

## PAPER21

### Course for Higher Technician for the Management of Production in the Paper Sector

<http://www.itsprime.it/corsi/nuovi-corsi/paper21>

**Type of course:**

two-year course after secondary school diploma.

**Teaching location:** Lucca

**Registration deadline:** 1st October 2021

**Type of final Diploma:**

Diploma in "HIGHER TECHNICIAN FOR THE INNOVATION OF MECHANICAL PROCESSES AND PRODUCTS" (Area 4.3 Mechanical System - Figure 4.3.1 of Annex D - Interministerial Decree 07/09/2011) **with indication of specialization of the course in "HIGHER TECHNICIAN FOR THE MANAGEMENT OF PRODUCTION IN THE PAPER SECTOR", with the certification of skills corresponding to the fifth level of the European Qualifications Framework - EQF.**

In order to facilitate circulation at national and European level, the certificate shall be supplemented by EUROPASS certification.

**Entry requirements:**

possession of secondary school diploma;  
age between 18 to 30 years (not completed on the call deadline date).

**Type of access:**

programmed number: 25 students

**Selection mode:**

The selection of participants includes:  
curricular evaluation by qualifications and experiences,  
a written test,  
a motivational interview.



**Method of enrollment:**

see link: <http://www.itsprime.it/corsi/nuovi-corsi/paper21/>

**Methods of recognition of previous training courses:**

The student at the time of enrollment may request the recognition of training courses, formal or non-formal, producing the documentation that attests them. The request is submitted to the evaluation of the Evaluation Commission that assesses the coherence of the previous training courses with the Training Units and the modules of the course that the student will have to attend. On this basis the Commission indicates which modules can be recognized as already learned by the student.

**Profile of the course**

The "HIGHER TECHNICIAN FOR THE MANAGEMENT OF PRODUCTION IN THE PAPER SECTOR" has the ability to use innovative materials and cutting-edge technologies to improve the quality, productivity, flexibility, and competitiveness of paper companies.

**Main expected learning outcomes**

The PIPER21 Graduate has the competence to:

1. know and control the production system of the paper industry and its production plants both with regard to paper products for domestic use and for personal hygiene and those used in the packaging sector;
2. take action in the production process in order to guarantee the quality level of the final product requested by the customer; know the main production processes aimed at obtaining virgin natural fibers and recycled paper to be used as raw materials in paper production processes;
3. know the auxiliary systems for the production of paper (eg: vacuum system, compressed air, water treatment, etc.);
4. know and carry out both process and product controls;
5. control and regulate the process parameters in its various phases;
6. be able to read a technical drawing and design product packaging;
7. be able to understand the activities related to the environmental management system and to monitor energy consumption;
8. know the internal logistics of the paper factory;
9. define, plan and carry out checks on the finished product;
10. be able to use and apply industrial automation and data analysis tools;
11. be able to carry out maintenance, assembly and testing of systems.

**Possibility of access to further studies**

The diploma can be integrated with a subsequent university course, with recognition of university training credits (CFU) on the basis of the didactic regulations of the individual universities. In this regard, reference should be made to the current legislation.

## **Regulations for the conduct of exams and other forms of school profit assessment**

Each ITS PRIME course is biennial and consists of Training Units, divided into Didactic Modules.

At the end of each Didactic module, a 100-scale assessment is planned. For the modules with many hours of lessons, intermediate verifications are foreseen. Students, after having attended the course for at least 80% of the 1000 hours of lessons and at least 50% of the 800 hours of internship in the company, and having obtained in all the didactic modules at least 60/100, are admitted to take the final exam. The exam consists of a written test with multiple choice tests, a technical-practical test, an interview. The fundamental part of interview is the discussion of a work experience, designed and prepared during the internship period. By passing the exam, students acquire the Diploma of Higher Technician, a qualification corresponding to the 5th level of the European Qualifications Framework EQF.

