MANUTECH24

HIGHER TECHNICIAN FOR MAINTENANCE MANAGEMENT OF INDUSTRIAL MACHINERY AND EQUIPMENT

https://www.itsprime.it/corsi-itsprime/manutech24/

The course is fully funded under Mission 4 - Component 1 Investment 1.5 of PNRR - Strengthening the training offer of the "ITS Academy".

Free for participants.

The ITS Prime Foundation has also provided for the award of **Scholarships** on the basis of merit and income. The terms and criteria for allocation and disbursement will be defined and communicated to students attending with appropriate notices and regulations.

Type of course:
Two-year course in higher education.

Teaching location:
the course will take place mainly at **ITI Pacinotti di Piombino (LI), in Via Pacinotti 3**. Some of the activities may be held in the technological laboratories of the Universities, Companies and Entities that collaborate with the ITS Prime Foundation. They may also be held occasionally in structures of educational or scientific interest located elsewhere. The internships may take place in companies located in any part of the regional, national and/or European territory.

Registration deadline: 18th October 2024, 11pm.

Type of final Diploma:
Diploma in " HIGHER TECHNICIAN FOR DESIGN AND ADVANCED MECHATRONIC PRODUCTION" (Ambito 6.1 - Sviluppo e innovazione del processo e del prodotto - Figura 6.1.1 dell'allegato 1 – DM 203 del 20.10.2023) with indication of specialization of the course in **"HIGHER TECHNICIAN FOR MAINTENANCE MANAGEMENT OF INDUSTRIAL MACHINERY AND EQUIPMENT"** with the certification of the competences corresponding to the **European Qualifications Framework for lifelong learning (EQF) level 5** and constitutes a qualification for access to public competitions pursuant to Art. 5, paragraph 7, of the D.P.C.M 25 January 2008.

Entry requirements:
possession of secondary school diploma or after the 4-year Diploma of Vocational Education and Training (VET) integrated by a one-year Higher Technical Education and Training (IFTS) course;

age between 18 to 35 years old (not completed on the call deadline date);

basic skills in English and ICT.

Female candidates and/or candidates belonging to disadvantaged categories who have been successful in the selection process will be automatically admitted to participate in the course as trainees, up to the limit of the number of places allocated to them (50% of places to women, 7% to disadvantaged categories in accordance with the provisions of Law 68/1999).

Type of access:
classes can be made up of a **minimum number of 20 students** as required by current national regulations on the matter and a **maximum of 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: https://www.itsprime.it/corsi-itsprime/manutech24/

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 Scientific Technical Committee that evaluates the coherence of the previous training courses with the Training Units and the modules of the course that the student is going to attend. On this basis the Scientific Technical Committee indicates which modules can be recognized as already learned by the student. Requests for recognition of training credits received after the selection date will not be evaluated.

Course Objectives.
The course for "MANUTECH24 - Higher Technician for the management of maintenance of industrial machines and plants" trains professionals specialized in the design, installa

tion and maintenance of machinery and plants. The skills acquired include the use of innovative technologies, preventive and predictive maintenance, and integrates Industry 4.0 principles to ensure efficiency, reliability and safety of operations.

Main job opportunities
Maintenance technician
Maintenance manager
Installation and testing technician
Plant safety manager

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 (1040 hours),
internship, in Italy and abroad (760 hours). Any foreign internships are carried out with the European Erasmus+ programme.
Lesson time: Monday to Friday with a weekly commitment of 35-40 hours. Interruptions in teaching activities will be planned for holidays, summer and winter vacations.
The entire training course is carried out in close connection with the mechanic sector companies. The teaching team is composed of at least 70% 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.

Possibility of access to further studies
The diploma may be integrated into a subsequent university course, with recognition of university credits (CFU) on the basis of the didactic regulations of the individual universities. In this regard, please refer to the regulations in force.

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 total hours of lessons, and having obtained in all the Didactic modules at least 60/100, are admitted to the final exam. The exam consists of technical-practical tests and an interview.

