DigiWork23

Course for Higher Technician for integration and control of business information systems

http://www.itsprime.it/corsi/nuovi-corsi/digiworks23-firenze/

Type of course:
two-year course after 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.

Teaching location:
the course will take place mainly at **the headquarters of the ITS PRIME Foundation, Via Panciatichi, 29 – Florence,** in the classrooms located inside **the Baker Hughes Nuovo Pignone factory in via Felice Matteucci, 2 Florence** and in the classrooms of **UNISER Srl in Via Sandro Pertini 358, Pistoia**. Part 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 facilities of educational or scientific interest located elsewhere. The internships can take place in companies located in any part of the regional, national and/or European territory.

Registration deadline: November 30, 2023

Type of final Diploma:
Diploma in "HIGHER TECHNICIAN FOR AUTOMATION AND MECHATRONIC SYSTEMS" (Area 4.3 Mechanical System - Figure 4.3.2 of Annex D - Interministerial Decree 07/09/2011) with indication of specialization of the course in **"HIGHER TECHNICIAN FOR INTEGRATION AND CONTROL OF BUSINESS INFORMATION SYSTEMS", 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 is accompanied by EUROPASS certification**.**

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 (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, 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:
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/digiworks23-firenze/

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 judgement of 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.

Profile of the course
The 'HIGHER TECHNICIAN FOR THE INTEGRATION AND CONTROL OF BUSINESS INFORMATION SYSTEMS' specialises in the conception and design of connected business information systems (both hardware and software applications), ensuring the interoperability of functions and platforms and the security of data and communications (cybersecurity).

Main expected learning outcomes
The graduate of **DigiWork23** has the competence:

1. defining the configuration of hardware infrastructures for data transmission and management, identifying physical solutions (servers, network equipment, etc.) and suitable virtual resources (Virtual Private Server, Cloud Server, etc.);
2. implementing methods for controlling anomalies and redundancy devices to avoid blocking system functions, defining procedures for backing up information and setting up remote assistance interventions;

3. assessing system vulnerabilities and possible breaches both from outside (viruses, hackers) and from within, defining the technologies required for system (antivirus, etc.) and network (firewall, etc.) protection and security
4. identifying an adequate level of data protection (cybersecurity) in terms of in-tegrity, availability, confidentiality, using encryption protocols and access monitoring (log-ging, accountability, etc.);
5. translating networking requirements into network topology configurations (hardware and software) and defining the network services and protocols to be installed, unin-stalled, configured on the different types of equipment;
6. identify and apply software design methodologies, development tools and integrat-ed CASE for managing the software development process;
7. develop application software for the management of corporate information systems, based on the functional requirements of the structure, using the power, stability and flexibility of some of the most popular object-oriented programming languages (C++, Python);
8. designing and implementing systems for the management of large amounts of data, managing processes and technologies for Big Data Management and Big Data Analytics;
9. developing Intelligent Autonomous Systems (IAS), using libraries of Ma-chine Learning algorithms (Keras, Tensor Flow, etc.) or programming autonomous solu-tions, with both supervised and unsupervised approaches;

Didactic plan

The two-year course, of 1800 hours in total, takes place in 4 semesters with a didactic ar-ticulation that provides:
classroom lessons and laboratory activities (1100 hours),
internship, in Italy and abroad (700 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 com-panies. The teaching team is composed of at least 50% of experts from the world of pro-duction, professions and work with a specific professional experience in the field. In partic-ular 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 universi-ties. 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 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 5st level of the European Qualifications Framework EQF.

Course structure
Training Units and Didactic Modules

UFC 1 - EMPOWERMENT AND TEAM BUILDING
1.1 Outdoor Training (in outdoor environment)
1.2 Self Empowerment and Team Building Workshop
1.3 Problemsetting and solving - decision making - time management

UFC 2 - JOB ORIENTATION AND SELF-EMPLOYMENT
2.1 The enterprise and the employment relationship (contracts)
2.2 Self-entrepreneurship
2.3 Safety at the workplace (medium risk)

UFC 3 - THE COMPANY SYSTEM
3.1 Company organization and organization charts
3.2 Supply Chain Management

UFC 4 - LANGUAGE SKILLS
4.1 English theory
4.2 English workshop
4.3 Technical English

UFC 5 - QUALITY POLICIES AND PRIVACY REGULATIONS
5.1 Quality policies in the use of processes (ISO 9001/2008)
5.2 Project management (waterfall & agile)

UFC 6 - OPERATING SYSTEMS
6.1 IT Essentials
6.2 NDG Linux Essentials
6.3 NDG Linux I
6.4 NDG Linux II

UFC 7 - PROGRAMMING FUNDAMENTALS
7.1 Fundamentals of programming
7.2 Fundamentals of object oriented programming

UFC 8 - PROGRAMMING LANGUAGES
8.1 PCAP: Programming Essentials In Python
8.2 CPA: Programming Essentials in C++
8.3 CPP: Advanced Programming in C++

UFC 9 - DATABASE MANAGEMENT AND CLOUD COMPUTING
9.1 Design and management of relational databases
9.2 Non-relational and NoSQL databases
9.3 Big Data Management and Analysis
9.4 Using microservice and container cloud platforms

UFC 10 - NETWORKING
10.1 CCNA Introduction to Networks
10.2 CCNA Switching, Routing, and Wireless Essentials
10.3 CCNA Enterprise Networking, Security, and Automation