## **Course structure** **Training Units and Didactic Modules**

### **First year**

#### **UFC 1 - EMPOWERMENT AND TEAM BUILDING**

- A1.1 Outdoor Training (in outdoor environment)
- A1.2 Self-empowerment and Team Building Workshop
- A1.3 Problem setting and solving - decision making - time management

#### **UFC 3 - LANGUAGE SKILLS**

- A3.1 English theory
- A3.2 English workshop
- A3.3 Technical English

#### **UFC 4 - THE COMPANY SYSTEM**

- C4.1 The corporate organizational system: roles, operational functions and professional figures
- C4.2 Sector analysis
- C4.3 The quality system
- C4.4 Safety and hygiene in the workplace

#### **UFC 5 - PRODUCTION PROCESSES AND PAPER MILL PLANTS**

- C5.1 View of the complete production process
- C5.2 Plants for the production of paper
- C5.3 Treatment of incoming and process water
- C5.4 Dough preparation
- C5.5 Continuous machine

C5.6 Elements of dressing  
C5.7 Coating and surface treatments

#### UFC 7 - PRODUCTS OF THE PAPER AND PAPER TECHNOLOGY CHAIN

C7.1 Analysis of the main products  
C7.2 Product characteristics  
C7.3 Laboratory instruments and quality control of products in the supply chain

#### UFC 8 - RAW MATERIALS AND SEMI-FINISHED PRODUCTS IN THE PAPER SECTOR

C8.1 Analysis of plants as a source of fibrous raw material, extraction techniques, characteristics.  
C8.2 Classification of recycled products  
C8.3 Specific products used in the process: starches, fillers, glues, resins, retentives, dyes  
C8.4 Packaging materials.  
C8.5 Laboratory instruments, characteristics and input controls

#### UFC 9 - PAPER CHEMISTRY

C9.1 Basic chemical processes for paper production  
C9.2 Chemical by-products, additives and related technologies  
C9.3 Basic analysis for paper  
C9.4 Product Safety Data Sheets

#### UFC 12 - MECHANICAL TECHNICAL DRAWING AND PACKAGING DESIGN

C12.1 Introduction to industrial automation  
C12.2 Elements of electrical engineering  
C12.3 Reading of technical drawings  
C12.4 Use of 2D and 3D drawing software  
C12.5 Packaging design

#### UFC 13 - ENERGY AND THE ENVIRONMENT

C13.1 Energy production and management of energy consumption  
C13.2 The environmental management system  
C13.3 Effluent treatment: analysis, legislation, plants  
C13.4 Emissions into the atmosphere  
C13.5 Waste management

#### UFC 14 - LOGISTICS

C14.1 Internal logistics of the plant  
C14.2 External logistics

### ***Second year***

#### UFC 2 - WORK AND BUSINESS ORIENTATION

C2.1 The company and the employment relationship (contracts)

C2.2 Business organization and organization charts

#### UFC 6 - PRODUCTION PROCESSES AND PAPER TECHNOLOGY PLANTS

C6.1 View of the complete production process-Tissue

C6.2 Plants for the transformation and packaging of tissue products

C6.3 Vision of the complete production process - Packaging

C6.4 Plants for processing packaging products

#### UFC 10 - AUTOMATION AND DATA ANALYSIS TOOLS (PERFORMANCE MANAGEMENT) INDUSTRY 4.0

C10.1 PLC

C10.2 Logic and pneumatic automation

C10.3 DCS control systems

C10.4 Continuous quality control systems (e.g. QCS)

C10.5 Instrumentation, sensors, wiring and communication protocols

C10.6 Application of 4.0 technologies for data control and analysis

#### UFC 11 - MAINTENANCE, ASSEMBLY AND TESTING

C11.1 Assembly and testing of machines

C11.2 Management of orders

C11.3 Preventive and predictive maintenance

C11.4 Cost centers

C11.5 Performance management

C11.6 Application of 4.0 technologies in maintenance activities

#### UFC 15 - STAGE

C15.1 Internship in the company

### Diagram of the structure of the course with the relative credits

Acronym	<b>Paper21</b>					
Title	<b>Tecnico Superiore per la gestione della produzione nel settore cartario</b>					
Modules code	Teaching	Hours UFC	Hours First year Modules	Hours Second year Modules	Credits First year	Credits Second year
	<b>UFC 1 - EMPOWERMENT E TEAM BUILDING</b>	36	First year	<b>Second Year</b>	<b>First Year</b>	<b>Second year</b>
A1.1	Outdoor Training (in outdoor environment)		8		2	
A1.2	Self-empowerment and Team Building Workshop		16			
A1.3	Problem setting and solving - decision making - time management		12			
	<b>UFC 2 - WORK AND BUSINESS ORIENTATION</b>	20		<b>Second Year</b>		
<b>C2.1</b>	<b>The company and the employment relationship (contracts)</b>			10		1
<b>C2.2</b>	<b>Business organization and organization</b>			10		1