Course structure
Training Units and Teaching Modules

UFC 1 - EMPOWERMENT E TEAM BUILDING
1.1 Outdoor Training (in ambiente esterno)
1.2 Laboratorio di Self Empowerment e Team Building
1.3 Problemsetting and solving - decision making - time management

UFC 2 - ORIENTATION TO WORK AND ENTERPRISE
2.1 The enterprise and the employment relationship (contracts)
2.2 Business organization and organization charts
2.3 Supply chain management

UFC 3 - LANGUAGE SKILLS
3.1 English theory
3.2 English laboratory
3.3 Technical English

UFC 4 - QUALITY, SAFETY AND ENVIRONMENT
4.1 Quality policies in the use of processes (ISO 9000)
4.2 Safety and accident prevention in the workplace (high risk) ISO 18000
4.3 Total Quality Management

UFC 5 - MECHANICAL TECHNOLOGIES and SYSTEMS.
5.1 Materials technology
5.2 Mechanical technologies
5.3 Mechanical plant engineering (oleodynamics,penumatics,drives, sensors, organs)
5.4 The process industry - design - prototyping - testing
5.5 Mechanical measurement laboratory
5.6 ISO language programming
5.7 Mechanical workshop (machining with traditional and CNC machines)

UFC 6 - ELECTRONICS AND ELECTRICAL ENGINEERING
6.1 Basics of electrical engineering and electromagnetism
6.2 Analog and digital electronics
6.3 Control systems - PLC - DCS
6.4 Electrical measurements
6.5 Electrical systems

6.6 Digitization of industrial production (Digital Twins)
6.7 Electronics laboratory

UFC 7 - CAD AND TECHNICAL DRAWING (2D 3 3D)

7.1 Elements of industrial technical drawing
7.2 Standards for industrial technical drawing
7.3 Machine and plant design, including reverse engineering
7.4 Computer Aided Design (AutoCAD 2D)
7.5 3D computer aided modeling
7.6 Basics of mechanical design

UFC 8 - MAINTENANCE SERVICE ORGANIZATION AND MANAGEMENT

8.1 Technical/administrative management and control documentation
8.2 Maintenance contracts
8.3 Scheduling techniques (scheduling) - the cost centers
8.5 Elements of project management

UFC 9 - PREVENTIVE AND PREDICTIVE MAINTENANCE MANAGEMENT

9.1 Types and strategies of maintenance - The KPIs
9.2 Types of failures and/or breakdowns
9.3 Cost management in maintenance - fixed and variable costs
9.4 Elements of reliability theory
9.5 Techniques for predicting failure modes
9.6 Preventive and predictive maintenance techniques
9,7 Testing and inspection techniques (CND)

UFC 10 - MAINTENANCE OF SERVICE TECHNOLOGY SYSTEMS.

10.1 Types, components, maintenance and safety of water and fire protection systems
10.2 Types, components, maintenance and safety of thermal and air conditioning systems
10.3 Types, components, maintenance and safety of electrical systems
10.4 Types, components, maintenance and safety of pneumatic and oledynamic systems

UFC 11 - MAINTENANCE OF INDUSTRIAL PRODUCTION MACHINERY

11.1 Types of machines
11.2 Types, components,maintenance and safety of production machines
11.3 Practical exercises at machines

UFC 12 - MAINTENANCE AND OPERATION OF INDUSTRIAL PLANTS.

12.1 Industrial plants
12.2 Maintenance of industrial plants (chemical, petrochemical, energy, food, pharmaceutical...)
12.3 Lean Manufacturing

