

Undergraduate Technological Degree

HEALTH SAFETY AND ENVIRONMENT

1. Course Objectives

The Health Safety and Environment DUT (Higher National Diploma) is a 4 term course that trains, in a cross disciplinary way, employees of private companies and public services how to manage various aspects of risk and environmental protection.

In their professional and personal lives, people constantly face hazardous situations and activities which can be of technical, material or organizational origins. Potential harm can be done to individuals (work-related accidents and diseases) or more generally to populations and the ecosystem.

In such a context the role and mission of the HSE technicians is to improve working conditions and the working environment by managing risk. Thus HSE technicians assist employers to comply with the legal obligations of their professional activities.

Promoting a human dimension is fully part of the mission of the HSE technician, who must co-operate with all the departments, both external and internal, of companies such as occupational health, work inspections, supervisory boards and emergency services.

Faced with the increasing complexity of machines, products, processes and process, and in a context where the social demand is becoming increasingly pressing for the protection of people and the environment, the HSE technician has to ensure health and safety, whilst, at the same time promote innovation.

Finally this course complies with the national and European requirements for occupational health, environmental protection and sustainable development.

The HSE diploma can be followed as initial training, full-time study, work placement, sandwich course, and apprenticeship or through on-the-job training.

Applications for the HSE DUT are welcome from students with a general, technological or vocational baccalaureate (high school diploma) with advanced science. Other equivalent diplomas are also considered.

MOST COMMON JOB PROSPECTS

	CODE ROME	TYPES OF JOBS
THE HSE DUT IS A VOCATIONAL DIPLOMA THAT LEADS TO WORK IN THE OCCUPATIONAL HEALTH AND SAFETY DOMAIN, IN RISK HEALTH AND ENVIRONMENTAL FIELDS.	H1303	<ul style="list-style-type: none">• Technical industrial HSE intervention• Industrial health, safety and environmental technician• Occupational health and safety instructor• Occupational health, safety and environmental technician• Industrial risk safety technician
CIVIL SECURITY AND EMERGENCY SERVICES	K1705	Firefighter Industrial firefighter Disaster prevention officer
HEALTH AND SAFETY ON CONSTRUCTION SITES	F1204	Construction site health and safety officer Construction site health and safety coordinator
INTERVENTIONS IN HAZARDOUS ENVIRONMENTS AND NOXIOUS SUBSTANCES	I1503	Chemical and radioactive unit firefighter Chemical, biological, radiological and nuclear decontamination officer Technological risk officer

**INSPECTION FOR SOCIAL
AFFAIRS**

K1502

Health and safety inspector

**SUPERVISION OF ECO-
INDUSTRIAL PARK**

K2306

Technical intervention for industrial laboratory analysis

2. Activities and Skills Tables

The missions and activities associated with the HSE DUT diploma can be various - therefore the training is multi-disciplinary and requires that students:

- Have good scientific and technological knowledge in order to understand physical, chemical and biological concepts necessary to identify and assess risk and be able to select the most appropriate protection in the economical and technical context of today, as well as taking into account human, material and financial factors when accidents occur.
- Are familiar with legal terms and have a clear perception of risk management economy to put forward to relevant authorities the best solution to implement, in compliance with the legal frame of the company or the public service.
- Have good communication skills. HSE workers have to deal with all types of people – operators, technicians, executives, managers, contractors, civil servants etc...they have to raise awareness, train, advise, convince and pay attention to both individuals and groups' psychological behaviors. HSE workers master new concepts and develop internal and external communication tools.

Whilst the programme aims to provide the student with the knowledge necessary to work in the HSE field, it also aims to provide the means to enable him to adapt to the rapidly changing needs of business. Moreover, beyond the development knowledge, the course is designed enable students to acquire methodologies of work and the reasoning to develop a critical sense of citizenship.

As it is a multi-disciplinary program, it is essential to have a main thread that will not only provide a guideline for students, but also coordinate and link each module to each other and therefore create a coherent structure. This main thread is 'Assessing and Managing Risk'.

