) research including:
 - Two ongoing projects with AREVA NP, Lynchburg on two-phase flow in steam generators
 - Two previous projects in reactor thermal hydraulics for AREVA's EPR reactor
 - Weld pool solidification modeling for Babcock & Wilcox Company, Lynchburg, VA
- Senior Design Project constructing an IECF Fusion Demonstration Reactor

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Virginia Tech Nuclear Engineering Program

GEM*STAR Support

- Briefed Deans of Science and Engineering, Provost, and President on GEM*STAR program
- Very strong university administration support for GEM*STAR
- Received \$225k internal funds to get program started
- Submitted proposals to DOE-NP and ARPA-E
- Pursuing funding from Virginia Tobacco Indemnification and Community Revitalization Commission

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Potential Collaborations

- GEM*STAR collaboration with Jefferson Lab, UVA, VCU, TUNL
 - ADS reactor physics, modeling & simulation, target design & cooling
- E-LINAC with VT, UVA, VCU and Jefferson Lab
 - Homeland security applications, ADS experiments
- Oak Ridge National Lab collaborations
 - Joint professorships, molten salt test loop, primary heat exchanger design, ADS modeling & simulation
- Advanced control room simulator at CAER Bedford facility with VT, UVA and AREVA
 - Nuclear power plant modeling & simulation