UFC 13 - INTERNSHIP

13.1 Internship in the compan

Timetable and credits for teaching modules

Acronym	MANUTECH24						
Title	Higher technician for maintenance management of industrial machinery and equipment						
Modules Code	Teaching	Hours Module	Hours UFC	Hours First year	Hours Second year	Credits First year	Credits Second year
	UFC 1 - EMPOWERMENT E TEAM BUILDING		**40**	**First year**		**First year**	
1.1	Outdoor Training (in ambiente esterno)	8		8		2	
1.2	Laboratorio di Self Empowerment e Team Building	16		16			
1.3	Problemsetting and solving - decision making - time management	16		16			
	UFC 2 - ORIENTATION TO WORK AND ENTERPRISE		**36**		**Second Year**		**Second Year**
2.1	The enterprise and the employment relationship (contracts)	12			12		1
2.2	Business organization and organization charts	12			12		2
2.3	Supply chain management	12			12		2
	UFC 3 - LANGUAGE SKILLS		**64**	**First year**		**First year**	
3.1	English theory	32		32		2	
3.2	English laboratory	20		20		1	
3.3	Technical English	12		12		1	
	UFC 4 - QUALITY, SAFETY AND ENVIRONMENT		**52**	**First year**		**First year**	
4.1	Quality policies in the use of processes (ISO 9000)	16		16		1	
4.2	Safety and accident prevention in the workplace (high risk) ISO 18000	16		16		1	
4.3	Total Quality Management	20		20		1	
	UFC 5 - MECHANICAL TECHNOLOGIES and SYSTEMS.		**196**	**First year**		**First year**	
5.1	Materials technology	20		20		2	
5.2	Mechanical technologies	24		24		2	
5.3	Mechanical plant engineering (oleodynamics,penumatics,drives, sensors, organs)	20		20		2	
5.4	The process industry - design - prototyping - testing	20		20		2	
5.5	Mechanical measurement laboratory	20		20		1	
5.6	ISO language programming	32		32		2	
5.7	Mechanical workshop (machining with traditional and CNC machines)	60		60		2	
	UFC 6 - ELECTRONICS AND ELECTRICAL ENGINEERING		**152**	**First year**		**First year**	
6.1	Basics of electrical engineering and electromagnetism	16		16		1	
6.2	Analog and digital electronics	16		16		1	
6.3	Control systems - PLC - DCS	20		20		2	
6.4	Electrical measurements	20		20		1	
6.5	Electrical systems	24		24		2	
6.6	Digitization of industrial production (Digital Twins)	16		16		1	
6.7	Electronics laboratory	40		40		2	
	UFC 7 - CAD AND TECHNICAL DRAWING (2D 3 3D)		**168**	**First year**		**First year**	
7.1	Elements of industrial technical drawing	32		32		2	
7.2	Standards for industrial technical drawing	20		20		1	
7.3	Machine and plant design, including reverse engineering	20		20		1	
7.4	Computer Aided Design (AutoCAD 2D)	40		40		2	
7.5	3D computer aided modeling	32		32		2	
7.6	Basics of mechanical design	24		24		1	
	UFC 8 - MAINTENANCE SERVICE ORGANIZATION AND MANAGEMENT		**56**	**First year**		**First year**	
8.1	Technical/administrative management and control documentation	20		20		1	
8.2	Maintenance contracts	12		12		1	
8.3	Scheduling techniques (scheduling) - the cost centers	12		12		1	
8.5	Elements of project management	12		12		1	
	UFC 9 - PREVENTIVE AND PREDICTIVE MAINTENANCE MANAGEMENT		**60**	**First year**		**First year**	
9.1	Types and strategies of maintenance - The KPIs	8		8		1	
9.2	Types of failures and/or breakdowns	8		8		1	
9.3	Cost management in maintenance - fixed and variable costs	8		8		1	
9.4	Elements of reliability theory	8		8		1	
9.5	Techniques for predicting failure modes	8		8		1	
9.6	Preventive and predictive maintenance techniques	8		8		1	
9,7	Testing and inspection techniques (CND)	12		12		1	
	UFC 10 - MAINTENANCE OF SERVICE TECHNOLOGY SYSTEMS.		**96**	**First year**		**First year**	
10.1	Types, components, maintenance and safety of water and fire protection systems	20		20		2	
10.2	Types, components, maintenance and safety of thermal and air conditioning systems	28		28		2	
10.3	Types, components, maintenance and safety of electrical systems	28		28		2	
10.4	Types, components, maintenance and safety of pneumatic and oledynamic systems	20		20		2	
	UFC 11 - MAINTENANCE OF INDUSTRIAL PRODUCTION MACHINERY		**60**		**Second Year**		**Second Year**
11.1	Types of machines	20			20		3
11.2	Types, components,maintenance and safety of production machines	20			20		3
11.3	Practical exercises at machines	20			20		3
	UFC 12 - MAINTENANCE AND OPERATION OF INDUSTRIAL PLANTS.		**60**		**Second Year**		**Second Year**
12.1	Industrial plants	20			20		3
12.2	Maintenance of industrial plants (chemical, petrochemical, energy, food, pharmaceutical...)	20			20		3
12.3	Lean Manufacturing	20			20		3
	UFC 13 - INTERNSHIP		**760**		**Second Year**		**Second Year**
13.1	Internship in the company	760			760		37
	TOTAL HOURS		**1800**	**884**	**916**	**60**	**60**

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ECTS credit system
For each course, ITS PRIME has adopted the calculation of credits according to the credit system used in the European Higher Education space ECTS (European Credit Tranfert Sy-stem). For the credits of an annuity there are, as for most Higher Education annuities, 60 credits. Typically 1 credit is equivalent to 25 hours of work between classroom (or laboratory for practical activities) and individual study . For each Didactic Module, the workload necessary for students to achieve the intended learning outcomes was assessed by assessment experts and module teachers. Lecture hours were considered 30% or 50% of the total workload hours according to the theoretical or theoretical-practical nature of the different modules. Time spent on company internship and laboratory activities was considered 100% of the workload.

Language of lessons
Italian

Course calendar
The course will start by October 30, 2024 and will end by June 2026. The actual start date of the course will be communicated via the ITS Prime Foundation website (www.itsprime.it).