



**Academic Programme 2018-2019**

**Measurement Systems and Applied Business**

**Semester 5**

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
<b>Unit 5.1 Mathematics, Information Technology (IT) and Measurement issues</b>						<b>96</b>	<b>7</b>	
Mathematics	22		26			48	3,5	411110
Information Technology	14		16			30	2	411120
Practicals in Information Technology (Lab)				18		18	1,5	411130
<b>Unit 5.2 Electronics and Systems</b>						<b>74</b>	<b>7</b>	
Fundamentals of electronic circuits	4		6			10	0,75	411210
Electronic circuits (Lab)				16		16	1,5	411220
Amplifiers, Linear circuits and Closed loop systems	12		12			24	2,25	411230
Fundamentals of modulation and demodulation	12		12			24	2,5	411240
<b>Unit 5.3 Physics and Chemistry</b>						<b>89</b>	<b>7</b>	
Measurement, Analysis, Chemometrics	23		22			45	4	411140
Chemistry - Basics	4		6			10	0,75	411310
Chemistry (Practical)				24		24	1,5	411320
Geometrical Optics	4		6			10	0,75	411330
<b>Unit 5.4 Business, Marketing and Human Sciences</b>						<b>96</b>	<b>6</b>	
Sports			22			22	0,75	411410
Marketing	12					12	0,75	411420
Communication tools fundamentals			10			10	0,75	411430
Building your own career plans			10			10	0,75	411440
Bases in Management	10					10	0,75	411450
Efficient report writing			14			14	1	411460
Economical environment	12		6			18	1,25	411470
<b>Unit 5.5 Languages</b>						<b>44</b>	<b>3</b>	
English			24			24	2	411510
Second language								
-> German						20	1	411521
-> Spanish						20	1	411522
-> French						20	1	411523
Remedial English			14			14	0	411530
<b>Total :</b>						<b>399</b>	<b>30</b>	

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 This course can be offered in English

## Academic Programme 2018-2019

### Measurement Systems and Applied Business

#### Semester 6

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
<b>Unit 6.1 Optics &amp; Quantitative Sciences</b>						<b>118</b>	<b>9</b>	
Fundamental Optics	12		12			24	2	412110
Optics (Practicals)				20		20	1,25	412120
Quantitative Spectroscopy	12		12			24	2	412130
Renewable energies using modern Chemistry	12		8			20	1,5	412140
Chromatography	8		6			14	1,25	412150
Practicals in Chemistry (Labs)				16		16	1	412160
<b>Unit 6.2 Analog and Digital Electronics</b>						<b>116</b>	<b>9</b>	
Signal generation techniques		10	18			28	2	412210
Analog/digital conversion and data buses			24			24	2	412220
Semi-conductor fundamental devices	14		14			28	2,25	412230
Signal Filtering - Fundamentals	12		12			24	2	412240
Practicals in Analog Electronics (Labs)				12		12	0,75	412250
<b>Unit 6.3 Marketing and Business Issues</b>						<b>126</b>	<b>9</b>	
Enhanced Communication			24			24	2,25	412310
Sales techniques	20					20	2	412320
Sports			22			22	0,75	412330
Business Management	14		16			30	2	412340
B to B Marketing (Business to Business)	12		12			24	2	412350
The business engineer job	6					6	0	412360
<b>Unit 6.4 Languages</b>						<b>44</b>	<b>3</b>	
English			24			24	2	412420
Second language			20					
-> German						20	1	412431
-> Spanish						20	1	412432
-> French						20	1	412433
Remedial English			18			18	0	412440
<b>Placement (minimum one month)</b>							<b>0</b>	
<b>Total :</b>						<b>404</b>	<b>30</b>	

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## Academic Programme 2018-2019

### Measurement Systems and Applied Business

#### Semester 7

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credit	Code
<b>Unit 7.1 Languages</b>						<b>42</b>	<b>3</b>	
English			22			22	2	413110
Second language			20					
-> German						20	1	413121
-> Spanish						20	1	413122
-> French						20	1	413123
Remedial English			18			18	0	413130
<b>Unit 7.2 Steering Management , Negotiation</b>						<b>56</b>	<b>4</b>	
Feedback on third year Placement			10			10	0,75	413210
Project Management	12					12	0,75	413220
Knowing yourself and understanding your colleagues			14			14	1	413230
How to do a business report	20					20	1,5	413240
<b>Unit 7.3 Business Engineering</b>						<b>108</b>	<b>7</b>	
Writing an efficient data-sheet for Marketing	10					10	0,5	413310
Database fundamentals	4			8		12	1	413320
Globalized economy	12					12	1	413330
Intellectual property and patents	9					9	0,5	413340
E-marketing - Web marketing	12					12	1	413350
Law and economics of innovation	9					9	0,5	413360
Business in English			30			30	1,5	413370
Marketing project : specifications					14	14	1	413380
<b>Unit 7.4 Scientific project and Molecular Spectroscopy</b>						<b>114</b>	<b>9</b>	
Spectroscopic devices and systems	24					24	2	413410
Spectroscopic instrumentation (Practical)				16		16	1	413420
Photonic-based spectroscopy	16		8			24	2	413430
Nuclear Magnetic Resonance Spectroscopy (NMRS)	16		8			24	2	413440
Research and Data analysis	2			10	14	26	2	413450
<b>Unit 7.5 Electronics, Instrumentation and Measurement</b>						<b>89</b>	<b>7</b>	
Electronics and measurement (Lab)	14		6	16		36	1	413520
Radiofrequency instrumentation (Lab)				16		16	1,25	413530
From semi-conductor single devices to circuits		16				16	1,5	413540
Signal conditioning, sensors, Labview	6		4	11		21	1,5	413550
<b>Total :</b>						<b>409</b>	<b>30</b>	

