BORDEAUX SUMMER SCHOOLS

université de BORDEAUX

CONTENTS

Manuel Tunon de Lara
President of the University of Bordeaux

The University of Bordeaux was founded in 1441 in the south-west of France. At the time, the country had been an English protectorate for nearly 300 years and would remain so another 14 years. Existing throughout various eras, the University of Bordeaux experienced many changes in relation to the history and evolution of our society. Building on this rich past along with a strong outlook for the future, our vision of what a University symbolizes, and the University of Bordeaux in particular, is an open and accessible place, a place to share new knowledge and nurture critical thinking.

This multicultural heritage has strongly contributed to our status as a leading, multidisciplinary, research university and has provided a solid foundation for the Bordeaux Summer Schools (BSS) program. A wide range of topics are proposed, illustrating our extensive, internationally renowned expertise. By organizing the schools at the same time of year and on a common campus site, we hope to promote encounters and exchanges between different disciplines, opinions and passions and therefore, stimulate original discussions and encourage new ideas. BSS targets future leaders who wish to reinforce their skills, gain new knowledge and develop their professional network.

In addition to a variety of disciplines and a rich past, our University proposes even more. Featured on the UNESCO World Heritage list, with the ocean to the west and prehistorical caves to the east, surrounded by vineyards, Bordeaux and the region of Nouvelle Aquitaine is well known for its excellent gastronomy and high quality of life. Summer time is ideal for visiting. Welcome!

YOUR JOURNEY STARTS HERE

WELCOME....
TO THE UNIVERSITY OF BORDEAUX!

Ranked among the **top universities in France** for the **quality of its academic courses and research**, in 2016 the University of Bordeaux was one of the first universities in France to obtain confirmation of the "Initiative of Excellence". This label recognizes its **successful academic transformation,** and supports its strategic capacity and vision to develop as an **international, research university**.

A LEADING, INTERNATIONAL RESEARCH UNIVERSITY

Research is **multidisciplinary** covering the fields of:
- Science and Technology,
- Life and Health Sciences,
- Social Sciences and Humanities.

A **Graduate Research School** coordinates the field of doctoral studies in collaboration with eight doctoral schools that ensure support and guidance for PhD students within the domains of:
- Law, economic sciences, management and demography,
- Mathematics and computer science,
- Sciences and environment,
- Physics and engineering,
- Health and life sciences,
- Chemical sciences,
- Society, politics and public health.

Graduate Research Programs have been launched within the domains of neuroscience, digital public health and light sciences and technologies.

CLUSTERS OF EXCELLENCE

The University of Bordeaux has established international clusters of excellence in the following scientific fields: Neuroscience, Medical imaging, Environment/climate, Advanced materials, Archaeology, Lasers/optics, Digital certification, Health and society and Cardiology.

A driving force of the university's development and a major force for its international visibility, these clusters, including five with national Laboratory of Excellence accreditation, bring together teams from different joint research units. They also count five facilities of excellence (EquipEx), a University Hospital Institute and an e-cohort on student health.

Around 4,000 lecturers/researchers are based in Bordeaux. Not surprising as the region is renowned for its world-class scientific environment!

56,000 students

7,000+ international students

250 Master programs

150 Bachelor programs

70 research laboratories under joint supervision with national research organizations (CNRS, Inserm, INRA, INRIA, CEA, etc.)


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BORDEAUX SUMMER SCHOOLS

Since 2012, the University of Bordeaux organizes summer schools that offer a range of **high-quality**, **multidisciplinary international courses** for postgraduate students and young researchers.

In 2019, the Bordeaux Summer Schools program is launching an even wider range of disciplinary themes. Courses will take place between late May and September and will cover **over ten very different disciplines** ranging from African studies to chemistry to health sciences to environmental issues to optics and more!

These courses are **highly selective** and target **international talents**. Course content offers an **enriching curricular experience** with, depending on the discipline, a mixture of theoretical and practical training that demands a **notable level of expertise and knowledge**.

Candidates must fulfill the specific requirements of their summer school of choice. Applications will be examined based on criteria of the summer school in question and candidates will be informed in due course.