SPECIFIC ACTIVITIES AND SKILLS

ACTIVITIES	COMPETENCIES
RISK ANALYSIS	<ul style="list-style-type: none">• Identify and locat hazards• Assess and prioritize technological, professional and environmental risk• Select and implement methods for quantitative analysis / qualitative risk.• Carry out normative regulatory monitoring
METROLOGY AND DATA ANALYSIS	<ul style="list-style-type: none">• Select appropriate instrumentation• Be familiar with calibration and the use of measuring devices• Implement and perform measurement campaigns• Analyze measurement campaign data in accordance with possible indicators or associated value guides
ESTABLISHMENT OF A RISK PREVENTION APPROACH	<ul style="list-style-type: none">• Associate hazards with their appropriate regulations• Write and update legal documents (risk assessments, impact studies and dangers, security protocols, prevention plans, fire permit, etc)• know how to define indicators• Design and plan a global and

interdisciplinary continuous improvement approach

- Train and inform stakeholders (employees, populations, trade unions, employers, etc) about health, safety and environmental issues.
- Understand and justify prevention actions based on scientific, technological, economical or legal grounds
- Put in place human, technological and organizational prevention elements
- Develop and use it tools for HSE policies (training, procedures, signing systems)
- Implement prevention plans
- Check for validity and efficiency of control systems already in place
- Learn from feedback

DEVELOPING A SUSTAINABLE HSE POLICY

- Establish, set up and promoting an HSE approach in line with the principles of sustainable development and social and environmental responsibilities
- Advise on acceptable level of risk
- Identify and raise the awareness of health and safety personnel
- Understand the regional organization of risk prevention and ways of implementing it
- Advise and alert employers to their HSE civil and criminal liabilities

TAKING PART IN EMERGENCY RESPONSE PLANS

- Be familiar with human, technological and organizational emergency equipment and procedures
 - Understand the territorial organization of emergency equipment in case of accidents
 - Write emergency procedures and/or intervention plans and ensure continuity of service
 - Have a good command of procedures in case of crisis
 - Communicate in emergency situations
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GENERAL ACTIVITIES AND SKILLS

ACTIVITIES

COMPETENCIES

CONDUCTING AND MANAGING PLANS

- Apply methodologies in a particular context
 - Implement problem solving methods
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COMMUNICATING AND INFORMING

- Promote a citizenship and corporate culture
 - Develop and use it tools
 - Be fluent with signing systems
 - Write reports
 - Master different forms of communication – written and oral
 - Express yourself in English
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3. Program Overview

a. Course description

The Course is structured over four semesters, which are divided into themes and further subdivided into modules. The themes are grouped into Teaching Units, each semester consisting of four Units.

The training comprises 1500h (85%) of HSE Core Modules and 300 hours (15%) of Additional Modules taught in the third and fourth semester.

Throughout the course, students work on a Professional Personal Project which helps to determine whether a student wishes to move into a professional situation, or continue into higher education. These additional modules form part of a University Diploma in HSE technology. In the case of studies leading to qualifications at Level 1 or 2, these studies are designed to develop complementary skills in science and technology. Additional modules comprise part of the training but only those aimed at professional insertion are mentioned below. For further studies, each IUT has designed their own modules in line with the CPN recommendations and are presented in separate documents. In both cases the number of hours is the same. New learning methods entitled "learn differently" are also well represented within the 180 hours (10%).

Finally to meet the professional requirements of HSE technicians, a large part (300 hours) is devoted to apprenticeship, IT tools and foreign languages.

b. Modules synthetic charts per semester

The supervised 1800 hours of teaching are delivered through a combination of lectures (20%) seminars (35%) and tutorials (15%).

Seminars can accommodate 26 students and tutorials 16. Please note that for safety reasons the number of students may be reduced, for example tutorials dealing with combustion, electricity or hazardous chemical reactions.

The IUT management board can decide to allow an increase of 20% of the total number of hours (360) for an improved response to the local, economical and professional environment.

SEMESTER 1

TEACHING UNIT (TU)	TOPICS	MODULE REFERENCE (M)	MODULE NAME	COEF. /M	TOTAL COEF. /TU ECTS	TOTAL HOURS LECTURE	TOTAL HOURS SUPERVISED WORK	TOTAL HOURS PRACTICAL WORK	TOTAL HOURS STUDENT /TU
TU 11 : RISK MANAGEMENT INTRODUCTION	T11 HEALTH SAFETY SUSTAINABLE DEVELOPMENT	M 1101	Risk assessment introduction, concepts and terms	1,5	6	2	10	12	24
		M 1102	Occupational health and safety. Risk assessment introduction	1,5		2	10	12	24
		M 1103	Risk management, environmental issues	1,5		2	10	12	24
		M 1104	First Aid certification	1,5		4	10	8	16

TU 12 : RISK MANAGEMENT METHODS AND TOOLS	T12 COMMUNICATI ON METHODS AND TOOLS	M 1201	English	2	9	3	8	24	35
		M 1202	Communication techniques and general culture. Communication issues	2		2	6	22	30
	T13 REGULATORY AND ECONOMICAL ASPECTS	M 1203	Introduction to law and standardization	2		14	8	8	30
		M 1204	Business management	1		6	6	8	20
	T14 MATHEMATICS	M 1205	Basic mathematical tools	2		4	10	16	30
TU 13 : RISK MANAGEMENT SCIENCE AND TECHNIQUES	T15 HUMAN BIOLOGY AND ECOSYSTEMS	M 1301	Human biology and physiology	2	10	4	10	16	30
		M 1302	Ecosystems and pollution	2		8	8	14	30
	T16 PRODUCT AND MACHINERY SAFETY	M 1303	Structure of materials and product properties	1,5		3	6	16	25
		M 1304	Thermodynamics and thermochemistry	1,5		4	10	16	30
		M 1305	Applied chemistry	1,5		4	10	16	30
		M 1306	Safety related to mechanics and energy	1,5		4	10	16	30
TU 14 : PROJECTS: TOOLS	T17 PROJECT SUPERVISION	M 1401	Project management	1	5	6	4	8	18
		M 1402	IT tools	1		2	4	12	18
		M 1403	HSE supervised project	2					
	T18 PERSONAL AND PROFESSIONAL PROJECT	M 1404	Personal professional project. Discovery of trades and professional environments. Introduction to project management	1		4	12	4	20
TOTAL HOURS SEMESTER 1				30	30	78	146	240	464

SEMESTER 2

TEACHING UNIT (TU)	TOPICS	MODULE REFERENCE (M)	MODULE NAME	COEF. /M	TOTAL COEF. /TU ECTS	TOTAL HOURS LECTURE	TOTAL HOURS SUPERVISED WORK	TOTAL HOURS PRACTICAL WORK	TOTAL HOURS STUDENT /TU
TU 21 : RISK MANAGEMENT METHODS AND TOOLS	T21 COMMUNICATION METHODS AND TOOLS	M 2101	Business English	1,5	7	1	10	24	25
		M 2102	Communication techniques. Critical analysis	1,5		4	14	26	44
	T22 RISK MANAGEMENT AND LEGAL ASPECTS	M 2103	Workplace and social security regulations	1,5		10	16	4	30
		M 2104	Civil, criminal and administrative liabilities	1,5		10	16	4	30
		M 2105	Occupational health and safety regulations	1		6	10	4	20
TU 22 : SCIENCE AND TECHNOLOGY APPLIED TO RISK MANAGEMENT	T23 APPLIED BIOLOGY	M 2201	Applied toxicology and microbiology	2,5	9	8	12	20	40
		M 2202	Communication techniques and general culture. Communication issues	2,5		8	16	16	40
	T24 CHEMISTRY AND RADIATION HAZARD	M 2203	Physiology, psychology, workplace ergonomics	2		4	16	16	36
		M 2204	Combustion reactions	1		4	14	12	30
		M 2205	Hazardous chemical reactions	1		6	10	8	24
TU 23 : RISK MANAGEMENT TECHNOLOGY	T25 MACHINERY AND CONSTRUCTION TECHNOLOGIES, APPLIED PHYSICS	M 2301	Ionizing and non-ionizing radiations	2	9	4	10	24	38
		M 2302	Mathematics and applied chemistry tools	2		6	12	20	38
		M 2303	Electrical installations technology	1,5		4	10	16	30
		M 2304	Fluid mechanics, material strength	1,5		5	10	20	35
		M 2305	Acoustics and vibration	2		10	12	16	38
TU 24 : PROJECTS: METHODOLOGY	T26 PROJECT MANAGEMENT	M 2401	Construction and civil engineering technologies Supervised project: HSE jobs	1	5				

		M 2402	Personal professional project, knowing oneself. Work placement preparation	2		2	6	12	20
TOTAL HOURS SEMESTER 2				30	30	92	194	242	528

