

Nuclear Chemistry

Bridging the gap between academia and industry



| In Brief

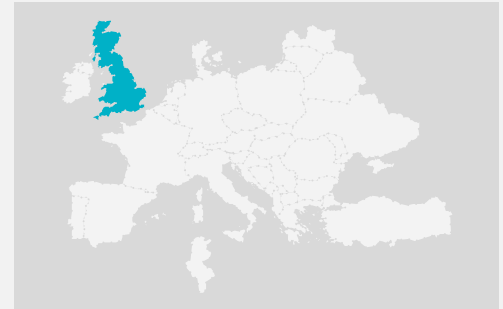
Veolia Nuclear Solutions was contracted to deliver a module in Nuclear Chemistry for the University of Cumbria's BSc course in Applied Chemistry, catering specifically to part-time students employed in the nuclear industry. This underscores Veolia's dedication to fostering the continuous professional growth of future nuclear scientists.

| The Objective

The objective was to deliver a Nuclear Chemistry module within the University of Cumbria's approved programme aligning it with the industrial context crucial for part-time students employed in the nuclear sector. Given the students' focus on nuclear decommissioning and waste management, the aim was to provide a comprehensive overview spanning waste generation, characterisation, treatment, conditioning, storage, and global disposal practices. This approach was designed to equip students with the industry-specific skills and knowledge necessary to tackle the challenges confronting the next generation of nuclear scientists.

| Veolia's Approach

Veolia Nuclear Solutions (VNS) adopted a practical approach to deliver teaching grounded in real world examples. Incorporating industrial context within the degree module offered students invaluable insights into how theoretical constructs manifest in real-world settings. This helped to bridge the academia-industry gap and bolstered graduates' employability by fostering adaptability to professional environments. In addition, the integration of industrial context helped to cultivate essential transferable skills, including problem-solving, critical thinking, and effective communication. These skills, all highly coveted by prospective employers, added to the overall value and applicability of the educational experience.



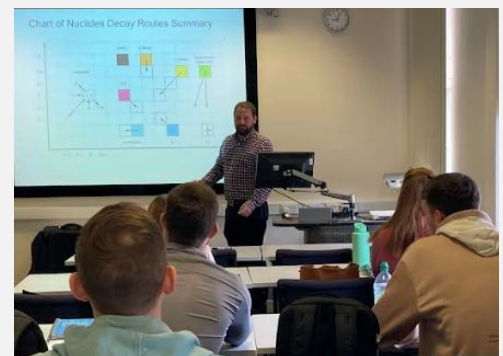
Carlisle, United Kingdom



Nuclear Chemistry

Duration: 12 Weeks

Qualification: BSc in Applied Chemistry



The course used an "assessment as learning" method, where students learn and develop skills through ongoing assessment of their progress and performance. This includes various types of assessments like quizzes, questioning, industry case studies, and presentations to gauge student understanding and mastery of the subject matter. Through these assessments, students receive feedback on their strengths and areas needing improvement, enabling them to focus on their learning gaps. This approach fosters active engagement with the material and encourages self-reflection as students identify their preferred learning strategies and ways to improve them (figure 1).

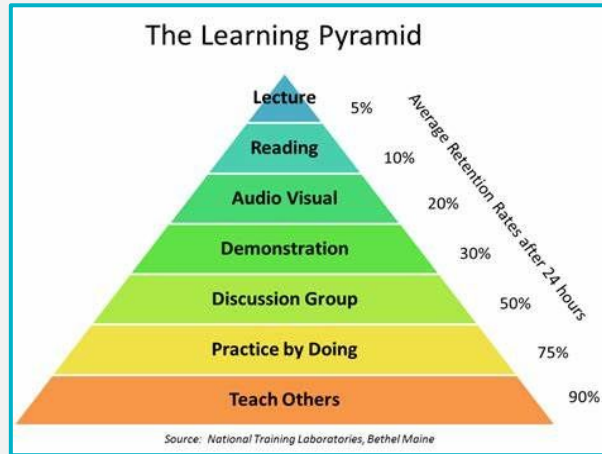


Figure 1: The learning pyramid showing the importance of class participation

Since VNS and the broader Veolia group possess extensive knowledge in handling hazardous and radioactive wastes, real-life case studies are integrated into the module's instruction. These case studies serve to underscore the significance of the waste hierarchy, environmental impact, and safety measures alongside the technical and economic facets of waste management.

| Impact

The learning approach is helping to play a crucial role in the workforce in multiple ways:

- Fosters critical thinking and analytical skills, it empowers individuals to analyse complex issues, devise innovative solutions, and make informed decisions.
- Through effective teaching methods and constructive feedback it is helping to boost individuals' confidence and belief in their abilities. This confidence motivates students to pursue ambitious career goals, take on leadership roles, and persevere in the face of difficulties.
- Instills valuable employability skills such as communication, teamwork, adaptability, and resilience.

“ Graduates of the University of Cumbria’s programme now hold various positions tackling challenges within the Nuclear Industry. ”

Dr Laura Offin, Senior Lecturer

VEOLIA'S PURPOSE: Committing to a multifaceted performance



SOCIAL

Veolia's approach fosters the development of future scientists, benefiting the societal need for skilled professionals in the nuclear industry.



COMMERCIAL

The module's industrial context enhances graduates' commercial readiness, aligning their skills with industry demands.



ENVIRONMENTAL

Integration of real-life case studies emphasises waste management principles, addressing environmental concerns in nuclear chemistry education.



HUMAN RESOURCES

The approach cultivates critical thinking, confidence, and essential employability skills, bolstering human resource potential in the nuclear sector.