

**COURSE TITLE: HIGHER TECHNICIAN FOR THE INNOVATION OF MECHANICAL PROCESSES AND PRODUCTS (ACRONYM: PROD5)**

**PROFILE 1A: INDUSTRIAL ENGINEERING TECHNICIAN (ITS for BOSCH)**

**MAIN OBJECTIVES:** to train a professional profile with a solid transversal training typical of the national profile of Higher Technician for the Innovation of Processes and Mechanical Products, but with a further specific specialization in the following areas of expertise:

1. Processing with traditional and numerical control machine tools
2. Knowledge and application of metrological notions and instruments
3. Elements of Industrial Fluidics

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU1	ECONOMICS AND BUSINESS ORGANIZATION	40	2					
TU2	ICT COMPUTER SCIENCE	80	4					
TU3	ENGLISH / GERMAN LANGUAGE	60	3					
TU4	WORKING TECHNIQUES IN THE COMPANY	48	2,5					
TU5	MATERIALS AND WORKING PROCESSES	60	3					
TU6	TECHNICAL DRAWING AND MEASURING INSTRUMENTS	70	3,5					
TU7	INDUSTRIAL AUTOMATION	170	8,5					
TU8	PRODUCT DESIGN AND DEVELOPMENT	80	4					
TU9	METHODS AND TOOLS FOR QUALITY	16	1					
TU10	WORK ANALYSIS AND ORGANIZATION	12	1					
TU11	USE AND PROGRAMMING OF AUTOMATIC PRODUCTION PLANTS	65	3					
TU12A	MANUFACTURING AND ASSEMBLY WORKS	67	3,5					
TU16	INTERNSHIP IN THE COMPANY - PART I	444	21					
<b>TOTAL - 1° YEAR COURSE</b>		<b>1212</b>	<b>60</b>	<b>16%</b>	<b>6%</b>	<b>13%</b>	<b>20%</b>	<b>55%</b>

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU16	INTERNSHIP IN THE COMPANY - PART I	296	17					
TU3	ENGLISH / GERMAN LANGUAGE	40	2,5					
TU4	WORKING TECHNIQUES IN THE COMPANY	25	1,5					
TU9	METHODS AND TOOLS FOR QUALITY	90	5					
TU10	WORK ANALYSIS AND ORGANIZATION	16	1					
TU11	USE AND PROGRAMMING OF AUTOMATIC PRODUCTION PLANTS	105	6					
TU12A	MANUFACTURING AND ASSEMBLY WORKS	110	6					
TU13	INDUSTRY 4.0 TECHNOLOGIES FOR THE MANAGEMENT OF PRODUCTION SYSTEMS	30	2					
TU14	TPM AND MAINTENANCE TECHNIQUES	32	2					
TU 15A	FLUID AND MAINTENANCE TECHNIQUES	104	6					
TU16	INTERNSHIP IN THE COMPANY - PART II	140	11					
<b>TOTAL - 2° YEAR COURSE</b>		<b>988</b>	<b>60</b>	<b>11%</b>	<b>9%</b>	<b>5%</b>	<b>20%</b>	<b>45%</b>

**TOTALS 2200 120 27% 15% 18% 40% 100%**

**TYPE OF TEACHERS/ TRAINERS**

- \_15% teachers from universities
- \_6% teachers from schools
- \_16% professional teachers from the world of work
- \_54% trainers from companies
- \_9% other (language training teachers, transversal skills training, soft skills ... etc)

MAIN LEARNING OUTCOMES	
<b>BASIC AND TRANSVERSAL GENERAL SKILLS</b>	<ul style="list-style-type: none"> <li>_LINGUISTIC, COMMUNICATIVE and RELATIONAL</li> <li>_SCIENTIFIC and TECHNOLOGICAL</li> <li>_LEGAL and ECONOMIC</li> <li>_ORGANIZATIONAL and MANAGEMENT</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS typical of the area of specialization</b>	<ul style="list-style-type: none"> <li>_To be able to manage production processes and flows in their planning, control and economic aspect, also in relation to the logic of industrialization and continuous improvement</li> <li>_To be able to understand the dynamics and issues related to the product development process: planning, setting studies, product / process development, experimentation and modification, qualification and regulations</li> <li>_To be able to carry out the study and design of processes through the definition of processing cycles, the choice of working means, the determination of times, the evaluation of operating costs</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS connected to specific technological applications, required by the production sectors where the internship activities are carried out</b>	<ul style="list-style-type: none"> <li>_To be able to operate in the field of mechanical machining processes, through the knowledge of machining and technological parameters, demonstrating the ability to manage and use machine tools and the programming of computerized numerical control systems (CNC)</li> <li>_To know the principles and techniques for quality; to be able to apply methods and analysis tools, including statistical ones, for product quality control; To be able to use the tools of measurement and control</li> <li>_To be able to apply the techniques of maintenance and analysis of the malfunctions of automation systems and production plants</li> </ul>

**COURSE TITLE:** HIGHER TECHNICIAN FOR THE INNOVATION OF MECHANICAL PROCESSES AND PRODUCTS (ACRONYM: PROD5)

**PROFILE 1B:** LEAN PRODUCTION & INDUSTRIAL LOGISTICS SPECIALIST

**MAIN OBJECTIVES:**

to train a professional profile with a solid transversal training typical of the national profile of Higher Technician for the Innovation of Processes and Mechanical Products, but with a further specific specialization in the following areas of expertise:

1. Organization and management of production
2. Lean Production tools and techniques
3. Mechanical processing

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU1	ECONOMICS AND BUSINESS ORGANIZATION	40	2					
TU2	ICT COMPUTER SCIENCE	80	4					
TU3	ENGLISH LANGUAGE	30	1,5					
TU4	WORKING TECHNIQUES IN THE COMPANY	40	2					
TU5	MATERIALS AND WORKING PROCESSES	60	3					
TU6	TECHNICAL DRAWING AND MEASURING INSTRUMENTS	70	3,5					
TU7	INDUSTRIAL AUTOMATION	210	10,5					
TU8	PRODUCT DESIGN AND DEVELOPMENT	55	3					
TU9	METHODS AND TOOLS FOR QUALITY	20	1					
TU10	WORK ANALYSIS AND ORGANIZATION	20	1					
TU11	USE AND PROGRAMMING OF AUTOMATIC PRODUCTION PLANTS	65	3					
TU12B	MANUFACTURING AND ASSEMBLY WORKS	65	3					
TU16	INTERNSHIP IN THE COMPANY - PART I	444	22,5					
<b>TOTAL - 1* YEAR COURSE</b>		<b>1199</b>	<b>60</b>	<b>16%</b>	<b>5%</b>	<b>13%</b>	<b>20%</b>	<b>55%</b>

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU16	INTERNSHIP IN THE COMPANY - PART I	296	17,5					
TU3	ENGLISH LANGUAGE	40	3					
TU4	WORKING TECHNIQUES IN THE COMPANY	25	1,5					
TU8	PRODUCT DESIGN AND DEVELOPMENT	40	2					
TU9	METHODS AND TOOLS FOR QUALITY	65	3,5					
TU10	WORK ANALYSIS AND ORGANIZATION	16	1					
TU11	USE AND PROGRAMMING OF AUTOMATIC PRODUCTION PLANTS	135	8					
TU13B	MANAGEMENT OF THE PRODUCTION PROCESS SYSTEMS	180	11					
TU14	TPM AND MAINTENANCE TECHNIQUES	64	4					
TU16	INTERNSHIP IN THE COMPANY - PART II	140	8,5					
<b>TOTAL - 2* YEAR COURSE</b>		<b>1001</b>	<b>60</b>	<b>12%</b>	<b>10%</b>	<b>3%</b>	<b>20%</b>	<b>45%</b>

**TOTALS    2200        120    28% 15% 16% 40% 100%**

**TYPE OF TEACHERS/ TRAINERS**

- \_15% teachers from universities
- \_6% teachers from schools
- \_16% professional teachers from the world of work
- \_54% trainers from companies
- \_9% other (language training teachers, transversal skills training, soft skills ... etc)

**MAIN LEARNING OUTCOMES**

<b>BASIC AND TRANSVERSAL GENERAL SKILLS</b>	<ul style="list-style-type: none"> <li>_LINGUISTIC, COMMUNICATIVE and RELATIONAL</li> <li>_SCIENTIFIC and TECHNOLOGICAL</li> <li>_LEGAL and ECONOMIC</li> <li>_ORGANIZATIONAL and MANAGEMENT</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS typical of the area of specialization</b>	<ul style="list-style-type: none"> <li>_To be able to manage production processes and flows in their planning, control and economic aspect, also in relation to the logic of industrialization and continuous improvement</li> <li>_To be able to understand the dynamics and issues related to the product development process: planning, setting studies, product / process development, experimentation and modification, qualification and regulations</li> <li>_To be able to carry out the study and design of processes through the definition of processing cycles, the choice of working means, the determination of times, the evaluation of operating costs</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS connected to specific technological applications, required by the production sectors where the internship activities are carried out</b>	<ul style="list-style-type: none"> <li>_To be able to apply the logic and principles of Lean Manufacturing in the context of production and logistics processes; to be able to use Lean Manufacturing tools and techniques for Problem Solving and Kaizen continuous improvement</li> <li>_To know the principles and techniques for quality; to be able to apply methods and analysis tools, including statistical ones, for product quality control; to be able to use the tools of measurement and control</li> <li>_To be able to program industrial automation systems PLC programmable controllers, robots, CNC numerical control machines, communication networks, diagnostic monitoring systems</li> </ul>

**COURSE TITLE: HIGHER TECHNICIAN FOR AUTOMATION AND MECHATRONIC SYSTEMS (ACRONYM: HTECH2)**

**PROFILE: HIGH TECHNICIAN BARI4.0**

**MAIN OBJECTIVES:**

to train a professional profile with a solid transversal training typical of the national profile of Higher Technician for Automation and Mechatronics Systems, but with a further specific specialization in the following areas of specialization in Industry 4.0: apps and IT tools for collaboration and sharing; computer systems and digital telecommunications networks; microcontrollers and industrial control applications; programming of robots for industrial applications; advanced PLC programming; visual study and programming fundamentals on object-oriented languages; C # languages and .NET environment; SQL language and relational database; web application; advanced automation: agv, collaborative robot; vision systems; industrial communication networks and protocols - SCADA

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
TU1	THE BUSINESS SYSTEM	40	2					
TU2	WORKING TECHNIQUES AND TOOLS: ICT (1st part)	70	4					
TU3	LANGUAGE SKILLS: ENGLISH (1st part)	40	2					
TU4	TEAM WORK - WORKING TECHNIQUES IN THE COMPANY	70	4					
TU5	WORKING TECHNIQUES AND TOOLS: Technical Drawing and Measuring Instruments	110	6					
TU6	BASIC TECHNICAL SKILLS	190	10					
TU7	PROCESSES AND PRODUCTION TECHNOLOGIES	230	12					
TU2	WORKING TECHNIQUES AND TOOLS: ICT (2nd part)	200	10					
TU8	THE COMPANY: MANAGEMENT OF THE PRODUCTION PROCESS	76	4					
TU9	INNOVATION AND NEW TECHNOLOGIES FOR FACTORY 4.0 (1st part)	104	6					
<b>TOTAL - 1° YEAR COURSE</b>		<b>1130</b>	<b>60</b>	<b>23%</b>	<b>10%</b>	<b>9%</b>	<b>0%</b>	<b>51%</b>

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
TU3	LANGUAGE SKILLS: ENGLISH (2nd part)	30	2					
TU9	INNOVATION AND NEW TECHNOLOGIES FOR FACTORY 4.0 (2nd part)	80	4,5					
TU10	INDUSTRY 4.0 DIGITAL TECHNOLOGIES	80	4,5					
TU11	RESEARCH INTERNSHIP	160	13					
TU12	INTERNSHIP IN THE COMPANY	720	36					
<b>TOTAL - 2° YEAR COURSE</b>		<b>1070</b>	<b>60</b>	<b>4%</b>	<b>2%</b>	<b>3%</b>	<b>40%</b>	<b>49%</b>

**TOTALS 2200 120 27% 12% 12% 40% 100%**

**TYPE OF TEACHERS/ TRAINERS**

- \_6% teachers from schools
- \_16% professional teachers from the world of work
- \_54% trainers from companies
- \_9% other (language training teachers, transversal skills training, soft skills ... etc)

**MAIN LEARNING OUTCOMES**

<b>BASIC AND TRANSVERSAL GENERAL SKILLS</b>	<ul style="list-style-type: none"> <li>_LINGUISTIC, COMMUNICATIVE and RELATIONAL</li> <li>_SCIENTIFIC and TECHNOLOGICAL</li> <li>_LEGAL and ECONOMIC</li> <li>_ORGANIZATIONAL and MANAGEMENT</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS typical of the area of specialization</b>	<ul style="list-style-type: none"> <li>_To be able to manage the operation of industrial automation systems in production PLC programmable controllers, robots, CNC computer numerical control machines, communication networks and new digital and IoT technologies</li> <li>_To be able to program automation systems and IT applications to support the production system</li> <li>_To be able to apply techniques and tools for predictive analysis and troubleshooting and perform maintenance of automation systems and company plants</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS connected to specific technological applications, required by the production sectors where the internship activities are carried out</b>	<ul style="list-style-type: none"> <li>_To be able to manage the Advanced Automation applications for the Smart Factory (mobile and collaborative robotics, advanced controllers, M2M, vision systems) and ICT technologies for Industry 4.0 (Fieldbus, Programmable Controllers, Scada systems, MES, ERP) in the production area</li> <li>_To be able to operate in the development of industrial applications based on the use of new Industry 4.0 digital technologies and ICT applications for factory management (Fieldbus, SCADA, MES, ERP), understanding the technological aspects and Cyber Security issues</li> <li>_To be able to carry out technical assistance and maintenance activities for industrial automation and ICT applications for factory management, applying analysis and troubleshooting techniques, remote troubleshooting and predictive maintenance</li> </ul>

