

TECHDESIGN24

HIGHER TECHNICIAN FOR MECHANICAL DESIGN AND DRAWING

<https://www.itsprime.it/corsi-itsprime/techdesign24/>

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: 126th September 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 MECHANICAL DESIGN AND DRAWING**" 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/techdesign24/>

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 “TECHDESIGN24 - Higher Technician for Mechanical Design and Drawing” trains professionals specialized in the design and industrialization of machines and implants, using CAD software and innovative technologies. The skills acquired comprehend simulation, prototyping, economic and environmental evaluation, and integrates IoT solutions to ensure compliance with design and sustainability standards.



Main job opportunities

Mechanical designer and drafter
Simulation and modeling specialist
Rapid prototyping technician

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 (1160 hours),
internship, in Italy and abroad (840 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 ORIENTATION AND SELF-ENTREPRENEURSHIP

- 2.1 The company and the employment relationship (contracts)
- 2.2 Self-entrepreneurship
- 2.3 Professional management (professional colleges)

UFC 3 - THE COMPANY SYSTEM

- 3.1 Company organization and organizational charts
- 3.2 Order management techniques
- 3.3 Supply Chain Management
- 3.4 Digitalization of industrial production (Industry 4.0)

UFC 4 - LANGUAGE SKILLS

- 4.1 English theory
- 4.2 English laboratory
- 4.3 Technical English

UFC 5 - MECHANICAL DESIGN

- 5.1 Basics of mechanical design
- 5.2 Machine design
- 5.3 Regulations for mechanical technical drawing
- 5.4 Materials technology
- 5.5 Basic mechanical measurement laboratory
- 5.6 Basic mechanics laboratory (manual machines)

UFC 6 - TOOLS FOR MECHANICAL DESIGN

- 6.1 Computer Aided Design (AutoCAD)
- 6.2 Basic parametric solid modeling (SolidWorks)
- 6.3 Laser scanning and reverse engineering

UFC 7 - PRODUCT DEVELOPMENT TOOLS

- 7.1 Additive manufacturing (Printers and processes)
- 7.2 Advanced parametric solid modeling (SolidWorks)



- 7.3 ISO
- 7.4 CAM programming (Esprit)
- 7.5 Static and dynamic structural analysis with FEM methodology
- 7.6 Digital Twin for predictive analysis
- 7.7 Advanced mechanical measurement laboratory (TAC, CMM, Optical Scanning, etc.)
- 7.8 Advanced mechanics laboratory (numerical control machines)

UFC 8 - QUALITY, SAFETY AND ENVIRONMENT

- 8.1 Quality policies in the use of processes (ISO 9001)
- 8.2 Safety and prevention of accidents in the workplace (high risk)
- 8.3 Ecological company; iso 14000 and eco-compatibility of industrial production

UFC 9 - INDUSTRIALIZATION OF THE PROCESS AND PRODUCT

- 9.1 Production processes and costs of company structures
- 9.2 Production technologies and mechanical processing
- 9.3 New Machinery Directive (2006/42/EC)
- 9.4 Design for production
- 9.5 Material Requirement Planning (MRP)
- 9.6 Product Lifecycle Management (PLM)
- 9.7 Lean Manufacturing (Six Sigma)

UFC 10 - INTERNSHIP

- 10.1 Internship in the company



Timetable and credits for teaching modules

Acronym	TECHDESIGN24						
Title	Higher Technician for Mechanical Design and Drawing						
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 - WORK ORIENTATION AND SELF-ENTREPRENEURSHIP		32		Second year		Second year
2.1	The company and the employment relationship (contracts)	8			8		1
2.2	Self-entrepreneurship	16			16		2
2.3	Professional management (professional colleges)	8			8		1
	UFC 3 - THE COMPANY SYSTEM		56	First year		First year	
3.1	Company organization and organizational charts	16		16		2	
3.2	Order management techniques	12		12		1	
3.3	Supply Chain Management	16		16		2	
3.4	Digitalization of industrial production (Industry 4.0)	12		12		1	
	UFC 4 - LANGUAGE SKILLS		72	First year		First year	
4.1	English theory	40		40		2	
4.2	English laboratory	20		20		1	
4.3	Technical English	12		12		1	
	UFC 5 - MECHANICAL DESIGN		236	First year		First year	
5.1	Basics of mechanical design	40		40		3	
5.2	Machine design	40		40		3	
5.3	Regulations for mechanical technical drawing	16		16		2	
5.4	Materials technology	40		40		3	
5.5	Basic mechanical measurement laboratory	40		40		3	
5.6	Basic mechanics laboratory (manual machines)	60		60		3	
	UFC 6 - TOOLS FOR MECHANICAL DESIGN		160	First year		First year	
6.1	Computer Aided Design (AutoCAD)	40		40		3	
6.2	Basic parametric solid modeling (SolidWorks)	80		80		5	
6.3	Laser scanning and reverse engineering	40		40		3	
	UFC 7 - PRODUCT DEVELOPMENT TOOLS		336		Second year		Second year
7.1	Additive manufacturing (Printers and processes)	32			32		3
7.2	Advanced parametric solid modeling (SolidWorks)	48			48		3
7.3	ISO	40			40		2
7.4	CAM programming (Esprit)	60			60		3
7.5	Static and dynamic structural analysis with FEM methodology	24			24		2
7.6	Digital Twin for predictive analysis	32			32		2
7.7	Advanced mechanical measurement laboratory (TAC, CMM, Optical Scanning, etc)	40			40		3
7.8	Advanced mechanics laboratory (numerical control machines)	60			60		3
	UFC 8 - QUALITY, SAFETY AND ENVIRONMENT		52	First year		First year	
8.1	Quality policies in the use of processes (ISO 9001)	16		16		1	
8.2	Safety and prevention of accidents in the workplace (high risk)	20		20		2	
8.3	Ecological company; iso 14000 and eco-compatibility of industrial production	16		16		1	
	UFC 9 - INDUSTRIALIZATION OF THE PROCESS AND PRODUCT		176	First year		First year	
9.1	Production processes and costs of company structures	32		32		2	
9.2	Production technologies and mechanical processing	20		20		2	
9.3	New Machinery Directive (2006/42/EC)	12		12		1	
9.4	Design for production	24		24		3	
9.5	Material Requirement Planning (MRP)	24		24		2	
9.6	Product Lifecycle Management (PLM)	32		32		3	
9.7	Lean Manufacturing (Six Sigma)	32		32		3	
	UFC 10 - INTERNSHIP		840		Second year		Second year
10.1	Internship in the company	840			840		35
	TOTALE ORE		2000	792	1208	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 work-



load 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 October 2026. The actual start date of the course will be communicated via the ITS Prime Foundation website (www.itsprime.it).

