

# ROBOTECH24

## HIGHER TECHNICIAN FOR AUTOMATION OF PRODUCTION SYSTEMS AND INDUSTRIAL ROBOTICS

<https://www.itsprime.it/corsi-itsprime/robotech24/>

**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 the ITS PRIME locations in **Florence**. 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:**

“Higher technician for industrial automation and robotics” (Ambito 6.2- Automation and integration of industrial production - Figura 6.2.1 dell'allegato 1 – DM 203 del 20.10.2023) with indication of specialization of the course in “**HIGHER TECHNICIAN FOR AUTOMATION OF PRODUCTION SYSTEMS AND INDUSTRIAL ROBOTICS**” 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/robotech24/>

**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 "ROBOTECH - Higher Technician for the automation of production systems and industrial robotics" trains professionals who specialize in the design, implementation



and ge- stration of automated and robotic systems intended for various industrial sectors: manufacturing, logistics, food, pharmaceutical, robotics and automation plants. The skills acquired range from robot and PLC programming to mechatronic design and the integration of digital technologies such as IoT and augmented reality.

### **Main job opportunities**

Robot and PLC programmer  
Mechatronic systems designer  
Maintenance technician for automated systems  
Production, installation and testing manager  
Consulting firms for 3D design and drawing

### **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 - WORK AND BUSINESS ORIENTATION**

- 2.1 The business and the employment relationship (contracts)
- 2.2 Business organization and organizational charts
- 2.3 Order management techniques
- 2.4 Supply Chain Management

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

- 3.1 English theory
- 3.2 English laboratory
- 3.3 Technical English

#### **UFC 4 - DESIGN AND PROTOTYPING**

- 4.1 Regulations for mechanical technical drawing
- 4.2 Computer Aided Design (AutoCAD)
- 4.3 Parametric solid modeling (SolidWorks)
- 4.4 Product Lifecycle Management
- 4.5 Rapid prototyping and virtual simulations

#### **UFC 5 - MECHANICAL TECHNOLOGIES**

- 5.1 Materials technology
- 5.2 Mechanical measurement laboratory
- 5.3 Mechanics laboratory

#### **UFC 6 - ELECTRONICS AND ELECTROTECHNICS**

- 6.1 Basics of electrical engineering and electromagnetism
- 6.2 Analog electronics
- 6.3 Digital electronics
- 6.4 Electrical measurements
- 6.5 Electrical systems
- 6.6 Laboratory of electronics



## **UFC 7 - QUALITY, SAFETY AND ENVIRONMENT**

- 7.1 Quality policies in the use of processes (ISO 9001)
- 7.2 Safety and prevention of accidents in the workplace (high risk)
- 7.3 Total Quality Management

## **UFC 8 - INDUSTRIALIZATION OF THE PROCESS AND PRODUCT**

- 8.1 Production processes and environmental and economic sustainability
- 8.2 Lean Manufacturing and Lean Sustainability Management
- 8.3 Digitalization of industrial production (Digital Twins)

## **UFC 9 - SYSTEMS MANAGEMENT AND MAINTENANCE**

- 9.1 Organization of the installation and maintenance service
- 9.2 Preventive and predictive maintenance (Digital Twins)
- 9.3 Installation and maintenance of automated lines

## **UFC 10 - APPLIED COMPUTER SCIENCE AND IOT**

- 10.1 Programming languages (C/C++)
- 10.2 IOT (Arduino)
- 10.3 Augmented reality systems (AR)
- 10.4 Applied computer science laboratory (Arduino)

## **UFC 11 - AUTOMATION INDUSTRIAL**

- 11.1 Electric motors
- 11.2 Electro-pneumatic and electro-hydraulic actuators
- 11.3 Industrial automation and control systems
- 11.4 Programming of industrial automation systems (PLC)
- 11.5 Industrial automation laboratory

## **UFC 12 - INDUSTRIAL ROBOTICS**

- 12.1 Classification of industrial robots
- 12.2 Mechanics of industrial robots
- 12.3 Robotic transport systems
- 12.4 Programming, control and testing of robotic systems
- 12.5 Robotics laboratory

