



## AI in Education

### Case Study 2: AI Driven Chemistry Education Bridging Laboratory Theory and Industrial Application

#### Client Profile

A university Chemistry department offering undergraduate and postgraduate programs with a strong emphasis on theoretical foundations but limited exposure to industrial scale applications.

#### Challenge

Students struggled to translate academic chemistry knowledge into practical industrial contexts such as:

- Process chemistry and scalability
- Analytical method selection and validation logic
- Data integrity and laboratory compliance expectations
- Use of digital and computational tools common in industry laboratories

#### AI Enabled Solution (STRATECS Approach)

- Virtual industrial laboratory simulations: AI powered case scenarios modeling analytical deviations, OOS results, process optimization, and troubleshooting
- AI assisted experimental planning: Tools guiding students on reagent selection, analytical techniques, and risk assessment
- Digital lab notebooks: AI enabled documentation and critique aligned with industry data integrity and compliance standards
- Industry contextualized problem sets: Real world chemistry problems derived from pharmaceutical manufacturing, materials science, and chemical process development



## Outcomes

- Improved student confidence in interpreting analytical data and experimental failures
- Faster transition of graduates into industrial R&D and QC roles
- Enhanced faculty capability to explain “why industry does it differently”
- Measurable improvement in laboratory report quality and scientific reasoning

## Strategic Impact

The department repositioned its chemistry programs as industry aligned and application focused, improving placement outcomes and academic industry collaboration.



**Stratecs**  
AI-Powered DI Governance