BYTE20

Course for Higher Technician for Software Applications Development and Company Information Systems Management
http://www.itsprime.it/corsi/nuovi-corsi/byte20/

Type of course:
two-year course after secondary school diploma.

Teaching location: Firenze/Empoli (FI)

Type of final Diploma:
Diploma in "HIGHER TECHNICIAN FOR THE DIGITIZATION OF INDUSTRIAL SYSTEMS AND PROCESSES" (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 SOFTWARE APPLICATIONS DEVELOPMENT AND COMPANY INFORMATION SYSTEMS MANAGEMENT", 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;
age between 18 to 30 years (not completed on the call deadline date).

Type of access:
programmed number: 25 students

Selection mode
The selection of participants includes a written test and a motivational interview.

Method of enrollment:
see link: http://www.itsprime.it/corsi/preiscriviti-ai-corsi/

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 will have to attend. On this basis the Scientific Technical Committee indicates which modules can be recognized as already learned by the student.

Profile of the course

The "HIGHER TECHNICIAN FOR SOFTWARE APPLICATIONS DEVELOPMENT AND COMPANY INFORMATION SYSTEMS MANAGEMENT" manages, on data models (prepared by design), the assembly, the configuration on physical assets, in-house testing, customer testing and subsequent life-cycle updating of the IT components (hardware, software, interfaces, networks and communication protocols) required for supervision, data acquisition and integration of functional information to electronic monitoring of individual automatic machines and complete lines of automated plants.
The technician manages the data collection and analysis systems, generating information (diagnostic, productivity, etc.) necessary for the definition of asset management strategies. It operates both at the control and data acquisition system level and at the next level of information processing. It is responsible for verifying the correct functioning of the integration of data into the corporate network, ensuring the security and integrity of the same. It manages the subsequent updates and maintenance of computer components in the plant life cycle (hardware, software, interfaces, networks, protocols, etc.).

Main expected learning outcomes

The graduate of BYTE20 has the competence:

1. to define the configuration of hardware infrastructures for data transmission and management, identifying the appropriate physical solutions (servers, network equipment, etc.) and virtual resources (Virtual Private Server, Cloud Server, etc.);
2. to define the configuration of the control and data acquisition system, in order to manage the distributed computer system for the electronic monitoring of physical systems or to control the MES/MOM systems for the management of the company's production function;
3. to define the configuration of the software modules for the processing and distribution of data to be activated to meet the needs of the company;
4. to perform the testing and validation of system functionalities, defining and adopting procedures for monitoring the performance of the software in operation, to identify and solve the problems of inter-operation between different systems and network architectures;
5. to develop software programming for data acquisition, processing and analysis, based on the functional needs of the system, developing graphical interfaces for application control and physical system management;
6. to implement methods for the control of anomalies and redundancy devices to avoid the blocking of system functions, defining information backup procedures and arranging tele-assistance interventions.

Possibility of access to further studies

The diploma can be integrated into a subsequent university course, with recognition of university credits.

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 1200 hours of lessons and at least 50% of the

800 hours of internship in the company, 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

First year

UFC 1 - EMPOWERMENT AND TEAM BUILDING
A1.1 Outdoor Training (in outdoor environment)
A1.2 Self Empowerment and Team Building Workshop
A1.3 Problemsetting and solving - decision making - time management

UFC 3 - THE COMPANY SYSTEM
A3.1 Company organization and organization charts
A3.3.1 Supply Chain Management

UFC 4 - LANGUAGE SKILLS
A4.1 English theory
A4.2 English workshop
A4.3 Technical English

UFC 5 - QUALITY POLICIES
A8.1 Quality policies in the use of processes (ISO 9001/2008)
A15.1 Project management
A15.2 Agile methodology for application development

UFC 6 - OPERATING SYSTEMS AND VIRTUALIZATION
A16.1 The Windows Server systems
A16.2 The Linux systems
A16.3 Tools for system virtualization
A16.4 Web server and application server configuration

UFC 7 - PROGRAMMING FUNDAMENTALS
A17.1 Fundamentals of object oriented programming
A17.2 The basic Java language
A17.3 The advanced Java language

UFC 8 - PROGRAMMING OF INTERFACES
A18.1 Client Interface Structure (HTML)
A18.2 Presentation of client interfaces (CSS)
A18.3 Behavior of client interfaces (Javascript)
A18.4 I framework Java script

UFC 11 - DATABASE MANAGEMENT AND CLOUD COMPUTING
A21.1 Design and management of relational databases
A21.2 Analysis of data flows (SQL)
A21.3 The relational and NoSQL databases
A21.4 Big Data Management and Analysis
A21.5 Using microservice and container cloud platforms

UFC 12 - NETWORKING
A22.1 Introduction to Networks
A22.2 Switching, Routing, and Wireless Essentials
A22.3 Enterprise Networking, Security, and Automation

Second year

UFC 2 - JOB ORIENTATION AND SELF-EMPLOYMENT
A2.1 The enterprise and the employment relationship (contracts)
A2.2.1Self-entrepreneurship
A8.2.1Safety at the workplace (medium risk)

UFC 9 - WEB APPLICATION PROGRAMMING
A19.1 Architecture of web applications
A19.2 Servlet Java
A19.3 Enterprise Java Beans
A19.4 JSP, JSF

