Ceramics & ICT
TACTIC Graduate School

MASTER IXEO

High Frequency Electronics & Photonics training path

Level	Program duration	Credits
Master	**2 years**	**120 credits**

Program outline

This Master's program is based on the IXEO Master's degree in Applied Physics and Engineering Physics, electronics-optics. Students will be trained in the fields of electronics and high-frequency photonics through a research-oriented approach with projects and laboratory internships, at XLIM or abroad.

Admissions requirements

Must hold a Bachelor's degree in "Electronics, electrical energy, automation" or a degree in "Physics" or "Sciences for engineers" or "Sciences and technologies" with a specialization in high frequency electronics and/or optics.

Organization

- Internship in M1 (international mobility)
- End-of-study internship in M2
- Scientific project in M2

How to apply

Students residing in France or the EU: www.monmaster.gouv.fr

International students from outside the EU: www.campusfrance.org/fr

Key info

- Selective course (limited places)
- No repetition possible in TACTIC course
- Scholarships 6000€ (4000€ in M1, 2000€ in M2)
- Financial assistance for incoming and outgoing mobility

Study place

Campus La Borie, Limoges

Program contact

M1 :
sebastien.fevrier@unilim.fr

M2 :
bruno.barelaud@unilim.fr

Project manager :
celine.parvy@unilim.fr

School contact

msciences@unilim.fr

What's next ?

- ## Continuation of study

Continuation in thesis possible.

- ## Job opportunities

Jobs: R&D engineer, project engineer, researcher, assistant professor

Sectors: Industrial groups, start-ups and SMEs: space, civil, defense applications, high-frequency components and technologies for communication sciences, photonic technologies (laser, imaging, etc.)

Program

Semester 1

Course name	Course unit (UE or component)	Nbr h Lecture	Nbr h Tutorial	Nbr h Practice	Credits
Electromagnetic theory for high frequency circuits and antennas	UE	42h	24h	24h	9
Optical propagation	UE	27h	19h	34h	8
Active circuits and nonlinear devices	UE	42h	24h	24h	9
Modulations and demodulations for RF front-end and devices	UE	17h	6h	32h	4

Semester 2

Course name	Course unit (UE or component)	Nbr h Lecture	Nbr h Tutorial	Nbr h Practice	Credits
Language (English or French)	UE	0h	30h	0h	3
Soft skills	UE	20h	10h	0h	3
Abroad internship	Internship				3

	Course unit	Nbr h Lecture	Nbr h Tutorial	Nbr h Practice	Credits
Laboratory research at XLIM	Project				6
Elective training path : Electronic					
Passive microwave components, antennas and transmission systems	UE	18h	8h	24h	5
Modeling and CAD of RF and microwave devices	UE	17h	6h	32h	6
Material properties & characterisation	UE	9h	0h	21h	3
Photonic					
Passive microwave components, antennas and transmission systems	UE	18h	8h	24h	5
Laser	UE	20h	10h	0h	3
Nonlinear optics	UE	26h	14h	0h	4
Novel light sources	UE	9h	0h	21h	3
IOT					
Modeling and CAD of RF and microwave devices	UE	17h	6h	32h	6
Smart Energy	UE	18h	22h	0h	3
Physics and technologies for devices	UE	31h	0h	9h	6

Semester 3

Course name	Course unit (UE or component)	Nbr h Lecture	Nbr h Tutorial	Nbr h Practice	Credits
CAD for engineering	UE	28h	0h	62h	3
Elective courses (3 out of 6)					
• Antennas and EM compatibility for RF systems	UE	30h	0h	0h	6
• Passive components and devices for RF systems	UE	30h	0h	0h	6
• Nonlinear components and devices for RF systems	UE	30h	0h	0h	6

Course name	Course unit (UE or component)	Nbr h Lecture	Nbr h Tutorial	Nbr h Practice	Credits
• Printed electronics for telecommunication and energy harvesting	UE	15h	0h	0h	3
• Advanced photonic sources and systems	UE	37.5h	0h	0h	7.5
• Telecom systems and networks	UE	7.5h	0h	0h	1.5
Elective courses (1 out of 4)					
• Materials and nonlinear optics	UE	10h	0h	20h	3
• Additive Manufacturing and RF technology processes	UE	9h	0h	21h	3
• Bio-Engineering	UE	18.5h	1.5h	10h	3
• Energy Harvesting		17h	10h	3h	3
Language (English or French)	UE	0h	30h	0h	3
Research or entrepreneurial project	Project				3

Semester 4

Course name	Course unit (UE or component)	Nbr h Lecture	Nbr h Tutorial	Nbr h Practice	Credits
Elective courses (2 out of 3)					
• Front-End and RF Architectures for Satellites	UE	15h	15h	0h	3
• Microelectronics RF, Micro and Nano Technologies	UE	15h	15h	0h	3
• Design, fabrication and characterization of fiber-based laser systems	UE	4.5h	1.5h	24h	3
Research or entrepreneurial project	Project				3
End of study internship (master's thesis)	Internship				24