Courses in English
Course Description

Department	05 Technical Systems, Processes and Communication
Course title	**Paper Physics**
Course number	
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	the students comprehend the theoretical principles and the practical ap plication of optical and physical measuring and testing techniques in the paper and packaging industry. □ The students gain competence to: o independently work with the physical characteristics of paper and to conduct different methods of testing; o determine complex relationships between faults in paper and suit able methods of testing together with their results and to apply these to optimize production and/or conversion processes; o identify the properties of unknown type of paper, and to deter mine their uses and limitation; o present the results and to discuss and defend them before a criti cal audience
Prerequisites	basics of statistics
Recommended reading	Various DIN, ISO, Tappi and SCAN norms and standards Prüfung von Papier, Pappe, Zellstoff und Holzstoff, Band 2 und 3, Herausg.: W. Franke et al., Heidelberg, Springer 1993 Levlin, Jan-Erik; Söderhjelm, Liva: Pulp and Paper Testing (Papermaking Science and Technology, Book 17). Fapet Oy, Helsinki, 1999 Niskanen, Kaarlo: Paper Physics (Papermaking Science and Technology Book 16). Fapet Oy, Helsinki, 1998 Makrström, Hakan: The Elastic Properties of Paper – Test Methods and Measure ment Instruments. Lorentzen & Wettre, Stockholm, 1991 Pauler, Nils: Optische Papiereigenschaften. AB Lorentzen & Wettre, Kista.
Teaching methods	Lecutre, labatory experiments
Assessment methods	Modular work
Language of instruction	English
Name of lecturer	Prof. Dr. Emanuele Martorana
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Link	
Course content	Important theoretical aspects for avoiding errors when taking samples and considering the statistical evaluation of measurements □ Methods of testing pulp and paper, as well as applying these inde pendently, in small groups comprising up to 3 persons □ Physical and chemical properties of fibre materials and fibre suspensions □ Important properties of paper: surface-related factors, mass, thickness, volume, moisture content □ Strength properties: dynamic strength, static strength, surface strength □ Dimensional stability of paper □ Structure of paper, surface topography □ Optical properties: whiteness, opacity, glossiness □ Dynamic behaviour in the presence of liquids
Remarks	