Nuclear Technology (G512)

Tutor(s)

Brian Matthews: Independent Consultant, Founder and Managing Director of TerraUrsa.

Overview

This course covers all aspects of nuclear technology and power production.

Duration and Logistics

Classroom version: A 3-day course comprising a mix of lectures, case studies and exercises. The manual will be provided in digital format and participants will be required to bring a laptop or tablet computer to follow the lectures and exercises.

Virtual version: Five 3.5-hour interactive online sessions presented over 5 days. A digital manual and exercise materials will be distributed to participants before the course. Some reading and exercises are to be completed by participants off-line.

Level and Audience

Fundamental. The course is intended for people with a basic engineering or scientific background.

Objectives

You will learn to:

1. Understand the scientific and technological background of nuclear power.
2. Describe how a nuclear power plant/power station works.
3. Characterize the effects and risk of radiation.
4. Evaluate how the history of the nuclear industry has shaped policy and public engagement today.
5. Interpret a typical nuclear fuel cycle (mining to disposal).
6. Develop an understanding of the economics and policy surrounding nuclear power and its growth internationally.
7. Assess the social impact of nuclear power and its benefits to climate change and achieving Net Zero.
8. Understand the future options for nuclear technologies and how they can work alongside other technologies.

Course Content

Course Details

This course will focus on giving the learner a full understanding of nuclear technology, the history and must-know events, the important engineering and scientific elements, what international nuclear policy looks like now and how it could develop in the future, and how nuclear power can work alongside other technologies to help decarbonize the energy sector.

Key session headings include:

- Understanding nuclear power
- The effects of radiation
- Mining to disposal – the nuclear fuel cycle
- The history of nuclear events
- Nuclear technologies – now and what’s next
- The internationally benchmarked safety culture principles of nuclear power
- The economics and international policy of nuclear power