	charts					
	<b>UFC 3 - LANGUAGE SKILLS</b>	66	<b>First year</b>			
A3.1	English theory		34		3	
A3.2	English workshop		20		1	
A3.3	Technical English		12		1	
	<b>UFC 4 - THE COMPANY SYSTEM</b>	40	<b>First year</b>	<b>Second Year</b>		
C4.1	C4.1 The corporate organizational system: roles, operational functions and professional figures		4		1	
C4.2	Sector analysis		6		1	
C4.3	The quality system		10		1	
C4.4	Safety and hygiene in the workplace		20		2	
	<b>UFC 5 - PRODUCTION PROCESSES AND PAPER MILL PLANTS</b>	154	<b>First year</b>			
C5.1	View of the complete production process		30		3	
C5.2	Plants for the production of paper		30		3	
C5.3	Treatment of incoming and process water		24		2	
C5.4	Dough preparation		26		2	
C5.5	Continuous machine		20		2	
C5.6	Elements of dressing		4		1	
C5.7	Coating and surface treatments		20		2	
	<b>UFC 6 - PRODUCTION PROCESSES AND PAPER TECHNOLOGY PLANTS</b>	100		<b>Second Year</b>		
C6.1	View of the complete production process- Tissue			20		2
C6.2	Plants for the transformation and packaging of tissue products			30		3
C6.3	Vision of the complete production process - Packaging			20		2
C6.4	Plants for processing packaging products			30		3
	<b>UFC 7 - PRODUCTS OF THE PAPER AND PAPER TECHNOLOGY CHAIN</b>	60	<b>First year</b>			
C7.1	Analysis of the main products		8		1	
C7.2	Product characteristics		16		2	
C7.3	Laboratory instruments and quality control of products in the supply chain		36		2	
	<b>UFC 8 - RAW MATERIALS AND SEMI-FINISHED PRODUCTS IN THE PAPER SECTOR</b>	54	<b>First year</b>			
C8.1	Analysis of plants as a source of fibrous raw material, extraction techniques, characteristics.		10		1	
C8.2	Classification of recycled products		10		1	
C8.3	Specific products used in the process: starches, fillers, glues, resins, retentives, dyes		8		1	
C8.4	Packaging materials.		8		1	
C8.5	Laboratory instruments, characteristics and input controls		18		1	
	<b>UFC 9 - PAPER CHEMISTRY</b>	20	<b>First year</b>			
C9.1	Basic chemical processes for paper production		4		1	
C9.2	Chemical by-products, additives and related technologies		4			
C9.3	Basic analysis for paper		6		1	
C9.4	Product Safety Data Sheets		6		1	

