

Nonwovens (NW)

NW 404/TT 404/TT 504/NW 504 Introduction to Nonwovens Products and Processes (3 credit hours)

This course introduces the fundamentals of nonwoven structures, process, and products. It provides performance criteria, raw materials, manufacturing methods, and market outlooks of major nonwoven application segments including hygiene, wipes, filters, medical, automotive, and geotextile. Emphasis is placed on building basic understandings of process/structure/property relationship in nonwoven product and the economic justification for process and production.

Prerequisite: (MA 131 or 141), PY 205; Corequisite: TT 503

Typically offered in Fall only

NW 405/TT 405/TT 505/NW 505 Advanced Nonwovens Processing (3 credit hours)

Mechanisms used in the production of nonwoven materials. Design and operation of these mechanisms. Process flow, optimization of process parameters, influence of process parameters on product properties.

Prerequisite: MA 231 or MA 241, PY 211 or (PY 205 and PY 206), TT 305 or TT 404

Typically offered in Spring only

NW 407/TT 407 Characterization Methods in Nonwovens (4 credit hours)

Fundamentals of methods used in evaluating structures & properties of nonwoven and related materials that influence nonwoven product performance and manufacturing processing. Principles and characterization methods of polymer thermal & rheological properties, nonwoven structural characteristics, mechanical, fluid transport, and barrier properties of nonwovens. Reliability and interpretation of test results.

Prerequisite: ST 311 or ST 370; and TT 305 or TT 404 or [TE 201 and TE 302]

Typically offered in Spring only

NW 408/TT 408/TT 508/NW 508 Nonwoven Product Development (3 credit hours)

Fundamentals of nonwoven product development. In-depth knowledge of the materials, processes and nonwovens products. Design of a set of experiments intended for product development. Students work in teams to design, fabricate and evaluate nonwoven products.

Prerequisites: TT 405 and TT 407

Typically offered in Spring only

NW 497 Research Experience in Nonwoven Science and Technology (1-3 credit hours)

This course provides an opportunity for students to gain real-world experiences in nonwoven science and technology relevant to their academic and career goals. The course is designed to provide an academic framework for the student to learn through a nonwoven research experience and/or exploration of nonwoven industry operations while integrating their academic program experience under a faculty mentor's supervision.

P: TT404

Typically offered in Fall, Spring, and Summer

NW 503/TT 503 Materials, Polymers, and Fibers used in Nonwovens (3 credit hours)

Fundamentals of raw material used in nonwoven processes. Raw material production, chemical and physical properties of nonwoven raw materials and assessment of material properties. Introduction of structure/property relationships for these materials and how these relationships influence end use applications.

Prerequisite: MA 141, PY 205, PCC 203

Typically offered in Fall and Spring

NW 504/NW 404/TT 404/TT 504 Introduction to Nonwovens Products and Processes (3 credit hours)

This course introduces the fundamentals of nonwoven structures, process, and products. It provides performance criteria, raw materials, manufacturing methods, and market outlooks of major nonwoven application segments including hygiene, wipes, filters, medical, automotive, and geotextile. Emphasis is placed on building basic understandings of process/structure/property relationship in nonwoven product and the economic justification for process and production.

Prerequisite: (MA 131 or 141), PY 205; Corequisite: TT 503

Typically offered in Fall and Spring

NW 505/NW 405/TT 405/TT 505 Advanced Nonwovens Processing (3 credit hours)

Mechanisms used in the production of nonwoven materials. Design and operation of these mechanisms. Process flow, optimization of process parameters, influence of process parameters on product properties.

Prerequisite: MA 231 or MA 241, PY 211 or (PY 205 and PY 206), TT 305 or TT 404

Typically offered in Spring only

NW 506 Bonding Principles in Nonwovens (3 credit hours)

Fundamentals of fluid mechanics and heat transfer mechanisms during the bonding nonwovens. Provide engineering and in-depth description of hydroentangling, thermal bonding and needle punching techniques. Modeling methods and laboratory work are assigned.

Prerequisite: MAE 308, MAE 310, TT /NW505

Typically offered in Fall and Summer

NW 507/TE 507/TT 507 Nonwoven Characterization Methods (4 credit hours)

Fundamentals of methods used in evaluating structures & properties of nonwoven and related materials that influence nonwoven product performance and manufacturing processing. Principles and Characterization methods of polymer thermal & rheological properties, nonwoven structural characteristics, mechanical, fluid transport, and barrier properties of nonwovens. Reliability and interpretation of test results.

Prerequisite: ST 361, Corequisite: TT/NW 505

Typically offered in Spring only

NW 508/NW 408/TT 408/TT 508 Nonwoven Product Development (3 credit hours)

Fundamentals of nonwoven product development. In-depth knowledge of the materials, processes and nonwovens products. Design of a set of experiments intended for product development. Students work in teams to design, fabricate and evaluate nonwoven products.

Prerequisites: TT 405 and TT 407

Typically offered in Fall and Spring