

## Environmental management systems specialization:

<b>Name of subject:</b> <b>Industrial raw material and waste</b>	<b>NEPTUN-code:</b> RMWIH1EBNE	<b>Number of hours:</b> <i>lectures+ classroom practice+lab practice</i> 2+1+0	<b>Credit: 5</b> <b>Requirement:</b> tm
<b>Course leader:</b> <i>Cecília Tamásné-Nyitrai Dr.</i>	<b>Position:</b> college professor	<b>Pre-requisite:</b> none	
<b>Curriculum:</b>			
<p>Manufacture of semi - finished paper products. Paper raw materials, mechanical, thermomechanical semi-finished products, pulp bleaching. Preparation of paper pulp. Dissolving fiber, grinding, gluing, filling, dyeing. Paper machines. Types of paper machines, main parts. Knowledge of packaging material. Packaging materials containing metal. Packaging based on glass, wood and textiles. Plastic materials for packaging. Natural based plastics in packaging. Synthetic plastics: polyolefins, chlorine-containing, PU, PA, PS, PET, EVA, PVOH, EVOH, etc. characteristics, its use in packaging. Flexible, semi-rigid and rigid plastic packaging. Grouping of printing processes, features, product types, sheet sizes, special processing needs. Text and image processing operations, color decomposition, film processing, montage, printing. Printing machine alignment, number of copies, operations on binding technology, folding systems. The structure of the book, the types of knitting, the journal, the daily newspaper, and other printing products. Environmental issues and solutions for the paper, printing and packaging industry. Cardboard and board manufacturing. Paper Removal. Unpacking operations, calendars, arc cutting. Paper processing. Areas of paper processing. Types of wave products and their manufacture. Typical structural units of printing presses, principles of operation of dyeing, wetting, printing machines, sheet and roll printing machines. Dryers, solvent recovery, extraction equipment. Technologies, characteristics, applications of composite packaging products.</p> <p>Laboratory exercises include: - identification of plastics, - general properties of packaging plastics: physico-chemical and mechanical properties, - barrier properties, temperature tolerance, processability. Environmental issues and solutions for the paper, printing and packaging industry.</p>			
<b>Professional competencies:</b>			
<p>Comprehensive knowledge of the basic features and interrelations of environmental elements and systems, as well as of the environmentally harmful substances affecting them. Knowledge of the concepts and tools of economics and environmental economics, project and environment management in environment protection.</p> <p>Knowledge of major environmental technologies, equipment and structures associated with each technology, including the functioning and operation thereof.</p> <p>Knowledge of the basics of energy management, options for energy production, their advantages and disadvantages, as well as the concept and feasibility options of sustainable development.</p> <p>Able to cooperate with engineers involved in the development and application of production and other technologies to develop the given technology in terms of environment protection.</p>			

Able to participate creatively in engineering work based on their multidisciplinary skills, as well as to adapt to continuously changing circumstances.

Able to reveal deficiencies in the technologies applied and process risks and to initiate mitigation measures after getting familiarized with the technology concerned.

Open to professional cooperation with specialists related to their profession but involved in other areas.

Responsible proclamation and representation of the value system of the engineering profession; openness to professionally well-founded critical remarks.

Cooperation with qualified experts from other special areas (primarily economic and legal) in the course of completing professional tasks.

***Literature:***

1. Wulfhorst, B., Gries, T., Veit, D.: Textile Technology, ISBN 9781569903711

2. X. Tao: Smart Fibres, Fabrics and Clothing, 1st Edition, ISBN: 9781855735460

4. <https://elearning.uni-obuda.hu/>

Remark: