

*Overview of UT Nuclear Engineering  
Department and Faculty Research Interests*

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**Presented by**

**H. L. Dodds**

**IBM Professor of Engineering and Department Head**

**UT Nuclear Engineering Department**

**To**

**ORNL Summer Interns**

**July 13, 2005**



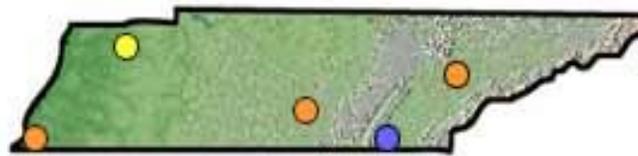
# *Presentation Overview*

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- **Describe the U. of Tennessee (UT) campus system**
- **Present an overview of the UTNE Department**
  - **UTNE enrollment history**
  - **Salary data for various engineering disciplines**
- **Summarize UTNE faculty research interests**
  - **Tenured faculty**
  - **Research faculty**
- **Provide contact information**

# *UT has five campuses across the State and UT-Battelle is the management contractor for ORNL*

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- The University of Tennessee (Knoxville, Memphis, Tullahoma)
- The University of Tennessee at Chattanooga
- The University of Tennessee at Martin



Management Contractor for DOE's  
Oak Ridge National Laboratory



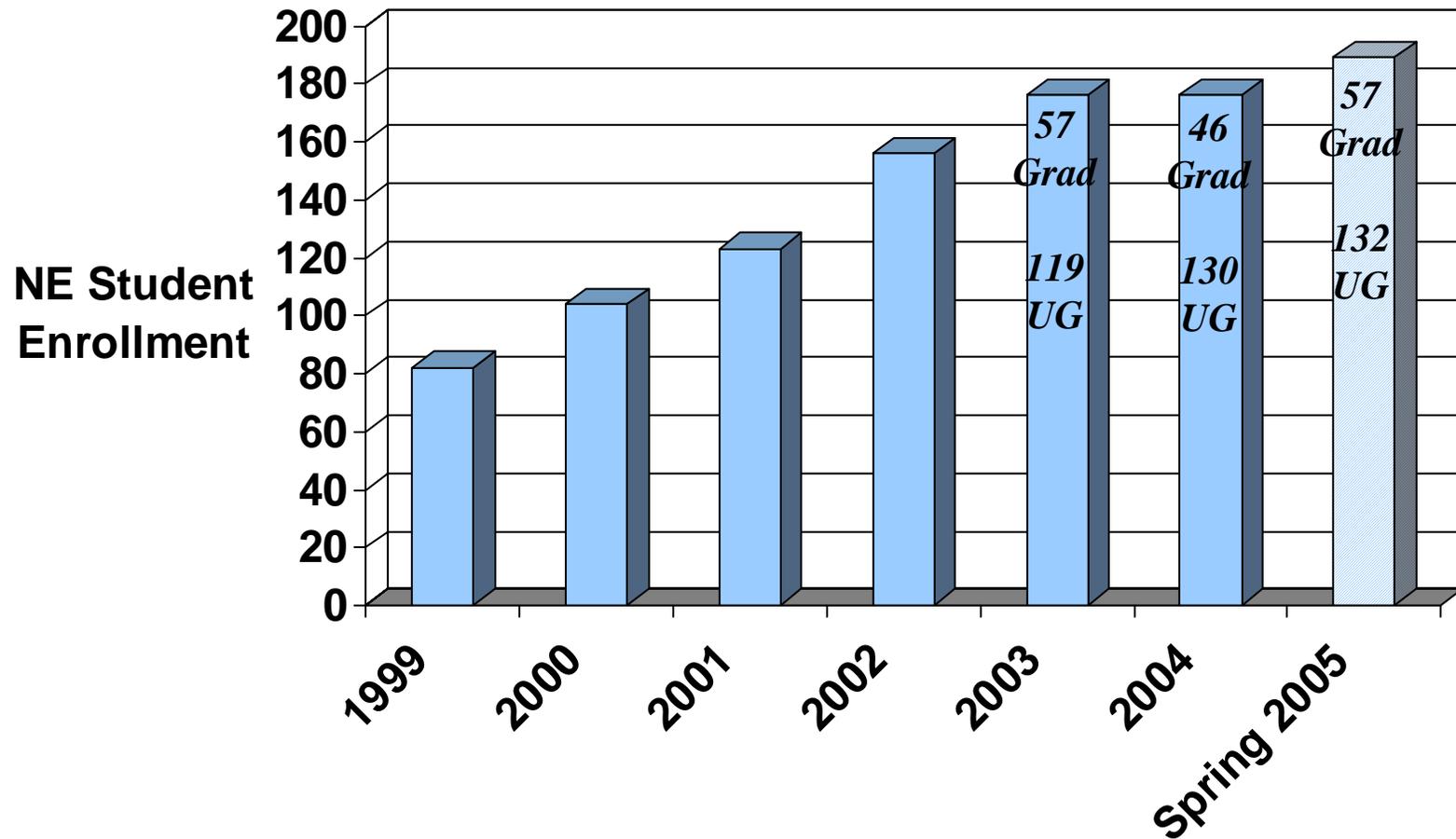
# *UTNE Department Overview*

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- **UTNE Department founded in 1957**
  - Offer BS, MS, PhD degrees, and two Graduate Certificates
    - **Two tracks: Traditional Nuclear and Radiological**
  - Produced over 1000 graduates in past 48 years
- **Faculty: 9 tenured faculty members including 1 emeritus member; 6 research professors; 21 adjunct professors**
  - New joint UT/ORNL faculty member position approved
- **6 support staff members and 2 visiting scholars**
- **Grad. program ranked No. 10 by *U.S. News and World Report***
- **Enrollment: 189 students (Spring, 2005)**
  - Second largest nuclear engineering program in U.S.