## **UFC 13- INTERNSHIP**

- 13.1 Internship in a company



## Timetable and credits for teaching modules

<b>ROBOTECH24</b>							
Acronym							
Title	<b>Higher Technician for Automation of Production Systems and Industrial Robotics</b>						
Modules Code	Teaching	Hours Module	Hours UFC	Hours First year	Hours Second year	Credits First year	Credits Second year
	<b>UFC 1 - EMPOWERMENT E TEAM BUILDING</b>		<b>40</b>	<b>First Year</b>		<b>First Year</b>	
1.1	Outdoor Training (in ambiente esterno)	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			
	<b>UFC 2 - WORK AND BUSINESS ORIENTATION</b>		<b>40</b>		<b>Second year</b>		<b>Second year</b>
2.1	The business and the employment relationship (contracts)	8			8		1
2.2	Business organization and organizational charts	12			12		2
2.3	Order management techniques	8			8		1
2.4	Supply Chain Management	12			12		2
	<b>UFC 3 - LANGUAGE SKILLS</b>		<b>68</b>	<b>First Year</b>		<b>First Year</b>	
3.1	English theory	40		40		2	
3.2	English laboratory	20		20		1	
3.3	Technical English	8		8		1	
	<b>UFC 4 - DESIGN AND PROTOTYPING</b>		<b>164</b>	<b>First Year</b>		<b>First Year</b>	
4.1	Regulations for mechanical technical drawing	12		12		1	
4.2	Computer Aided Design (AutoCAD)	32		32		2	
4.3	Parametric solid modeling (SolidWorks)	64		64		3	
4.4	Product Lifecycle Management	24		24		2	
4.5	Rapid prototyping and virtual simulations	32		32		2	
	<b>UFC 5 - MECHANICAL TECHNOLOGIES</b>		<b>72</b>	<b>First Year</b>		<b>First Year</b>	
5.1	Materials technology	24		24		2	
5.2	Mechanical measurement laboratory	24		24		1	
5.3	Mechanics laboratory	24		24			1
	<b>UFC 6 - ELECTRONICS AND ELECTROTECHNICS</b>		<b>124</b>	<b>First Year</b>		<b>First Year</b>	
6.1	Basics of electrical engineering and electromagnetism	16		16		2	
6.2	Analog electronics	16		16		2	
6.3	Digital electronics	20		20		3	
6.4	Electrical measurements	20		20		2	
6.5	Electrical systems	20		20		2	
6.6	Laboratory of electronics	32		32		2	
	<b>UFC 7 - QUALITY, SAFETY AND ENVIRONMENT</b>		<b>52</b>		<b>Second year</b>		<b>Second year</b>
7.1	Quality policies in the use of processes (ISO 9001)	16			16		1
7.2	Safety and prevention of accidents in the workplace (high risk)	20			20		2
7.3	Total Quality Management	16			16		1
	<b>UFC 8 - INDUSTRIALIZATION OF THE PROCESS AND PRODUCT</b>		<b>62</b>	<b>First Year</b>		<b>First Year</b>	
8.1	Production processes and environmental and economic sustainability	24		24		2	
8.2	Lean Manufacturing and Lean Sustainability Management	30		30		2	
8.3	Digitalization of industrial production (Digital Twins)	8		8		1	
	<b>UFC 9 - SYSTEMS MANAGEMENT AND MAINTENANCE</b>		<b>44</b>	<b>First Year</b>		<b>First Year</b>	
9.1	Organization of the installation and maintenance service	12		12		1	
9.2	Preventive and predictive maintenance (Digital Twins)	8		8		1	
9.3	Installation and maintenance of automated lines	24		24		2	
	<b>UFC 10 - APPLIED COMPUTER SCIENCE AND IOT</b>		<b>104</b>	<b>First Year</b>		<b>First Year</b>	
10.1	Programming languages (C/C++)	32		32		2	
10.2	IOT (Arduino)	24		24		2	
10.3	Augmented reality systems (AR)	16		16		1	
10.4	Applied computer science laboratory (Arduino)	32		32		3	
	<b>UFC 11 - AUTOMATION INDUSTRIAL</b>		<b>160</b>	<b>First Year</b>		<b>First Year</b>	
11.1	Electric motors	32		32		2	
11.2	Electro-pneumatic and electro-hydraulic actuators	24		24		2	
11.3	Industrial automation and control systems	32		32		2	
11.4	Programming of industrial automation systems (PLC)	32		32		2	
11.5	Industrial automation laboratory	40		40		2	
	<b>UFC 12 - INDUSTRIAL ROBOTICS</b>		<b>110</b>		<b>Second year</b>		<b>Second year</b>
12.1	Classification of industrial robots	8			8		1
12.2	Mechanics of industrial robots	20			20		3
12.3	Robotic transport systems	10			10		1
12.4	Programming, control and testing of robotic systems	32			32		3
12.5	Robotics laboratory	40			40		3
	<b>UFC 13- INTERNSHIP</b>		<b>760</b>		<b>Second year</b>		<b>Second year</b>
13.1	Internship in a company	760			760		39
	<b>TOTAL HOURS</b>		<b>1800</b>	<b>838</b>	<b>962</b>	<b>60</b>	<b>60</b>

### 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](http://www.itsprime.it)).

