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 (2.5 ECTS Lecture / 2.5 ECTS Practical Training)
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	