# *UTNE Fall Enrollment (Total)*

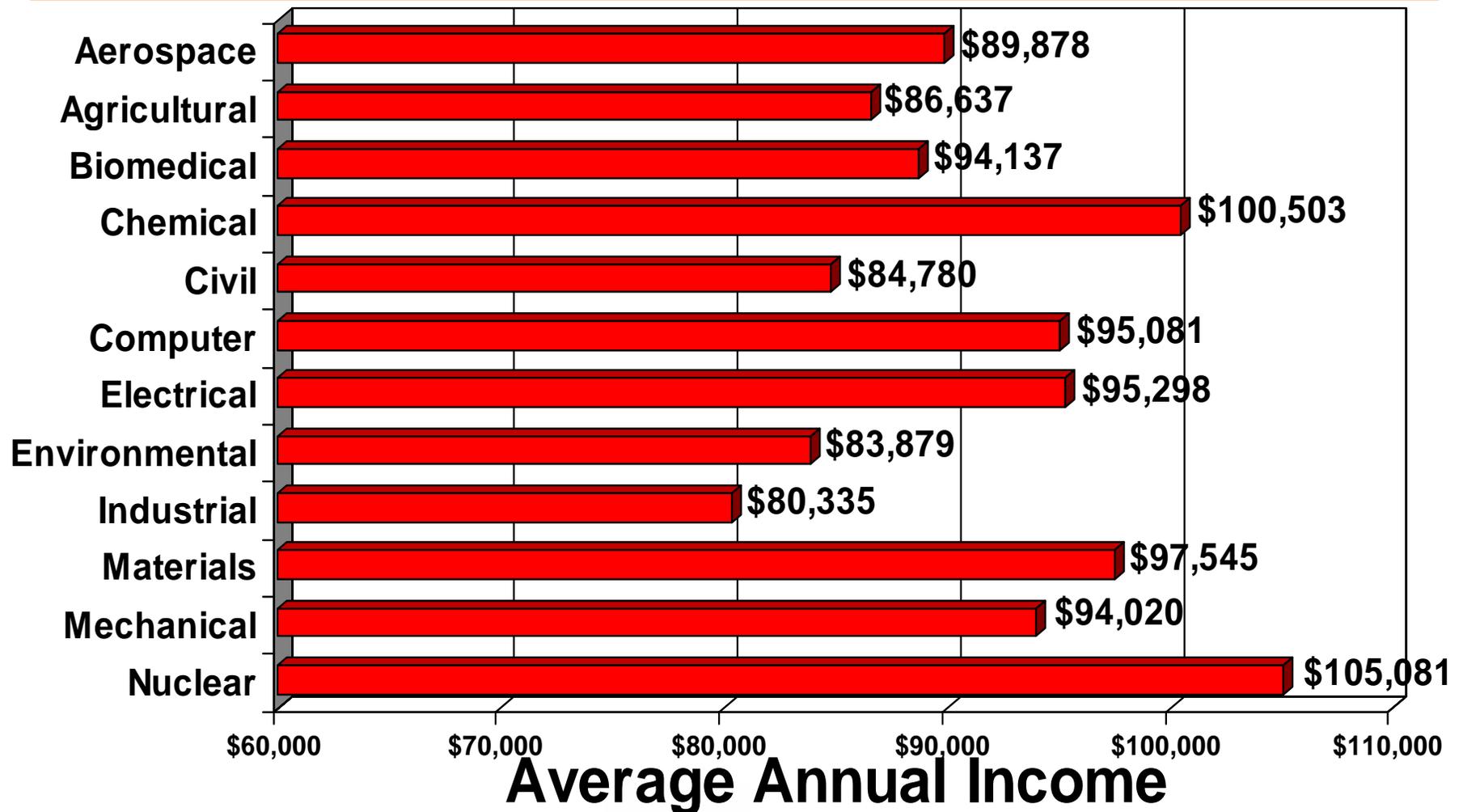


# *UTNE Department Overview (cont.)*

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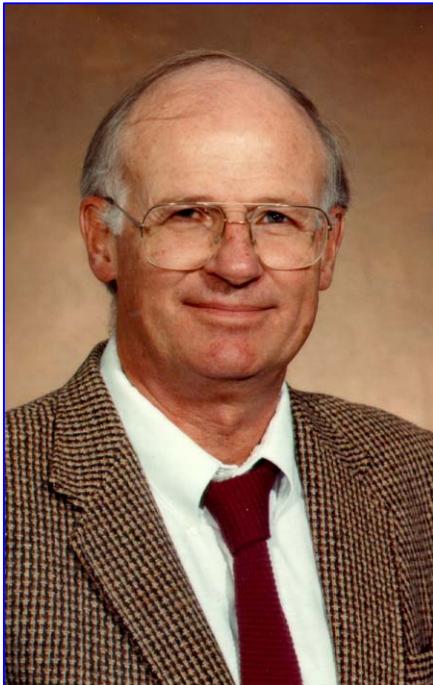
- **Externally funded research: ~ 2 million dollars in FY2005**
  - **100% of UTNE faculty have externally funded research**
- **Offer 5 Synchronous Distance Education programs**
  - **M.S. degree; Two Graduate Certificate Programs (Nuclear Criticality Safety and Main. & Reliability Engineering); Short course on Nuclear Criticality Safety; Weekly Colloquium Program that is webcast in real time (free and open to public)**
- **2003 update of UTNE Strategic Plan posted on our home page at [www.engr.utk.edu/nuclear](http://www.engr.utk.edu/nuclear); next update will be in Fall, 2005**
- **More detailed research information, including recent publications by faculty, is in our Annual Report, which is also posted online at [www.engr.utk.edu/nuclear/fy04.html](http://www.engr.utk.edu/nuclear/fy04.html)**

