



Course Syllabus - Introduction to Vacuum Plumbing Systems

1) Introduction to vacuum plumbing and drainage

- Origin and where it is currently used
- Overview of How the System Works

2) Systems comparison – vacuum vs. gravity

- Similarities and differences in materials, fittings, routing

3) Overview of the System operation

- Includes review of critical components and their function:
 - a. Vacuum Center
 - b. Vacuum Interface Valves
 - c. System waste piping network
 - d. Specialized plumbing fixtures - toilets

4) Vacuum Center Sizing and Design

- Includes a review of major components and sizing criteria:
 - a. Vacuum Pumps – types and importance of proper selection
 - b. Waste Collection Tank sizing; rules and guidelines

5) Vacuum Valve Components

- A review of vacuum valve components, their function and operation:
 - a. Valve Controllers – electronic and pneumatic
 - b. Waste Extraction Valves
 - c. Accumulators – sizing and design criteria

6) Drainage Piping Design

- Appropriate piping materials
- Installation criteria – vertical & horizontal runs; vacuum waste line pitch requirements and techniques for recovery; bracing; branch and main line routing; cleanouts.

7) Benefits Review

- LEED Design and Water Efficiency Credits
- Construction benefits for projects with special site and/or structural issues
- Security and control as it applies to both commercial and institutional projects
- Building design and architectural flexibility

8) Benefits using case studies

- A review of vacuum plumbing benefits using specific project case studies and information
 - a. Flexibility in plumbing layout and design - Supermarkets
 - b. Security, Control and Water Savings - Jails and Prisons
 - c. Renovation Issues & Healthcare Concerns - Medical Office Buildings, Day Surgical Centers
 - d. Health and Safety Concerns – BSL3 Laboratory