Please note:

Language: classes are conducted in English.

Location: classes take place at the University of Bordeaux.

Period: May - July, 2019.

Participant profile: the Bordeaux Summer Schools are designed for postgraduate students and young researchers.

Upon completion of the Summer School, students are awarded a University of Bordeaux certificate that attests to the knowledge and skills acquired during the course.

TOMORROW'S SUCCESS STARTS TODAY

1 LEARN FROM **INTERNATIONALLY RECOGNIZED** EXPERTS

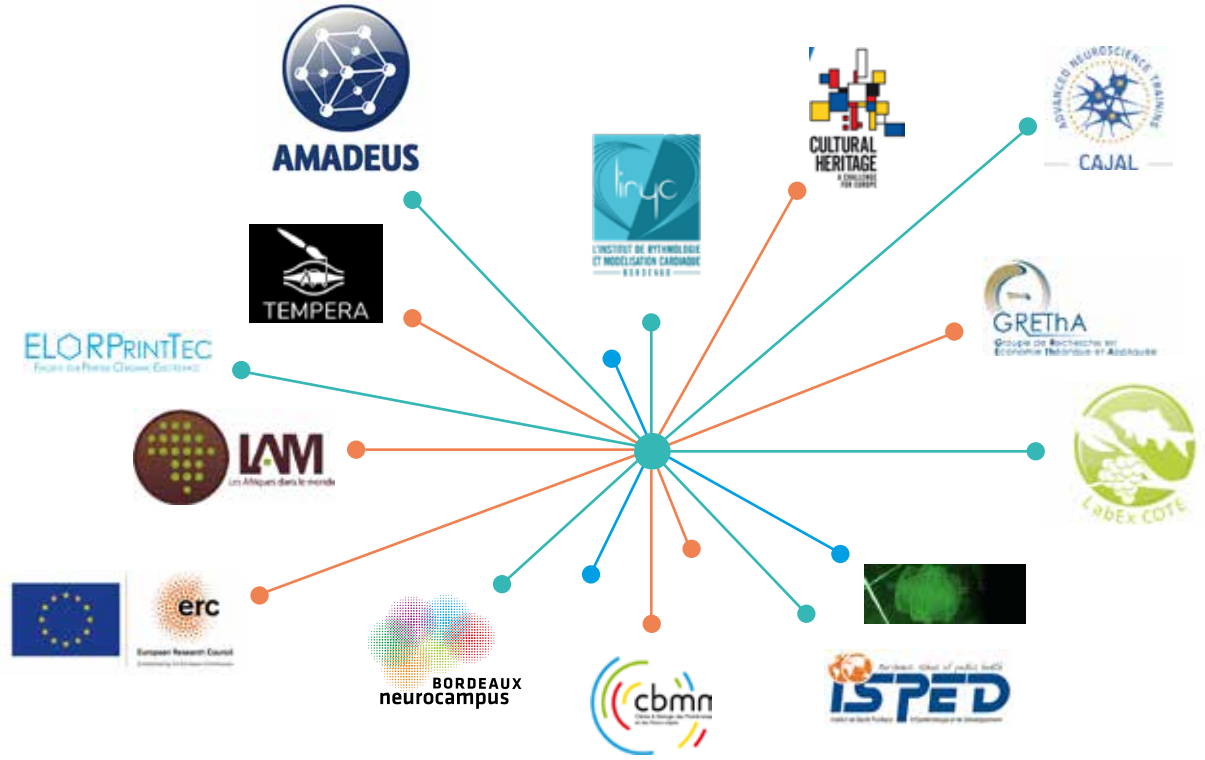
2 BUILD YOUR **PROFESSIONAL AND ACADEMIC NETWORK**

