

Academic Programme 2018-2019

Materials Science

Semester 5

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
Unit 5.1 Engineering tools						142	10	
Computing	16		16		16	48	3	611110
Mathematics	22		26			48	3	611120
Spreadsheets and databases				10		10	1	611130
Experimental plans	10		10			20	1,5	611140
Scientific and technical information			16			16	1,25	611150
Unit 5.2 Chemistry - Thermodynamics						88	6	
Macromolecular Chemistry	20		20	20		60	4	611220
Thermodynamics 1	18		10			28	2	611230
Unit 5.3 Structure and Properties of Matter						110	9	
Cristallography	10		10			20	2	611310
Fundamentals of Elasticity	18		18	12		48	4	611320
Structure of Matter	14		18			32	2	611340
Reverse Engineering project (part1)					10	10	1	611350
Unit 5.4 Soft Skills and Sport						32	2	
Career Planning			10			10	1,25	611410
Sport					22	22	0,75	611420
Unit 5.5 Languages						44	3	
Remedial English			14				0	611510
English			24			24	2	611511
Second Language								
-> German			20			20	1	611413
-> Spanish			20			20	1	611414
-> French			20			20	1	611415
Total :						416	30	

Lect. : Lecture

LwT : Lecture with Tutorial

Tut. : Tutorial

Prac. : Practicql

According to the timetable,
the personal work of the student for all the units
of the semester is between 10 and 20 hours
every week.

Academic Programme 2018-2019
Materials Science

Semester 6

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
Unit 6.1 Thermodynamics and Phase Transformations						104	8	
Binary equilibrium diagrams and alloy microstructure Thermodynamics 2	14		10			24	2	612110
Advanced used of phase diagram	4		4	2		10	1	612140
Up-to-date assessment on processes	2			6		8	0,5	612150
Crystal defects	20		20			40	3	612160
Electrochemical-Corrosion	12		10			22	1,5	612170
Unit 6.2 Structure and Properties of Matter 2						150	12	
Structure and Physical properties of polymers	20		20	16		56	4	612210
Thermal, magnetic and optical properties of materials	20		10			30	2,5	612230
Reverse Engineering Project (part 2)					20	20	2	612240
Conferences	4					4		612250
Thermomechanical behavior of polymers	8		8	4		20	1,5	612260
Numerical physics			20			20	2	612270
Unit 6.3 Semi-Conductor Materials						61	4	
Semiconductor Physics	20		20			40	3	612310
Semiconductor devices				21		21	1	612320
Unit 6.4 Soft Skills						42	3	
Public Speaking			10			10	1	612420
Corporate Communication			10			10	1	612430
Sport					22	22	1	612440
Unit 6.5 Languages						44	3	
English			24			24	2	612511
Second Language								
-> German			20			20	1	612513
-> Spanish			20			20	1	612514
-> French			20			20	1	612515
Remedial English			18			18	0	612610
Placement (minimum one month) during the summer							0	
Total :						401	30	

Lect. : Lecture

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According to the timetable,

Tut. : Tutorial
Prac. : Practical

the personal work of the student for all the Units
Of the semester is between 10 and 20 hours
every week.

Academic Programme 2018-2019

Materials Science

Semester 7

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
Unit 7.1 Quality, Health, Safety and Environment						56	5	
Introduction to Quality	12		4			16	2	613110
Life Cycle Analysis	8		4	4		16	1	613120
Risk Analysis	4		4			8	1	613130
Lean Manufacturing	12					12	1	613150
Conferences	4					4		613160
Unit 7.2 Materials 1						126	9	
Applied Metallurgy	18		16			34	2,5	613210
Materials for energy	18		16			34	2,5	613230
Plasticity of crystalline materials	20		18			38	3	613240
Characterisation techniques					14	14	1	613250
Conferences	6					6		613260
Unit 7.3 Processing and Strength of Materials						134	10	
Polymer Rheology	14		4		4	22	1,5	613320
Elasticity and toughness of materials	14		14	16		44	3	613330
Materials Elaboration	8			20		28	2	613340
Organic Matrix Composite Materials	14		6			20	1,5	613350
Materials elaboration project (part 1)					12	12	2	613360
Conferences	8					8		613370
Unit 7.4 Soft Skills						60	3	
Work placement debriefing	4		4			8	0,5	613410
Economics	12		6			18	1	613420
Management basics	10					10	0,5	613430
Marketing	12					12	0,5	613440
Project Management	12					12	0,5	613450
Unit 7.5 Languages						42	3	
Remedial English			18			18	0	613510
English			22			22	2	613511
Second language			20			20	1	613512
-> German			20			20	1	613413
-> Spanish			20			20	1	613414
-> French			20			20	1	613415
Total :						418	30	