	<b>UFC 10 - AUTOMATION AND DATA ANALYSIS TOOLS (PERFORMANCE MANAGEMENT) INDUSTRY 4.0</b>	130		<b>Second Year</b>		
C10.1	PLC			28		2
C10.2	Logic and pneumatic automation			26		2
C10.3	DCS control systems			22		2
C10.4	Continuous quality control systems (e.g. QCS)			4		1
C10.5	Instrumentation, sensors, wiring and communication protocols			30		3
C10.6	Application of 4.0 technologies for data control and analysis			20		2
	<b>UFC 11 - MAINTENANCE, ASSEMBLY AND TESTING</b>	100		<b>Second Year</b>		
C11.1	Assembly and testing of machines			15		1
C11.2	Management of orders			15		1
C11.3	Preventive and predictive maintenance			20		2
C11.4	Cost centers			10		1
C11.5	Performance management			20		2
C11.6	Application of 4.0 technologies in maintenance activities			20		2
	<b>UFC 12 - MECHANICAL TECHNICAL DRAWING AND PACKAGING DESIGN</b>	100	<b>First year</b>			
C12.1	Introduction to industrial automation		10		1	
C12.2	Elements of electrical engineering		10		1	
C12.3	Reading of technical drawings		20		2	
C12.4	Use of 2D and 3D drawing software		40		2	
C12.5	Packaging design		20		2	
	<b>UFC 13 - ENERGY AND THE ENVIRONMENT</b>	80	<b>First year</b>			
C13.1	Energy production and management of energy consumption		20		2	
C13.2	The environmental management system		16		2	
C13.3	Effluent treatment: analysis, legislation, plants		16		3	
C13.4	Emissions into the atmosphere		16			
C13.5	Waste management		12		1	
	<b>UFC 14 - LOGISTICS</b>	40	<b>First year</b>			
C14.1	Internal logistics of the plant		20		2	
C14.2	External logistics		20		2	
	<b>UF 15 - STAGE</b>	800		<b>Second Year</b>		
C15.1	Internship in the company			800		27
	<b>TOTAL HOURS</b>	1800	650	1150	60	60

## ECTS credit system

For each course, ITS PRIME has adopted the credit calculation according to the credit system used in the European Higher Education Area ECTS (European Credit Transfer System). For one-year credits, 60 credits are provided, as for most Higher Education Institutions. For each Didactic Module, the workload required by the students to achieve the expected learning outcomes has been evaluated by evaluation experts and modules

teachers. The hours of lessons were considered 30% or 50% of the hours of the workload according to the theoretical or theoretical-practical nature of the different modules. The time spent on the internship in the company and for the laboratory activities was considered 100% of the workload.

### Didactic plan

The two-year course, of 1800 hours in total, takes place in 4 semesters with a didactic articulation that provides:

classroom lessons and laboratory activities (1000 hours),  
internship, in Italy and abroad (800 hours). Any foreign internships are carried out with the European Erasmus+ programme.

Lesson time: from a minimum of 4 to a maximum of 8 hours per day.

The entire training course is carried out in close connection with the mechanic sector companies. The teaching team is composed of at least 50% of experts from the world of production, professions and work with a specific professional experience in the field. In particular is involved the staff of the companies partners of ITS Prime Foundation.

Teachers from the School, University, Research Centres and Vocational Training will also be involved. Seminars, testimonies of key protagonists in the sector and visits to fairs, events, companies and installations of particular interest will complete the path of studies.

### Language of lessons

Italian

### Course calendar

<b>Start-up</b>	<b>october</b>	<b>2021</b>
<b>Preliminary Lessons on fundamental topics to the under-standing of the course</b>	<b>october</b>	<b>2021</b>
<b>End of first year</b>	<b>july</b>	<b>2022</b>
<b>Second-year start</b>	<b>september</b>	<b>2022</b>
<b>Start of internship in Italy</b>	<b>march</b>	<b>2023</b>
<b>Start of foreign internship (if any)</b>	<b>june</b>	<b>2023</b>
<b>End of the course</b>	<b>september</b>	<b>2023</b>
<b>Final examination</b>	<b>october</b>	<b>2023</b>

### Information on the organisation of mentoring and accompanying services

For each course a coordinator and a tutor will be appointed, who will follow and monitor the didactic activities and solve any collective or personal problems of the students.

Accompanying activities to achieve the best learning outcomes will be:



Accompanying activities	Individual hours	Group hours	Total hours
<b>Initials</b>			
Presentation and training agreement		2	2
Individual analysis	2		50
Preliminary Lessons on fundamental topics to the understanding of the course		48	48
<b>Additional training</b>			
English conversation	4		100
Laboratory of production synthesis		60	60
<b>Stage alignment</b>			
Collective orientation internship		4	4
Individual orientation internship	1		25
<b>Accompaniment</b>			
Collective accompaniment		16	16
Individual accompaniment	1		25
<b>Totale</b>	<b>8</b>	<b>130</b>	<b>330</b>

Calculation based on the number of students = 25

<b>Course manager</b>	Mirko Del Grande
<b>Tutor</b>	Anna Semeraro