SEMESTER 3

TEACHING UNIT (TU)	TOPICS	MODULE REFERENCE (M)	MODULE NAME	COEF. /M	TOTAL COEF. /TU ECTS	TOTAL HOURS LECTURE	TOTAL HOURS SUPERVISED WORK	TOTAL HOURS PRACTICAL WORK	TOTAL HOURS STUDENT /TU
TU 31 : UE31 WORKPLACE HEALTH SAFETY AND WELFARE	T31 COMMUNICATION METHODS AND TOOLS	M 3101	English: technical terms	2	10	1	10	24	35
		M 3102	Workplace communication	1,5		4	6	16	26
	T32 RISK ASSESSMENT METHODOLOGY	M 3103	Safety systems analysis	1		3	6	6	15
		M 3104	Workplace risk assessment	1,5		2	8	12	22
	T33 WORKPLACE SITUATIONS	M 3105	Environmental factors	1,5		8	10	12	30
		M 3106	Ergonomics	1,5		4	10	16	30
		M 3107	Workplace psychology	1,5		8	10	12	30
TU 32 : TECHNOLOGICAL AND ENVIRONMENTAL RISK PROJECTION AND PREVENTION	T34 NUCLEAR, RADIOLOGICAL, BIOLOGICAL, CHEMICAL AND EXPLOSION HAZARDS	M 3201	Biological hazard, radiation protection	1,5	10	8	12	12	32
		M 3202	Chemical hazards	1		4	6	12	22
	T35 SECURITY OF PLANT AND EQUIPMENT	M 3203	Fire safety	2,5		6	14	18	38
		M 3204	Workplace installations and equipment safety, explosion hazards	1,5		9	14	8	31
		M 3205	Electrical hazards	1		4	8	8	20
	T36 ENVIRONMENTAL PROTECTION AND SUSTAINABLE DEVELOPMENT	M 3206	Environmental law	1		8	8	4	20
		M 3207	Environmental risk assessment	1,5		6	10	16	32
TU 33 : PROJECTS: IMPLEMENTATION AND ADDITIONAL MODULES	T37 PROJECT MANAGEMENT	M 3301	Supervised project. Case study (80h)	2	10				
		M 3302	Personal professional project. Post DUT plans	2		4	12	4	20

		M 3303C	Practical aspects of safety of installations, risks and industrial accidents	2		10	18	16	44
	T38 ADDITIONAL MODULES	M 3304C	Gas emissions and pollution control. Case study	2		13	14	16	43
		M 3305C	Control of health and safety at work: case analysis	2		13	14	16	14
TOTAL HOURS SEMESTER 3				30	30	115	190	228	533

SEMESTER 4

TEACHING UNIT (TU)	TOPICS	MODULE REFERENCE (M)	MODULE NAME	COEF. /M	TOTAL COEF. /TU ECTS	TOTAL HOURS LECTURE	TOTAL HOURS SUPERVISED WORK	TOTAL HOURS PRACTICAL WORK	TOTAL HOURS STUDENT /TU
TU 41 : TECHNOLOGICAL AND ENVIRONMENTAL RISK MANAGEMENT	T41 REGULATORY AND ORGANIZATIONAL ASPECTS AND TECHNIQUES OF ENVIRONMENTAL RISK	M 4101	Environmental approach	2	6	6	10	4	20
		M 4102	Technological hazards and classified installations	2		6	10	14	30
		M 4103	Natural hazards	2		4	8	8	20
TU 42 : PROJECT: MONITORING AND FEEDBACK	T42 PROJECT MANAGEMENT	M 4201	English: HSE approach	2,5	6	3	4	8	15
		M 4202	Communication techniques: corporate culture and writing	2,5		2	8	10	20
		M 4203	Supervised project: project implementation (60h)	1					
TU 43 : WORK PLACEMENT	T43 WORK PLACEMENT	M 4301	Work placement (minimum 10 weeks)	12	12				
TU 44 : Additional modules -2	T44 ADDITIONAL MODULES	M 4401C	Adaptation to work as a HSE Technician	1,5	6	10	18	16	44
		M 4402C	Organisation of public safety	1,5		12	14	16	42
		M 4403C	Using an environmental standard	1,5		12	14	16	42
		M 4404C	Using a Health & Safety frame of reference	1,5		12	14	16	42
TOTAL HOURS SEMESTER 4				30	30	67	100	108	275
TOTAL HOURS SEMESTER 1 + 2 + 3 + 4				120	120	352	628	820	1800
ETCS						20%	35%	45%	100%