

ELETTROMECC24

HIGHER TECHNICIAN FOR ELECTRONIC INSTALLATION AND MAINTENANCE OF THE PRODUCTION PROCESS

<https://www.itsprime.it/corsi-itsprime/elettromec24/>

The course is fully funded by PR Tuscany ESF+ 2021 - 2027, with D.D 13362 of 11/06/24 and is included in the framework of Giovanisì (www.giovanisi.it), the project of the Tuscany Region for the autonomy of young people.

Free for participants.

Participants who live more than 50 km away from the course location will receive a **contribution** to reimburse the expenses incurred for **food and accommodation**. The contribution will be granted only on condition that the participant successfully completes the ITS training course in which he/she is enrolled.

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 the ITS PRIME locations in **Campi Bisenzio (FI), Via delle Officine Galileo 1**. 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: 26th September 2024, 11pm.

Type of final Diploma:

Diploma in " Higher Technician for Industrial Automation and Robotics" (Ambito 6.1 - Process and Product Development and Innovation - Figura 6.1.1 dell'allegato 1 – DM 203 del 20.10.2023) with indication of specialization of the course in "**HIGHER TECHNICIAN FOR**



ELECTRONIC INSTALLATION AND MAINTENANCE OF THE PRODUCTION PROCESS” 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 (IFTTS) 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/elettromec24/>

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 "ELETTROMECC24 - Higher technician for the installation and maintenance of electronic production processes" trains professionals capable of designing, installing and testing complex electronic systems. The skills acquired include the integration of advanced technologies such as Additive Manufacturing and sustainability practices.

Main job opportunities

Installation and maintenance technician for electronic equipment
Designer and testing technician for electronic devices and systems
Maintenance manager for systems

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: 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 Job order management techniques
- 2.4 Supply chain management

UFC 3 - LANGUAGE SKILLS

- 3.1 English theory
- 3.2 English lab
- 3.3 Technical English

UFC 4 - QUALITY, SAFETY AND ENVIRONMENT

- 4.1 Quality policies in the use of processes (ISO 9001)
- 4.2 Safety and accident prevention in the workplace (high risk)
- 4.3 Green enterprise; iso 14000 and eco-compatibility of industrial production
- 4.4 Regulations in the field of installation and maintenance of electrical and electronic systems

UFC 5 - FUNDAMENTALS OF ELECTRONICS

- 5.1 Basic electronic quantities
- 5.2 Discrete electronic components
- 5.3 Amplifiers
- 5.4 Integrated circuits
- 5.5 Theory of Reaction
- 5.6 Basic electronics laboratory



UFC 6 - ELECTRONICS INSTRUMENTATION

- 6.1 Automatic measurement systems
- 6.2 Synthesizers, Arbitrary waveform generators and digital oscilloscopes
- 6.3 Logic state analyzers

- 6.4 Spectrum analyzers
- 6.5 Vector and network analyzers
- 6.6 Electronic system installation laboratory

UFC 7 - ASSEMBLY AND INSTALLATION OF ELECTRONIC SYSTEMS

- 7.1 Elements of electrical-electronic drawing
- 7.2 Electrical systems technology
- 7.3 Principles of operation and construction characteristics of installations
- 7.4 Analysis of the context of plant installation
- 7.5 Main techniques of plant installation and assembly
- 7.6 Laboratory of plant assembly and installation

UFC 8 - TESTING OF ELECTRONIC EQUIPMENT

- 8.1 Failure models and test coverage
- 8.2 Testing techniques
- 8.3 Fault diagnosis
- 8.4 Design for testability
- 8.5 Concurrent Engineering

UFC 9 - TESTING AND DIAGNOSTIC SYSTEMS FOR PRODUCTION

- 9.1 Monitoring and control with AOI 3D and X-ray systems
- 9.2 Moving probe testers
- 9.3 Functional Testing: Methods and Tools
- 9.4 Automatic Testing Systems (Automatic Test Equipment)
- 9.5 Test system programming (LabView)
- 9.6 Laboratory for programming and utilizing a test and monitoring system

UFC 10 - SENSING AND MAINTENANCE 4.0

- 10.1 Big Data analysis and interpretation
- 10.2 Preventive maintenance
- 10.3 Predictive maintenance
- 10.4 IoT sensing for electronic systems
- 10.5 Maintenance 4.0 technologies (AR, AI)
- 10.6 Maintenance planning and documentation