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 This course can be offered in English

Academic Programme 2018-2019

Materials Science

Semester 8

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credit	Code
Unit 8.1 Materials 3 (Design and Control)						86	6	
Finite Elements Modelisation	6			24		30	2	614110
Characterisation techniques					20	20	1,5	614120
Computer-aided design (CAD)	2			24		26	2	614130
Non destructive tests	4			6		10	0,5	615150
Unit 8.2 Materials 2						118	9	
Technology of semiconductors	10			8		18	1	614220
Biomaterials	16				4	20	2	614230
Ceramics	20		12			32	2,5	614240
Materials elaboration project (part 2)					20	20	1,5	614250
Conferences	8					8	0	614260
Metals fatigue	10					10	1	614270
Rubbers and Elastomers	6		4			10	1	614280
Unit 8.3 Soft Skills						30	2	
Management	14					14		614310
Corporate strategy			16			16	2	614320
Unit 8.4 Languages						42	3	
English			22			22	2	614411
Second Language								
-> German			20			20	1	614413
-> Spanish			20			20	1	614414
-> French			20			20	1	614415
Remedial English			18			18	0	614451
Unit 8.5 Assistant Engineer placement : Starting in May (6 - 13 weeks)						116	10	
Assistant Engineer placement						116	10	614510
Total :						392	30	

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 This course can be offered in English

Academic Programme 2018-2019

Materials Science

Semester 9

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
Unit 9.1 Synthesis and advanced course in Materials Engineering						129	10	
Module 1 : Tools and project management								
-> Choice of materials	12		2	12		26	2	615121
-> Project : Industrial problem solving	1				20	21	2	615122
-> Application of quality to the biomedical field	12					12	1	615124
-> Intellectual property	6				4	10	1	615125
-> Introduction to cybersecurity	4					4	0	615127
-> From the idea to the plant	4					4	0	615128
-> Product development	4					4	0	615129
Module 2 : Multimaterials							0	
-> Assembly and Welding of materials	20		4			24	2	615126
-> Coatings and painting	8					8	1	615131
-> Surface processing	4					4	0,5	615132
-> Recycling	8					8	0,5	615133
Conferences	10					10	0	615140
Unit .2 Soft Skills						60	3	
Labour Law	12					12	0,75	615210
Preparing for a Job Interview	12					12		615220
Team Management and Change Management	24					24	1,75	615230
Corporate social responsibility			4			4		615240
Ergonomy	8					8	0,5	615250
Unit 9.3 Final-Year Project (part 1)						114	11	
Final Year Project (part 1)					114	114	11	615410
Unit 9.5 Cross-disciplinary modules						48	3	
Cross-Disciplinary modules * 2 courses to be chosen from the following list :								
-> Eco-Design			24			24	1,5	925510
-> Intercultural Management			24			24	1,5	925511
-> International Corporate Strategy Simulation			24			24	1,5	925518
-> High Tech Innovation Management and Business Intelligence			24			24	1,5	925523
-> Internet of Things			24			24	1,5	925530
-> Management of Industrial Waste			24			24	1,5	925540
-> Renewable Energy			24			24	1,5	925571
-> Collective Intelligence			24			24	1,5	925580
-> Economics, Geopolitics and International Geostrategy			24			24	1,5	925595

-> The Basics of Business Engineering and Trade Negotiation			24			24	1,5	925598
-> Production Management			24			24	1,5	925599
-> Symbolic Computation and Introduction to Scientific Documents with Latex			24			24	1,5	925619
-> Art & Science			24			24	1,5	925639
-> Agent-based Modelling and Simulation			24			24	1,5	925649
-> Stress Management			24			24	1,5	925669
-> Marketing Business to Business			24			24	1,5	925679
-> The Engineer and Design			24			24	1,5	925689
-> Improve your relational efficiency through drama			24			24	1,5	925699
9.4 Languages						52	3	
English			20			20	1,75	615611
Second Language								
-> German			20				0,75	615613
-> Spanish			20				0,75	615614
-> French			20				0,75	615615
Remedial English			12			12	0,5	615620
Total :						403	30	

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* The list of cross-disciplinary courses available may be slightly modified each year.

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Materials Science

Semester 10

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
Unit 10.1 Final Year Project (part 2)						70	4	
Final Year Project (part 2)					70	70	4	616310
Unit 10.2 Engineer Placement : months starting in March						300	24	
Engineer Placement						300	24	616910
Corporate Project Challenge						35	2	
Corporate Project Challenge					35	35		617010
Total :						405	30	

 The project can be supervised in English

The project can also be carried out during a full semester for a workload of 30 ECTS credits