

**Intermediate Nonwovens Training Course  
AGENDA**

*Ed Thomas*  
Head of Research and Product Development,  
DuPont, Fiberweb, & First Quality (retired)  
**het852@gmail.com**

*Behnam Pourdeyhimi, PhD*  
Professor & Executive Director of The Nonwovens  
Institute (NWI) at NC State University  
**nonwovens@ncsu.edu**

*Amy Minton*  
Physical Testing Lab Manager,  
The Nonwovens Institute  
**nonwovens@ncsu.edu**

*Benoit Maze, PhD*  
Director of Education and  
Administration, NWI  
**nonwovens@ncsu.edu**

*Matt O'Sickey, PhD*  
Director Education, Technical  
Affairs & Events, INDA  
**mosickey@inda.org**

**Day 1: Tuesday**

8:30 am	<b>Coffee &amp; Pastries</b>	INDA
9:00 am	<b>Introduction</b>	Matt O'Sickey, INDA
9:10 am	<b>Welcome</b>	Ed Thomas, Instructor
9:20 am	<b>Program Preview</b> Video overview, nonwoven markets and product applications, information sources.	Ed Thomas, Instructor
	<b>The World of Nonwovens</b> Hands-on examination of nonwoven fabrics and end-use products illustrating the wide usage of nonwovens. Establishment of "Analysis Teams and Tasks."	Ed Thomas, Instructor
12:00 pm	<b>Lunch</b>	INDA
12:45 pm	<b>Fiber Fundamentals</b> Generic types and characteristics, property comparisons, raw material-fabric property relationships.	Ed Thomas, Instructor
	<b>Nonwovens Technology Primer</b> Definitions of nonwovens, short history of the technical evolution of the industry. Description of basic nonwoven manufacturing principles and systems.	Ed Thomas, Instructor
5:30 pm	<b>Questions and Review of Day 1</b>	Ed Thomas, Instructor
6:00 pm	<b>Adjournment (evening on your own)</b>	

**Day 2: Wednesday**

8:30 am	<b>Coffee &amp; Pastries</b>	INDA
	<b>Analysis Team Work and Discussion Session</b>	
9:00 am	<b>Web Forming Technologies – Drylaid Nonwovens, Carding, and Crosslapping</b> Analysis of carding and staple fiber airlaid systems. Review of background, process technologies and recent developments.	Behnam Pourdeyhimi, NWI
	<b>Web Forming Technologies – Wetlaid &amp; Short Fiber Airlaid Nonwovens</b> Development of wetlaid nonwovens based on paper technology. Unique characteristics of cellulose fibers in wetlaid technology. Development of short fiber airlaid nonwovens and comparison of short fiber airlaid nonwovens technology with wetlaid nonwovens technology.	Ed Thomas, Instructor
11:45 am	<b>Travel to Nonwovens Institute</b>	
12:15 pm	<b>Lunch</b>	Nonwovens Institute
1:00 pm	<b>Nonwoven Institute Welcome</b>	Behnam Pourdeyhimi, NWI
1:10 pm	<b>Web Forming &amp; Bonding Technologies – “Polymer to Fabric” Nonwovens</b> Basic principles associated with spunbond, meltblown and film-based nonwovens and the polymers used in their production.	Behnam Pourdeyhimi, NWI
1:30 pm	<b>Web Forming and Bonding Technologies (con’t)</b> Systems for Spunlaced / Hydro-entangled nonwovens.	Behnam Pourdeyhimi, NWI
3:45 pm	<b>Staple &amp; Polymer Lab Discussion, Tours &amp; Demonstrations</b>	Benoit Maze, NWI
5:00 pm	<b>Networking Reception and Team Project Time</b>	
7:00 pm	<b>Travel Back to INDA</b>	



**Day 3: Thursday**

8:30 am	<b>Coffee &amp; Pastries</b>	INDA
	<b>Analysis Team Work and Discussion Session</b>	
9:00 am	<b>Web Bonding Technologies I</b> Mechanical bonding principles and systems.	Ed Thomas, Instructor
	<b>Web Bonding Technologies II</b> Chemical and thermal bonding principles and systems.	
	<b>Nonwoven Fabric Finishing &amp; Converting</b> Principles, processes, and methods used to treat nonwoven fabrics to obtain enhanced physical and aesthetic properties for specific end-use.	
12:15 pm	<b>Travel to Nonwovens Institute</b>	
12:45 pm	<b>Lunch</b>	Nonwovens Institute
1:30 pm	<b>Nonwoven Fabric Test Methods &amp; Procedures</b>	Amy Minton, NWI
2:15 pm	<b>Test Methods</b> Overview of nonwoven test methods and standardization of test procedures.	Amy Minton, NWI
3:15 pm	<b>Test Lab Tours and Demonstrations</b>	Amy Minton, NWI
5:00 pm	<b>Travel back to INDA</b>	
5:25 pm	<b>Adjournment (evening on your own)</b>	

**Day 4: Friday**

8:15 am	<b>Coffee &amp; Pastries</b>	INDA
8:45 am	<p><b>Future Trends</b>            Projection of future applications and developments in manufacturing materials, processes and products.  <i>(This section may move to Thursday afternoon pending how much time is taken for lab tours and demos)</i></p>	Behnam Pourdeyhimi, NWI
9:30 am	<b>Analysis Team Presentations</b>	Ed Thomas, Instructor
10:30 am	<b>Break</b>	
10:45 am	<b><i>“New Normals, Newer Normals, and Next Normals”</i></b> <b>Impacts of Sustainability on Nonwoven Markets</b>	Matt O’Sickey, INDA
11:15 am	<b><i>“Overview of Nonwoven Markets and Outlook for Nonwoven Filter Media”</i></b>	Matt O’Sickey, INDA
12:15 pm	<p><b>Lunch/Course Adjournment</b>            Please exchange a completed evaluation for your certificate.</p>	INDA