UFC 11 - STAGE

11.1 Company internship

Timetable and credits for teaching modules

Acronym	ElettroMec24						
Title	Higher technician for electronic installation and maintenance of the production process						
Modules Code	Insegnamento	Hours Module	Hours UFC	Hours First year	HoursSecond year	Credits First year	Credits Second year
	UFC 1 - EMPOWERMENT E TEAM BUILDING		40	First year			
1.1	Outdoor Training (in outdoor environment)	8		8			
1.2	Laboratorio di Self Empowerment e Team Building	16		16		2	
1.3	Problemsetting and solving - decision making - time management	16		16			
	UFC 2 - ORIENTATION TO WORK AND ENTERPRISE		40		Second year		Second year
2.1	The enterprise and the employment relationship (contracts)	8			8		1
2.2	Business organization and organization charts	12			12		2
2.3	Job order management techniques	8			8		1
2.4	Supply chain management	12			12		2
	UFC 3 - LANGUAGE SKILLS		68	First year		First year	
3.1	English theory	40		40		2	
3.2	English lab	20		20		1	
3.3	Technical English	8		8		1	
	UFC 4 - QUALITY, SAFETY AND ENVIRONMENT		64	First year		First year	
4.1	Quality policies in the use of processes (ISO 9001)	16		16		1	
4.2	Safety and accident prevention in the workplace (high risk)	16		16		1	
4.3	Green enterprise: iso 14000 and eco-compatibility of industrial production	8		8		1	
4.4	regulations in the field of installation and maintenance of electrical and electronic systems	24		24		2	
	UFC 5 - FUNDAMENTALS OF ELECTRONICS		128	First year		First year	
5.1	Basic electronic quantities	24		24		3	
5.2	Discrete electronic components	24		24		2	
5.3	Amplifiers	16		16		1	
5.4	Integrated circuits	24		24		2	
5.5	Theory of Reaction	16		16		1	
5.6	Basic electronics laboratory	24		24		2	
	UFC 6 - ELECTRONICS INSTRUMENTATION		104	First year		First year	
6.1	Automatic measurement systems	20		20		2	
6.2	Synthesizers, Arbitrary waveform generators and digital oscilloscopes	16		16		1	
6.3	Logic state analyzers	12		12		1	
6.4	Spectrum analyzers	12		12		1	
6.5	Vector and network analyzers	12		12		1	
6.6	Electronic system installation laboratory	32		32		2	
	UFC 7 - ASSEMBLY AND INSTALLATION OF ELECTRONIC SYSTEMS		160	First year		First year	
7.1	Elements of electrical-electronic drawing	24		24		2	
7.2	Electrical systems technology	24		24		2	
7.3	Principles of operation and construction characteristics of installations	24		24		2	
7.4	Analysis of the context of plant installation	16		16		1	
7.5	Main techniques of plant installation and assembly	32		32		2	
7.6	Laboratory of plant assembly and installation	40		40		2	
	UFC 8 - TESTING OF ELECTRONIC EQUIPMENT		104	First year		First year	
8.1	Failure models and test coverage	24		24		2	
8.2	Testing techniques	24		24		2	
8.3	Fault diagnosis	16		16		1	
8.4	Design for testability	16		16		1	
8.5	Concurrent Engineering	24		24		2	
	UFC 9 - TESTING AND DIAGNOSTIC SYSTEMS FOR PRODUCTION		176	First year		First year	
9.1	Monitoring and control with AOI 3D and X-ray systems	32		32		3	
9.2	Moving probe testers	24		24		2	
9.3	Functional Testing: Methods and Tools	24		24		1	
9.4	Automatic Testing Systems (Automatic Test Equipment)	24		24		1	
9.5	Test system programming (LabView)	24		24		2	
9.6	Laboratory for programming and utilizing a test and monitoring system	48		48		2	
	UFC 10 - SENSING AND MAINTENANCE 4.0		116		Second year		Second year
10.1	Big Data analysis and interpretation	32			32		3
10.2	Preventive maintenance	16			16		2
10.3	Predictive maintenance	16			16		2
10.4	IoT sensing for electronic systems	20			20		3
10.5	Maintenance 4.0 technologies (AR, AI)	24			24		3
10.6	Maintenance planning and documentation	8			8		2
	UFC 11 - STAGE		800		Second year		Second year
11.1	Company internship	800			800		39
	TOTALE ORE		1800	844	956	60	60



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 Transfer System). 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).