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**Academic Programme 2018-2019**

**Measurement Systems and Applied Business**

**Semester 8**

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
<b>Unit 8.1 Languages</b>						<b>42</b>	<b>3</b>	
English			22			22	2	414110
Second language			20					
-> German						20	1	414121
-> French						20	1	414123
-> Spanish						20	1	414124
Remedial English						18	0	414130
<b>Unit 8.2 Lasers, Photonics</b>						<b>82</b>	<b>7</b>	
Digital Signal Processing	10		12			22	2	413510
Instrumental Optics and Lasers	12		12			24	2	414210
Digital transmissions, fiber optics	8		4			12	1	414220
Practicals in Photonics and Lasers (Labs)				24		24	2	414230
<b>Unit 8.3 Measurement, Data and Image signal Processing</b>						<b>68</b>	<b>6</b>	
Noise in measurements	12		8			20	2	414310
Metrology and calibration	16					16	2	414320
Fiber optic/measurement project				32		32	2	414330
<b>Unit 8.4 Assistant Engineer Placement (from May - 10 - 13 weeks)</b>						<b>100</b>	<b>7</b>	
Fourth-year placement			100			100	7	414410
<b>Unit 8.5 Project and applied Marketing</b>						<b>122</b>	<b>8</b>	
Management and changes in organizations	12		12			24	1,5	414510
Financial Management	10		10			20	1,5	414520
Specific and complex business issues	14					14	1	414530
Marketing project - Execution					64	64	4	414540
<b>Total :</b>						<b>414</b>	<b>31</b>	

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## Academic Programme 2018-2019

### Measurement Systems and Applied Business

#### Semester 9

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
<b>Unit 9.1 Languages</b>						<b>52</b>	<b>3</b>	
Second language			20					
-> German						20	0,75	415111
-> Spanish						20	0,75	415112
-> French						20	0,75	415113
English			20			20	1,75	415120
Cross-cultural communication			12			12	0,5	415130
<b>Unit 9.2 Key professional Issues</b>						<b>106</b>	<b>7</b>	
Business relationships	12					12	1	415220
Introduction: Labour Law	12					12	1	415230
Quality, Health and Safety	10					10	0,75	415250
Case study and Business plans			24			24	1,5	415260
Undertake and innovate	20					20	1	415270
Feedback on internship as Engineering-assistant					4	4	0	415280
<b>Unit 9.3 International Business, Engineer project</b>						<b>80</b>	<b>6</b>	
Quantitative Marketing	12		12			24	1,5	415320
Corporate Social Responsibilities			10			10	0,75	415330
Sales and international issues	10					10	0,75	415340
Succeed in your job interview	12					12	1	415350
Innovative Instrumentation : from concept to implementation	24				24	24	2	415360
<b>Unit 9.4 Telecom and I.T. Networks, Imaging</b>						<b>130</b>	<b>12</b>	
Final-year project I					50	50	6	415405
Telecom and I.T. networks conferences	6					5,8		415410
Wireless Communication Electromagnetic compatibility	12					12	1	415420
Architecture of wired and IP networks	24					24	2	415430
Microwaves and High frequency measurements	24					24	2	415440
Surface Imaging	24					24	2,5	415450
Advanced Spectroscopy, Bioimaging	24					24	2	415460
Imaging Conferences	24					3	0	415470
Healthcare Engineering	14					14	1	415480
Chemometric Data Analysis	12					12	1	415490
<b>Unit 9.5 Cross-disciplinary modules *</b>						<b>48</b>	<b>3</b>	
Cross-Disciplinary modules - 2 courses to be chosen from the following list :						48	3	925500
-> Eco-Design						24	1,5	925510
-> Intercultural Management						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
<b>Total :</b>						<b>392</b>	<b>30</b>	

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


  The project can be supervised in English

## Academic Programme 2018-2019

### Measurement Systems and Applied Business

#### Semester 10

Course	Lec.	LwT	Tut.	Prac.	Project	Student Hours	ECTS Credits	Code
<b>Unit 10.1 Final Project</b>						<b>100</b>	<b>6</b>	
Final-year Project II (at school or in a company)					100	100	6	416110
<b>Unit 10.2 Final Placement</b>						<b>300</b>	<b>24</b>	
Engineer Placement					300	300	24	416210
<b>Total :</b>						<b>400</b>	<b>30</b>	

 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