

## Mechanical Engineering and Production Department

An intensive 2 year course leading to a National University Institute of Technology Graduate Diploma

DUT : Diplôme Universitaire de Technologie : 120 ECTS credits

### COURSE CHARACTERISTICS

4 semesters (September 1st to mid-January/ January to June) - 60 weeks over 2 years

Average number of contact hours 30 hours / a week (1,800h contact hours)

10-week of industrial work placement

Tutored projects

Tutorials: 26 students per group

Lab work: 13 students per group

2 Lectures/week

Continuous assessment & 2- hour written assessment each week

### SUBJECTS & COURSE UNITS

In any industrial sectors, the main steps structure the life cycle of a product, so teaching is organized in reference to these steps:

**Design** (computer-aided design, mechanics, material science, structure dimensioning)

**Industrialisation** (methods: process, product, manufacturing workshop, maintenance & quality)

**Production** (scheduling, planning, supply and workflow management)

**Control** (quality, metrology, and environmental safety)

### EACH SEMESTER IS COMPOSED OF 3 OR 4 BLOCKS CALLED COURSE UNITS

**Course Unit 1** groups the courses linked to the product design

**Course Unit 2** groups the courses linked to industrialization and process management. It allows students to understand the industrial field and environment.

**Course Unit 3** groups the cross-curricular and fundamental courses. They also develop a sense of communication and organization in the managerial sense.

**Course Unit 4** (semester 4 only) is a professional training in the industrial field, which is supervised by a teacher and a professional tutor, and is fully assessed by a written report and a viva for the awarding of the DUT degree.

*Please refer to page 3 for detailed syllabus*

#### ▪ A CAREER ORIENTED DIPLOMA

- ✓ Industry oriented teaching: close university /industry links: staff from business and academic background.
- ✓ Well-equipped workshop (CNC machines, a water-jet cutting machine...)

#### ▪ CAREER PROSPECTS

- ✓ Main areas

any mechanical engineering oriented firm- automobile/aeronautical/naval construction and equipment manufacturers - food industry - medical field.

- ✓ Scope of activities

research and design, tooling and facilities planning department, quality and control methods, production planning and management departments, manufacturing and production, commercial engineer.

#### ▪ EMPHASIS ON FOREIGN LANGUAGES

- ✓ English course compulsory
- ✓ *second language possible: German, Spanish, Italian, Russian, Chinese*
- ✓ *possible French tuitions at the "CILEC"*
- ✓ *Language assistant classes for English*
- ✓ *4 language labs + 3 specific multimedia classrooms equipped for language learning*
- ✓ *A free TOEIC session in real exam conditions*

#### ▪ INTERNATIONAL DIMENSION

- ✓ Possibility of placements abroad for semester 4 or industrial placement (Russia, Quebec, Malta..)
- ✓ postgraduate International Diploma open to DUT graduates :  
*DUETI Diplôme d'Université d'Etudes Technologiques Internationales*
- ✓ Numerous partnerships: Scotland, Wales, Russia, Canada, Germany, Spain, Italy, Sweden, Norway, Denmark, Finland, Korea....

### COURSE GOALS

After having completed their studies, graduates are able to:

- understand the company system and its interactions with its environment,
- choose and adapt his/her tools to the different situations
- meet technical, economical, quality and safety requirements needed in a competing economy
- work within a team and be proactive in a national or international environment

### CONTACT

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### STUDENT NUMBERS

1st year: 104 students maximum (4 groups of 26 students each)

### ADMISSION REQUIREMENTS

**3 conditions:**

- 1 - a formal entrance qualification : the Baccalauréat or a University entrance examination
- 2 - Assessment of academic results over the last two years taken into account. Main subjects required: French, Maths, Foreign language, Physical and Mechanical Sciences, Technology
- 3 - Selection process

### REGISTRATION PROCEDURE

**Deadlines for submitting applications:**

**1<sup>st</sup> semester and full year: 20 May**

**2<sup>nd</sup> semester: 20 October**

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## Overview table of Course Units per semester

Abbreviations used in the tables hereunder:

NC: Numerical Control.

EC: Expression Communication.

IOM: Industrial Organisation and Management.

PPP: Professional Personal Project

MS: Material Sciences.

DS: Dimensioning of Structures.

EEA: Electricity, Electronics and Automation.

FPD: Fundamental Principle of Dynamics.

MR: Material Resistance.

### Semester 1

CU	Module reference	Module name	Module Coef.	Total Coef.	Lecture volume	Tuto volume	PW volume	Student's volume
<b>Semester 1</b>								
11 Design: introduction	M1101	Mechanical design: study of existing mechanisms	4	10	10	10	40	150
	M1102	DS: MR hypothesis and simple stresses	2		8	18	4	
	M1103	Mechanics: Fundamental principle of statics	2		6	20	4	
	M1104	MS: material properties	2		9	9	12	
12 Industrialise and manage: introduction	M1201	Production: basis for product manufacturing processes	3	9	7	10	28	120
	M1202	Methods: Introduction to product manufacturing processes	2,5		6	16	8	
	M1203	Metrology: Measurements and control	1		3	4	8	
	M1204	EEA: Fundamental concepts in Electricity	2,5		6	12	12	
	M1214	EEA: Basics of automation						
13 Methodology: basics and specifics development	M1301	Mathematics: mathematical tools	2,5	11	14	28	3	185
	M1302	EC: Fundamental elements of communication	2		1	14	15	
	M1303	PPP: To know oneself better, profession and professional environment discovery	1		6	6	8	
	M1304	Foreign languages: Foreign languages communication: Basic tools	2,5			15	15	
	M1306	Methodology and individualised help: To foster student's success	1		2	4	24	
	M1307	Computer science: Spreadsheets and programming languages	2		5	10	15	
<b>Total Semester 1</b>				<b>30</b>	<b>83</b>	<b>176</b>	<b>198</b>	<b>455</b>

