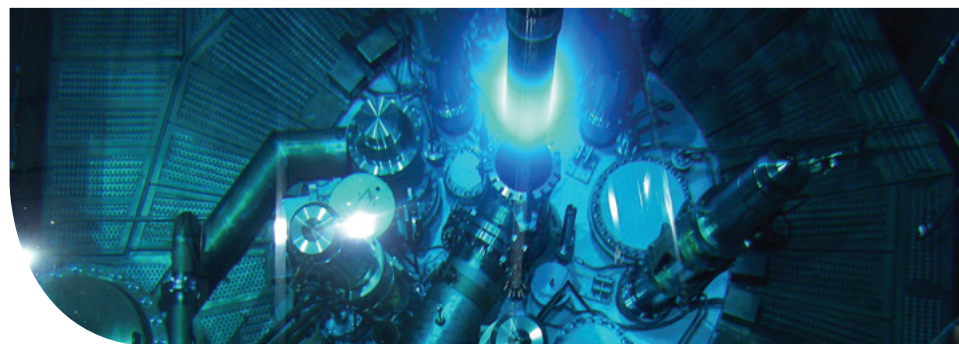


Career Spotlight

Nuclear Engineer

Nuclear engineers figure out how to use radioactive materials in manufacturing, agriculture, medicine, power generation, and many other fields. Many nuclear engineers design, develop, monitor, and operate nuclear plants used to generate power. They may work on the nuclear fuel cycle or the production of fusion energy. Some specialize in the development of power sources for spacecrafts that use radioactive materials. Others develop and maintain the nuclear imaging technology used to diagnose and treat medical problems.



EDUCATION

A bachelor's degree in engineering is required for almost all entry-level engineering jobs, but graduates with a degree in mathematics may qualify for some engineering jobs, especially in specialties that are in high demand. Most engineering programs involve a concentration of study in an engineering specialty, along with courses in both mathematics and science. A doctoral degree is essential for faculty positions at universities and many research programs at national laboratories but is not required for the majority of entry-level engineering jobs. Many engineers obtain graduate degrees in engineering or business administration to learn new technology and broaden their education.

WHEN MATH IS USED

Math is required for all nuclear engineering, but some branches use math more than others. Math is specifically used in the computer coding side of nuclear engineering, the instrumentation and control (I&C) area, and the heat transfer and fluid flow areas. Neutron transport, shielding work, nuclear criticality, and nuclear safety also involve a lot of math.

MATH REQUIRED

- College Algebra
- Geometry
- Trigonometry
- Calculus I and II
- Linear Algebra
- Differential Equations
- Statistics

Low-end Salary: \$66,650/yr
Median Salary: \$102,950/yr
High-end Salary: \$152,220/yr

POTENTIAL EMPLOYERS

Almost half of nuclear engineers are employed in utilities; one-quarter in professional, scientific, and technical services firms; and 14 percent in the Federal Government. Many federally employed nuclear engineers are civilian employees of the U.S. Navy, and others work for the U.S. Department of Energy or the Nuclear Regulatory Commission. In addition to the nuclear power industry, Nuclear Engineers also find employment in sectors such as medical equipment manufacturing, construction firms, national laboratories, research facilities, and consulting firms. Nuclear Engineers may also focus on fission or fusion energy.

FACTS

To get ahead in the field, nuclear engineering students often take opportunities to do research in graduate school. Research opportunities offer hands-on application in radiological engineering, risk assessment, maintainable energy, fuel recycling, materials fatigue and public policy analysis. Additionally, the American Nuclear Society recommends becoming obtaining a state license. To become a licensed engineer, there is a set of two exams, including the Fundamentals of Engineering and the Principles and Practice of Engineering. The first exam can be completed after graduation from an engineering program; however, the final exam is completed after four years of work experience.

CITATIONS

<http://www.bls.gov/oes/current/oes172161.htm>
<http://www.careercornerstone.org/pdf/nuclear/nuceng.pdf>
<http://www.newton.dep.anl.gov/askasci/eng99/eng99062.htm>
http://diplomaguide.com/articles/Nuclear_Engineer_Career_Summary.html