**COURSE TITLE:** HIGHER TECHNICIAN FOR AUTOMATION AND MECHATRONIC SYSTEMS (ACRONYM: MEDMECH)

**PROFILE:** MECHATRONICS FOR THE MANAGEMENT AND MAINTENANCE OF BIOMEDICAL DEVICES

**MAIN OBJECTIVES:**

to train a professional profile with a solid transversal training typical of the national profile of Higher Technician for Automation and Mechatronics Systems, and with highly specialized skills that enable students to manage maintenance, electrical and electromechanical safety checks and testing of biomedical equipment.

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU1	LEGAL-ECONOMIC BASICS	50	3					
TU2	WORKING TECHNIQUES AND TOOLS: ICT (1st part)	80	4					
TU3	LANGUAGE SKILLS: ENGLISH (1st part)	40	2,5					
TU4	WORKING TECHNIQUES IN THE COMPANY	60	3					
TU5	WORKING TECHNIQUES AND TOOLS: Technical Drawing and Measuring Instruments	135	7,5					
TU6	BASIC TECHNICAL SKILLS	280	14,5					
TU7	PRODUCTION PROCESSES AND TECHNOLOGIES Biomedical sector	105	6					
TU2	WORKING TECHNIQUES AND TOOLS: ICT (2nd part)	120	6,5					
TU8	MANAGEMENT OF THE PRODUCTION PROCESS	110	6					
TU9	MEDICAL TECHNIQUES AND EQUIPMENT (1st part)	120	7					
<b>TOTAL - 1° YEAR COURSE</b>		<b>1100</b>	<b>60</b>	<b>23%</b>	<b>8%</b>	<b>20%</b>	<b>0%</b>	<b>50%</b>

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU3	LANGUAGE SKILLS: ENGLISH (2nd part)	30	2					
TU9	MEDICAL TECHNIQUES AND EQUIPMENT (2nd part)	90	5					
TU10	INDUSTRY 4.0 DIGITAL TECHNOLOGIES	100	5					
TU11	RESEARCH INTERNSHIP	160	9					
TU12	INTERNSHIP IN THE COMPANY	720	39					
<b>TOTAL - 2° YEAR COURSE</b>		<b>1100</b>	<b>60</b>	<b>4%</b>	<b>2%</b>	<b>4%</b>	<b>40%</b>	<b>50%</b>

**TOTALS 2200 120 27% 10% 24% 40% 100%**

**TYPE OF TEACHERS/ TRAINERS**

- \_15% teachers from universities
- \_6% teachers from schools
- \_16% professional teachers from the world of work
- \_54% trainers from companies
- \_9% other (language training teachers, transversal skills training, soft skills ... etc)

**MAIN LEARNING OUTCOMES**

<b>BASIC AND TRANSVERSAL GENERAL SKILLS</b>	<ul style="list-style-type: none"> <li>_LINGUISTIC, COMMUNICATIVE and RELATIONAL</li> <li>_SCIENTIFIC and TECHNOLOGICAL</li> <li>_LEGAL and ECONOMIC</li> <li>_ORGANIZATIONAL and MANAGEMENT</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS typical of the area of specialization</b>	<ul style="list-style-type: none"> <li>_To be able to manage the operation of industrial automation systems in production PLC programmable controllers, robots, CNC computer numerical control machines, communication networks and new digital and IoT technologies</li> <li>_To be able to program automation systems and IT applications to support the production system</li> <li>_To be able to apply techniques and tools for predictive analysis and troubleshooting and perform maintenance of automation systems and company plants</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS connected to specific technological applications, required by the production sectors where the internship activities are carried out</b>	<ul style="list-style-type: none"> <li>_To be able to manage plants, Automation systems and Industry 4.0 and ICT digital applications in the Biomedical production sector</li> <li>_To be able to operate in the development of industrial applications for the biomedical sector based on the use of new digital and ICT technologies</li> <li>_To be able to perform the installation, diagnosis and maintenance of automation systems and applications based on new digital technologies in the biomedical sector</li> </ul>

**COURSE TITLE:** HIGHER TECHNICIAN FOR AUTOMATION AND MECHATRONIC SYSTEMS (ACRONYM: TECHYDRA)

**PROFILE:** HIGHER TECHNICIAN FOR SPECIALIST MAINTENANCE OF THE INTEGRATED WATER SYSTEM

**MAIN OBJECTIVES:** to train a professional profile with a solid transversal training typical of the national profile of Higher Technician for Automation and Mechatronics Systems, and with highly specialized skills that enable students to manage maintenance, electrical and electromechanical safety checks and testing of biomedical equipment.