### Semester 2

CU	Module reference	Module name	Module Coef.	Total Coef.	Lecture volume	Tuto volume	PW volume	Student's volume
<b>Semester 2</b>								
21 Design: Basics	M2101	Mechanical design: Design study	3	10	8	12	40	195
	M2102	DS: Simple stresses: torsion, flexion	2		10	16	4	
	M2103	Mechanics: Solid dynamics: kinematics, kinetics, FPD	3		18	38	4	
	M2104	MS: Implementation and material behaviour	2		15	14	18	
22 Industrialise and manage: Basics	M2201	Production: Implementation of production means	2,5	8	8	12	40	180
	M2202	Methods: From product definition to process	1,5		6	12	12	
	M2203	Metrology: Three-dimensional metrology and surface finishes	1,5		6	8	16	
	M2204	EEA: Electric motorization	2,5		12	24	24	
	M2214	EEA: Automation of a workstation, safety						
23 Cross- curricular competencies: Tools, methods	M2301	Mathematics: Integral and matrix calculation	3	12	19	35	6	180
	M2302	EC: communication, information and argumentation	2		1	14	15	
	M2303	PPP: Project building. Professional integration preparation	1		5	4	6	
	M2304	Foreign languages: Technical and professional foreign language: research and convey data	2			15	15	
	M2305	IOM: Project management	2		10	15	20	
	M2308	Synthesis work and projects	2					
<b>Total Semester 2</b>				<b>30</b>	<b>118</b>	<b>219</b>	<b>218</b>	<b>555</b>

### Semester 3

CU	Module reference	Module name	Module Coef.	Total Coef.	Lecture volume	Tuto volume	PW volume	Student's volume
Semester 3								
31 Design: Implementation	M3101	Mechanical design: Power transmission design	3	10	12	23	25	180
	M3111	Mechanical design: Study in a digital chain context	1,5		1	4	25	
	M3102	DS: Elasticity – Combined stress	2		8	18	4	
	M3103	Mechanics: Dynamics and energetics	2,5		9	28	8	
	M3104C	MS: Material selection	1		2	9	4	
32 Industrialise and manage: Implementation	M3201	Production: Production preparation on a CNC machine	2	11	4	6	20	180
	M3202	Methods: Phase study and simulation - Cost optimization	2		6	12	12	
	M3203C	Metrology: Advanced metrology and control	1		3	6	6	
	M3204	EEA: Information processing	3		8	15	22	
	M3214	EEA: Automated systems integration						
	M3205	IOM: Process management	3		14	18	28	
33 Cross-curricular competencies: Implementation	M3301	Mathematics: Functions of several variables	2	9	9	18	3	115
	M3302	EC: Academic and professional communication	1		1	7	7	
	M3303	PPP: Professional integration preparation (work placement), post-DUT course and international mobility	1		7	8	10	
	M3304	Foreign languages: Technical and professional foreign language: Write and inform in an intercultural context	2			15	15	
	M3307C	Computer science: Database	1		3	4	8	
	M3308	Synthesis work and projects	2					
Total Semester 3				30	87	191	197	475

### Semester 4

CU	Module reference	Module name	Module Coef.	Total Coef.	Lecture volume	Tuto volume	PW volume	Student's volume
Semester 4								
41 Design: Development	M4101C	Mechanical design: Studies and developments	2	6	2	10,5	40	112,5
	M4102C	DS: Energy methods and finite element modelling	1		8	18	4	
	M4105C	Mechanical Design and Dimensioning of Structures	1			14	16	
	M4108	Synthesis work and projects	2					
42 Industrialise and manage: Development	M4201C	Production: Production preparation in industrial conditions	1	6		10	20	97,5
	M4202C	Methods: Multi-process industrialisation	2		8	12,5	32	
	M4212C	Methods: Study in a digital chain context						
	M4204C	EEA: Continuous system automation	1		2	4	9	
	M4208	Synthesis work and projects	2					
43 Cross-curricular competencies: Development	M4301C	Mathematics: Curves	1	6	5	10		105
	M4302C	EC: Communication in organisations	2		1	9	20	
	M4304C	Foreign languages: General, professional and technical foreign language: Integrate a international professional team	1,5			15	15	
	M4305C	IOM: Company management	1,5		10	20		
44 Professional situation	M4409	Work placement: professional immersion	12	12				
Total Semester 4				30	36	123	156	315
Course Total				108	324	709	767	1800