UFC 10 - PROGRAMMING OF MOBILE APPLICATIONS
A20.1 Cross-platform mobile application development
A20.2 Development of Android mobile applications

UFC 13 - CYBERSECURITY
A23.1 Encryption protocols
A23.2 Computer Security
A23.3 Network Security
A23.4 Web Security

UFC 14 - APPLIED INFORMATICS AND IOT
A24.1 Fundamentals of IOE and IOT
A24.2 IOT-oriented protocols
A24.3 Online IOT platforms

UFC 15 - STAGE
A12.1 Internship in the company

Diagram of the structure of the course with the relative credits

Acronym	Byte20					
Title	"HIGHER TECHNICIAN FOR SOFTWARE APPLICATIONS DEVELOPMENT AND COMPANY INFORMATION SYSTEMS MANAGEMENT"					
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**			
A1.1	Outdoor Training (in outdoor environment)		8			
A1.2	Self Empowerment and Team Building Workshop		16		2	
A1.3	Problemsetting and solving - decision making - time management		16			
	UFC 2 - JOB ORIENTATION AND SELF-EMPLOYMENT	**40**		**Second year**		
A2.1	The enterprise and the employment relationship (contracts)			8		1
A2.2.1	Self-entrepreneurship			16		2
A8.2.1	Safety at the workplace (medium risk)			16		2
	UFC 3 - THE COMPANY SYSTEM	**32**	**First year**			
A3.1	Company organization and organization charts		16		1	
A3.3.1	Supply Chain Management		16		1	
	UFC 4 - LANGUAGE SKILLS	**72**	**First year**			
A4.1	English theory		40		3	
A4.2	English workshop		20		1	
A4.3	Technical English		12		1	
	UFC 5 - QUALITY POLICIES	**64**	**First year**			
A8.1	Quality policies in the use of processes (ISO 9001/2008)		16		1	
A15.1	Project management		24		2	
A15.2	Agile methodology for application development		24		2	
	UFC 6 - OPERATING SYSTEMS AND VIRTUALIZATION	**160**	**First year**			
A16.1	The Windows Server systems		40		3	
A16.2	The Linux systems		40		3	
A16.3	Tools for system virtualization		40		3	
A16.4	Web server and application server configuration		40		2	
	UFC 7 - PROGRAMMING FUNDAMENTALS	**128**	**First year**			
A17.1	Fundamentals of object oriented programming		32		2	
A17.2	The basic Java language		48		4	
A17.3	The advanced Java language		48		4	
	UFC 8 - PROGRAMMING OF INTERFACES	**80**	**First year**			
A18.1	Client Interface Structure (HTML)		20		2	
A18.2	Presentation of client interfaces (CSS)		20		2	
A18.3	Behavior of client interfaces (Javascript)		20		2	
A18.4	I framework Javascript		20		2	
	UFC 9 - WEB APPLICATION PROGRAMMING	**136**		**Second year**		
A19.1	Architecture of web applications			16		1
A19.2	Servlet Java			40		3
A19.3	Enterprise Java Beans			40		3
A19.4	JSP, JSF			40		3
	UFC 10 - PROGRAMMING OF MOBILE APPLICATIONS	**80**		**Second year**		
A20.1 1	Cross-platform mobile application development			40		3
A20.2	Development of Android mobile applications			40		3
	UFC 11 - DATABASE MANAGEMENT AND CLOUD COMPUTING	**124**	**First year**			
A21.1	Design and management of relational databases		32		2	
A21.2	Analysis of data flows (SQL)		20		2	
A21.3	The relational and NoSQL databases		20		2	
A21.4	Big Data Management and Analysis		32		2	
A21.5	Using microservice and container cloud platforms		20		1	
	UFC 12 - NETWORKING	**120**	**First year**			
A22.1	Introduction to Networks		40		3	
A22.2	Switching, Routing, and Wireless Essentials		40		3	
A22.3	Enterprise Networking, Security, and Automation		40		2	
	UFC 13 - CYBERSECURITY	**64**		**Second year**		
A23.1	Encryption protocols			16		1
A23.2	Computer Security			16		1
A23.3	Network Security			16		1
A23.4	Web Security			16		1
	CFU 14 - APPLIED INFORMATICS AND IOT	**60**		**Second year**		
A24.1	Fundamentals of IOE and IOT			20		1
A24.2	IOT-oriented protocols			20		1
A24.3	Online IOT platforms			20		1
	UFC 15 - STAGE	**800**		**Second year**		
A12.1	Internship in the company			800		32
	TOTAL HOURS	**2000**	**820**	**1180**	**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. 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.

Didactic plan

The two-year course, of 2000 hours in total, takes place in 4 semesters with a didactic articulation that provides:
classroom lessons and laboratory activities (1200 hours),
internship, in Italy and abroad (800 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 companies. The teaching team is composed of at least 50% 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.

Language of lessons

Italian

Course calendar

Start-up	**october**	**2020**
Preliminary Lessons on fundamental topics to the understanding of the course	**october**	**2020**
End of first year	**july**	**2021**
Second-year start	**september**	**2021**
Early stage italia	**march**	**2022**
Start of foreign internship (if any)	**june**	**2022**
End of the course	**september**	**2022**
Final examination	**october**	**2022**

Course manager	Mirko Del Grande
Tutor	Anna Semeraro