## Training Course Agenda

### DAY 1

**8:30**  Welcome and Introductions

Membrane Materials and Retention Mechanisms
- Differences in Manufacturing
- Differences in Polymers
- Adsorptive Properties of Different Polymers
- Sieve vs Adsorptive Retention
- Influences on Rententivity

**9:00**  Coffee/Tea Break

**10:00**  Filter Handling and Care
  - Documentation
  - Steaming
  - Troubleshooting

**12:00**  Lunch

**13:00**  Air Filtration
  - Regulations
  - Applications
  - Separation Mechanisms
  - Sizing

**14:30**  Coffee/Tea Break

**15:00**  Air Filtration
  - Application Considerations
  - Troubleshooting

**16:00**  Q&A

**16:30**  End of Day 1

### DAY 2

**8:30**  Liquid Filtration Prefiltration
  - Prefilter Construction and Materials
  - Necessity of Prefilters
  - Difference between Pre- and Final Filter
  - Troubleshooting

**10:00**  Coffee/Tea Break

**10:30**  Liquid Filtration Final Filter
  - Final Filter Construction and Materials
  - Retention Mechanisms
  - Important Aspects to Consider
  - 0.2/0.1 Filtration
  - Applications
  - Troubleshooting

**12:00**  Lunch

**13:00**  Validation of Filters
  - Filter Qualifications
  - FDA Requirements/Guidance
  - Viability/Bacteria Challenge Testing
  - Chemical Compatibility
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<th>Time</th>
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<th>Topics</th>
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| 8:30 | Filter Evaluation, Choices and Sizing | - Filterability Trials  
- 47 mm vs Pleating Devices  
- Flow vs Throughput Testing |
| 9:30 | Coffee/Tea Break | |
| 10:00 | Practical Work – Unspecific Adsorption |  
Filterability Test Set-up Description/Discussion |
| 12:00 | Lunch | |
| 13:00 | Practical Work – Filterability | |
| 15:00 | Coffee/Tea Break | |
| 15:30 | Analysis of Results  
Result Presentations  
Lessons Learned | |
| 16:30 | End of Day 3 | |

**DAY 4**

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| 8:00 | Integrity Testing (Liquid Filters) | - Destructive/Non-Destructive Test  
- Principle of Bubble Point Test  
- Principle of Diffusive Flow Test  
- Principle of Pressure Drop Test |
| 9:00 | Coffee/Tea Break | |
| 9:15 | Practical Work – Integrity Testing |  
Manual Diffusion Test  
Manual Bubble Point Test  
Automated Diffusive Flow/Bubble Point  
Troubleshooting |
| 11:30 | Integrity Testing (Air Filters) |  
Testing of Hydrophobic Filters  
Feature & Benefits of the Tests |
<p>| 12:00 | Lunch | |</p>
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<tr>
<td>13:00</td>
<td>Practical Work – Integrity Testing</td>
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<td>• Water Intrusion Test</td>
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<td>14:00</td>
<td>Trouble Shooting Exercise</td>
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<td>15:00</td>
<td>Final Discussions and Questions</td>
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<td>15:30</td>
<td>End of Training Course</td>
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