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU1	INTEGRATED WATER SERVICE: GENERAL FRAMEWORK	16	1					
TU2	SECTORAL ENVIRONMENTAL LAW AND LEGISLATION	16	1					
TU3	RISK AND SAFETY	40	2					
TU4	WORKING TECHNIQUES IN THE COMPANY	60	3					
TU5	ICT	80	4					
TU6	ENGLISH LANGUAGE	80	4					
TU7	MATERIALS AND WORKING PROCESSES - INDUSTRIAL AUTOMATION	260	13,5					
TU8	INDUSTRIAL INFORMATION TECHNOLOGY	80	4					
TU9	DRAWING CAD DESIGN AND PRODUCT DEVELOPMENT PROCESS	120	6					
TU10	TECHNICAL AND MANAGEMENT ASPECTS OF SERVICES	144	7					
TU15	INTERNSHIP IN THE COMPANY - PART I	248	14,5					
<b>TOTAL - 1° YEAR COURSE</b>		<b>1144</b>	<b>60</b>	<b>22%</b>	<b>8%</b>	<b>11%</b>	<b>12%</b>	<b>53%</b>

TRAINING UNITS NUMBER	TITLE OF THE TRAINING UNIT	DURATION (in hours)	CREDITS	TEACHING METHODS				
				THEORY	PRACTICE	LABORATORY	INTERNSHIP	TOTAL
TU7	MATERIALS AND WORKING PROCESSES - INDUSTRIAL AUTOMATION	90	5					
TU11	DATA MANAGEMENT TOOLS	84	5					
TU12	TERRITORIAL PROGRAMMING TOOLS	20	1					
TU13	MANAGEMENT AND ECONOMIC-FINANCIAL MANAGEMENT OF SERVICES	82	5					
TU14	SPECIALIST MAINTENANCE OF THE PLANTS	130	8					
TU15	INTERNSHIP IN THE COMPANY - PART II	600	36					
<b>TOTAL - 2° YEAR COURSE</b>		<b>1006</b>	<b>60</b>	<b>9%</b>	<b>8%</b>	<b>2%</b>	<b>28%</b>	<b>47%</b>

**TOTALS 2150 120 31% 16% 13% 40% 100%**

**TYPE OF TEACHERS/ TRAINERS**

- \_15% teachers from universities
- \_6% teachers from schools
- \_16% professional teachers from the world of work
- \_54% trainers from companies
- \_9% other (language training teachers, transversal skills training, soft skills ... etc)

## MAIN LEARNING OUTCOMES

<b>BASIC AND TRANSVERSAL GENERAL SKILLS</b>	<ul style="list-style-type: none"> <li>_LINGUISTIC, COMMUNICATIVE and RELATIONAL</li> <li>_SCIENTIFIC and TECHNOLOGICAL</li> <li>_LEGAL and ECONOMIC</li> <li>_ORGANIZATIONAL and MANAGEMENT</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS typical of the area of specialization</b>	<ul style="list-style-type: none"> <li>_To be able to manage the operation of industrial automation systems in production PLC programmable controllers, robots, CNC computer numerical control machines, communication networks and new digital and IoT technologies</li> <li>_To be able to program automation systems and IT applications to support the production system</li> <li>_To be able to apply techniques and tools for predictive analysis and troubleshooting and perform maintenance of automation systems and company plants</li> </ul>
<b>TECHNICAL-PROFESSIONAL SKILLS connected to specific technological applications, required by the production sectors where the internship activities are carried out</b>	<ul style="list-style-type: none"> <li>_To be able to Operate in the management and assistance activities of the water services sector, through the knowledge of the technical and managerial aspects, the legislative and regulatory references of the sector and the understanding of the aspects relating to health and environmental impact</li> <li>_To Know and to be able to use the information and management software and electronic control systems to perform the control and management activities of water services</li> <li>_To be able to apply the techniques of maintenance and analysis of the malfunctions of the plants used in the field of water services</li> </ul>