# 2004 NSPE Salary Survey



***Peter G. Groer***  
***Professor of Nuclear Engineering***  
***Ph.D. Vienna***

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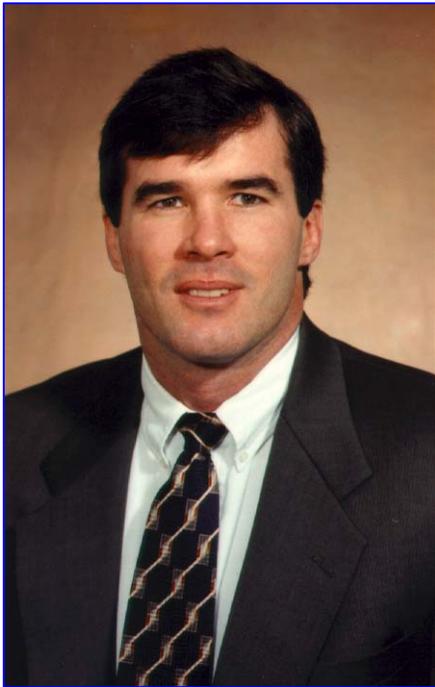


➤ ***Research Interests:***

- **Radiation risk assessment**
- **Competing risk theory**
- **Health physics**
- **Reliability analysis**
- **Bayesian analysis**

*J. Wesley Hines*  
*Professor of Nuclear Engineering*  
*Ph.D., MBA Ohio State*

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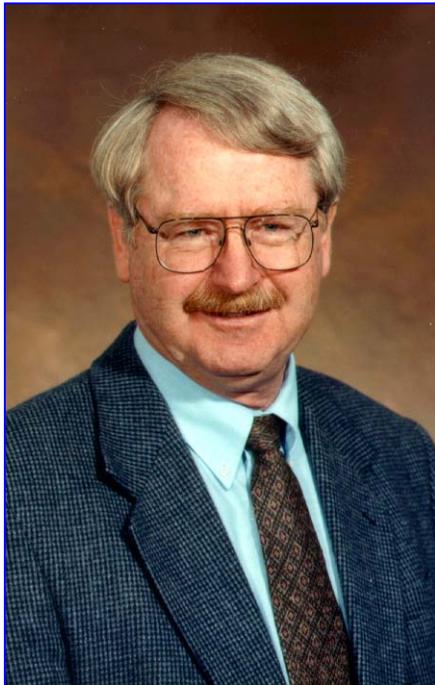


➤ *Research Interests:*

- **Diagnostics and surveillance**
- **Artificial intelligence methods**
- **Expert systems and neural networks**
- **Sensor networks and data mining**
- **International research collaboration**

*Laurence F. Miller*  
*Professor of Nuclear Engineering*  
*Ph.D. Texas A&M, P.E.*

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➤ *Research Interests:*

- Particle and radiation transport
- Diagnostics and surveillance
- Waste management
- Health physics
- Modeling and simulation
- Instrumentation and control

# *Ronald E. Pevey*

*Associate Professor of Nuclear Engineering*

*Ph.D. Tennessee, MBA Emory, P.E.*

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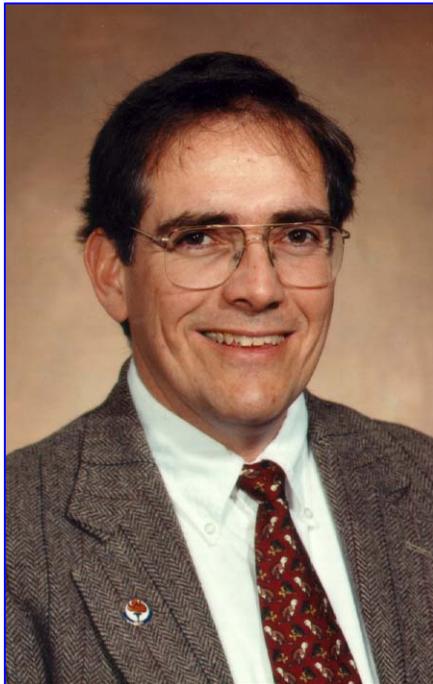