UFC 11 - CYBERSECURITY
11.1 Introduction to Cybersecurity
11.2 Security by design
11.3 Cybersecurity Essentials
11.4 CyberOps Associate

UFC 12 - APPLIED INFORMATICS AND IOT
12.1 IOT Fundamentals: Connecting Things
12.2 IOT Fundamentals: Big Data & Analytics
12.3 IOT Fundamentals: Hackathon Playbook
IOT Fundamentals: IOT Security

UFC 13 - AI & MACHINE LEARNING
13.1 Machine Learning
13.2 Interfacce e sistemi di controllo
13.3 Sistemi Autonomi Intelligenti IAS

UFC 14 - STAGE
A14.1 Internship in the company

Timetable and credits for teaching modules

Acronym	DigiWork23					
Title	"HIGHER TECHNICIAN FOR INTEGRATION AND CONTROL OF BUSINESS INFORMATION SYSTEMS"					
Modules Code	Teaching	Hours UFC	Hours First year	HoursSecond year	Credits First year	Credits Second year
	UFC 1 - EMPOWERMENT AND TEAM BUILDING	**40**	**First year**			
1.1	Outdoor Training (in outdoor environment)		8		2	
1.2	Self Empowerment and Team Building Workshop		16			
1.3	Problemsetting and solving - decision making - time management		16			
	UFC 2 - JOB ORIENTATION AND SELF-EMPLOYMENT	**28**		**Second year**		
2.1	The enterprise and the employment relationship (contracts)			4		4
2.2	Self-entrepreneurship			8		
2.3	Safety at the workplace (medium risk)			16		
	UFC 3 - THE COMPANY SYSTEM	**32**	**First year**			
3.1	Company organization and organization charts		16		4	
3.2	Supply Chain Management		16			
	UFC 4 - LANGUAGE SKILLS	**80**	**First year**			
4.1	English theory		40		3	
4.2	English workshop		20		1	
4.3	Technical English		20		2	
	UFC 5 - QUALITY POLICIES	**48**	**First year**			
5.1	Quality policies in the use of processes (ISO 9001/2008)		16		1	
5.2	Project management		32		2	
	UFC 6 - OPERATING SYSTEMS	**160**	**First year**			
6.1	IT Essentials		40		2	
6.2	Windows Server System Administration		36		2	
6.3	Windows Server Active Directory Administration		36		2	
6.4	Windows Server Sharing Administration		32		2	
6.5	Windows Server Virtualization (Hyper-V)		16		1	
	UFC 7 - PROGRAMMING FUNDAMENTALS	**76**	**First year**			
7.1	Fundamentals of programming		36		2	
7.2	Fundamentals of object oriented programming		40		3	
	UFC 8 - PROGRAMMING LANGUAGES	**120**	**First year**			
8.1	PCAP: Programming Essentials In Python		40		3	
8.2	CPA: Programming Essentials in C++		40		3	
8.3	CPP: Advanced Programming in C++		40		3	
	UFC 9 - DATABASE MANAGEMENT AND CLOUD COMPUTING	**100**	**First year**			
9.1	Design and management of relational databases		40		3	
9.2	Non-relational and NoSQL databases		20		2	
9.3	Big Data Management and Analysis		20		2	
9.4	Using microservice and container cloud platforms		20		1	
	UFC 10 - NETWORKING	**140**	**First year**			
10.1	CCNA: Introduction to Networks		44		4	
10.2	CCNA: Switching, Routing, and Wireless Essentials		48		5	
10.3	CCNA: Enterprise Networking, Security, and Automation		48		5	
	UFC 11 - CYBERSECURITY	**76**		**Second year**		
11.1	Introduction to Cybersecurity			8		2
11.2	Security by design			16		
11.3	Cybersecurity Essentials			12		
11.4	CyberOps Associate			40		2
	CFU 12 - APPLIED INFORMATICS AND IOT	**100**		**Second year**		
12.1	IOT Fundamentals: Connecting Things			28		3
12.2	IOT Fundamentals: Big Data & Analytics			28		3
12.3	IOT Fundamentals: Hackathon Playbook			16		2
12.4	IOT Fundamentals: IOT Security			28		3
	UFC 13 - AI & MACHINE LEARNING	**100**		**Second year**		
13.1	Machine Learning			40		4
13.2	Interfaces and control systems			20		3
13.3	Intelligent Autonomous Systems IAS			40		4
	UFC 14- STAGE	**700**		**Second year**		
14.1	Internship in the company			700		30
	TOTAL HOURS	**1800**	**796**	**1004**	**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. 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 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.

Language of lessons
Italian

Course calendar

Start-up	**September**	**2023**
Preliminary Lessons on fundamental topics to the under-standing of the course	**October**	**2023**
End of first year	**June**	**2024**
Second-year start	**September**	**2024**
Early stage italia	**February**	**2025**
Start of foreign internship (if any)	**May**	**2025**
End of the course	**September**	**2025**
Final examination	**October**	**2025**

Information on the organisation of tutoring and mentoring 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
Initials			
Presentation and training agreement		2	2
Individual analysis	2		50
Preliminary Lessons on fundamental topics to the understanding of the course		32	32
Additional training			
English conversation	4		100
Laboratory of production synthesis		48	48
Stage alignment			
Collective orientation internship		4	4
Individual orientation internship	1		25
Accompaniment			
Collective accompaniment		20	20
Individual accompaniment	1		25
Totale	**8**	**106**	**306**

Calculation based on the number of students = 25