

IT NUMBER	MODULE	SCOPE	EXAMINATION
<b>PL: 181301 Digital Printing</b>	<b>4</b>	<b>5</b>	<b>PL: KL, 90 Min.</b>

The Digital Printing course provides a profound overview over the digital printing industry. This comprises digitally printed products and their markets, the functional principles of the important digital printing technologies (mainly electrophotography and inkjet), advantages, disadvantages, technical and economical limits of the different technologies, designs of digital presses, applications in the field, and expected future developments. After completion of the course students have obtained a detailed understanding of digital printing processes including the physical backgrounds, their applications, markets and prospects. They know the relations between technology, printing quality, productivity and costs. Students are able to work their way into advanced topics in the field of digital printing and to self-dependently work on projects.

#### CONTENTS OF LECTURE

1. Overview, terminology, foundations
2. Digitally printed products, economic significance, markets and projections
3. Halftone processes: Generation of halftones (gray values) in digital printing
4. Screening processes in digital printing
5. Printing resolution, optical resolution, number of gray levels, and how these quantities are related to printing quality
6. Functional principle of electrophotography (including the physical backgrounds)
7. Design principles of print engines and their subsystems
8. Design principles of electrophotographic presses, applications in the field, advantages and disadvantages
9. Liquid toner (HP Indigo)
10. Functional principles of Continuous Inkjet, Thermal Inkjet, and Piezo Inkjet (including the physical backgrounds)
11. Design principles of inkjet printheads
12. Inkjet inks, their interaction with substrates, pre-treatments, and the relation to printing quality
13. Design principles of inkjet presses, applications in the field, advantages and disadvantages