## ➤ *Research Interests:*

- **Reactor physics**
- **Thermal-hydraulics**
- **Computer methods development**
- **Shielding**
- **Nuclear criticality safety**

*Arthur E. Ruggles*  
*Professor of Nuclear Engineering*  
*Ph.D. RPI*

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➤ *Research Interests:*

- **Reactor thermal-hydraulics**
- **Liquid metal flow and heat transfer**
- **Cavitation and fluid transients**
- **Accelerator target design**
- **Micro-channel flow**

*Lawrence W. Townsend*  
*Condra Professor of Nuclear Engineering*  
*Ph.D. Idaho*

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➤ *Research Interests:*

- **Radiation physics, transport, shielding and risk assessment**
- **Nuclear and radiological engineering**
- **Space radiation assessment**
- **Theoretical nuclear physics**

# *Robert E. Uhrig*

*Distinguished Professor (Emeritus) of Nuclear Engineering  
Ph.D. Iowa State, P.E.*

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## ➤ *Research Interests:*

- **Diagnostics and surveillance**
- **Artificial intelligence methods**
- **Expert systems and neural networks**
- **Hydrogen production**

***Belle R. Upadhyaya***  
***Professor of Nuclear Engineering***  
***Ph.D. UC-San Diego, P.E.***

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➤ ***Research Interests:***

- **System dynamics, control, and Instrumentation**
- **Advanced signal processing**
- **Monitoring and diagnostics**
- **Next generation reactors, space reactors**
- **Reliability Engineering, NDE**
- **International research collaboration**

***Mario Fontana***  
***Research Professor of Nuclear Engineering***  
***Ph.D. Purdue, P.E.***

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➤ ***Research Interests:***

- **Power reactor safety**
- **Thermal-hydraulics**
- **Response to potential terrorist attacks**
- **Advanced reactor systems**

# *Andrei Gribok*

*Research Assistant Professor of Nuclear Engineering  
Ph.D. Moscow Institute of Biological Physics*

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## ➤ *Research Interests:*

- **Artificial intelligence techniques**
- **Surveillance and diagnosis**
- **Inverse and ill-posed problems**
- **Regularization theory**

***Martin L. Grossbeck***  
***Research Professor of Nuclear Engineering***  
***Ph.D. Illinois***

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➤ ***Research Interests:***

- **Radiation effects in materials**
- **Burnable absorbers**
- **Research reactors**
- **Refractory metals for high temperature applications**

***Fred R. Mynatt***  
***Research Professor of Nuclear Engineering***  
***Ph.D. Tennessee***

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➤ ***Research Interests:***

- **Radiation transport**
- **Isotope production**
- **Nuclear regulations**
- **Advanced reactors**
- **Homeland security**
- **Energy policy**

# *Hanna Moussa*

*Research Assistant Professor of Nuclear Engineering  
Ph.D. Tennessee*

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## ➤ *Research Interests:*

- **Radiation safety**
- **Monte Carlo simulation of radiation transport**

# *Harry J. Pettengill*

*Research Professor of Nuclear Engineering*

*Ph.D. Michigan*

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## ➤ *Research Interests:*

- **Counter-Terrorism technology**
- **WMD technologies**
- **New nuclear technologies**
- **Environmental health effects**
- **International research collaboration**

# *H. Lee Dodds*

*IBM Professor of Engineering and Department Head  
Ph.D. Tennessee, P.E.*

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## ➤ *Research Interests:*

- **Reactor core analysis**
- **Transient modeling and simulation**
- **Reactor safety analysis**
- **Advanced reactors**
- **Nuclear criticality safety**
- **Food irradiation**
- **Energy policy**

# *Contact Information*

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- **UTNE Department**
  - **Email:** [utne@tennessee.edu](mailto:utne@tennessee.edu)
  - **Phones:** 865-974-2525, 865-974-5048
  - **Web page:** [www.engr.utk.edu/nuclear](http://www.engr.utk.edu/nuclear)