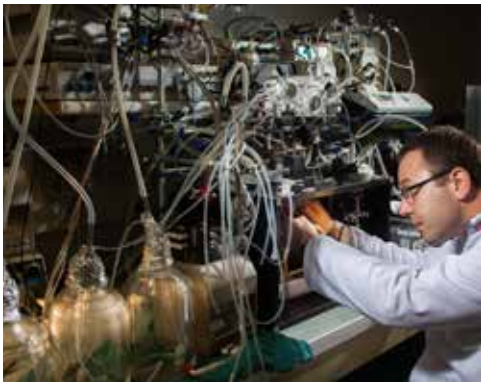
3 DISCOVER THE UNIVERSITY OF BORDEAUX'S **FACILITIES OF EXCELLENCE**

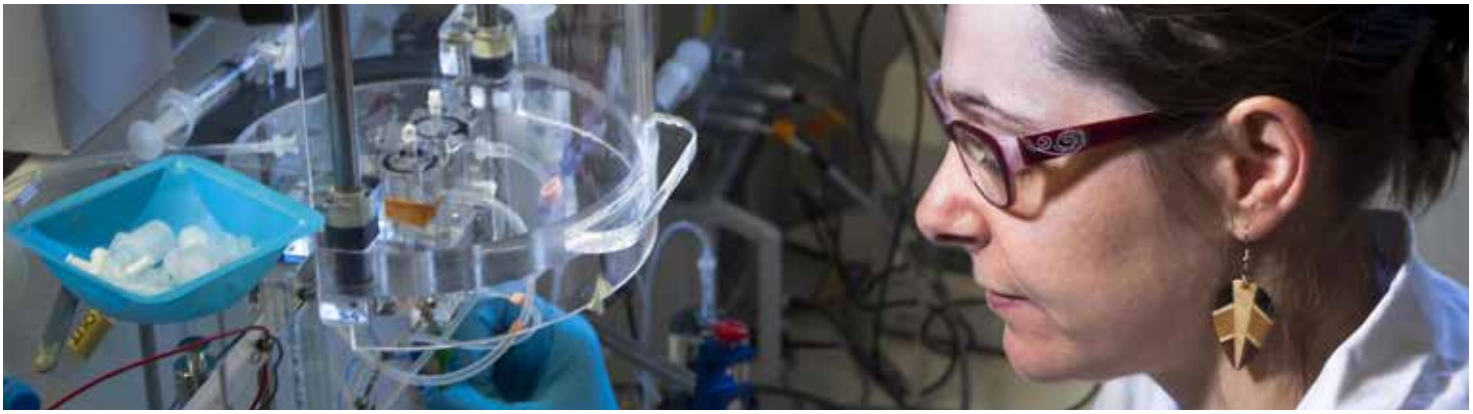
NETWORK OF EXCELLENCE

The Bordeaux Summer Schools benefit from strong input regarding format and scientific content from the **University of Bordeaux Graduate Research School** , a central structure that coordinates the doctoral schools and the entire field of doctoral studies.

A large majority of the Summer Schools are organized in collaboration with **internationally renowned** laboratories and institutes that share their expertise and **cutting-edge facilities** with the young, international talents that come to Bordeaux over the summer.







Many summer schools are organized according to a common policy for fees, accommodation, location and social activities. Please see below for information on these aspects and consult the specific flyers for any alternative arrangements.

FEES

The Bordeaux Summer Schools are fee-paying courses with a registration that covers the cost of courses, accommodation, breakfast and lunch as well as local transport and social events. Travel to Bordeaux from the home country is not included.

Scholarships and grants are available under certain conditions. To apply for a summer school as well as for such financial aid, please consult the specific webpage of the summer school and follow the application guidelines (detailed CV with cover letter required in most cases). Once the application is approved, fees must be paid upon registration via the summer school webpage.

ACCOMMODATION

Top quality student residences are pre-reserved for international students attending the Bordeaux Summer Schools. These mini-studios contain a sleeping area, kitchenette and shower room/WC.

Located within the campus, students are thus comfortably lodged during their stay in Bordeaux and able to reach their classes by foot. The city center is accessible via the tram in less than 20 minutes.

LOCATION

The Bordeaux Summer Schools are mainly organized within the campus site of the University of Bordeaux. Classes take place in the recently renovated and/or constructed buildings of the Talence Campus. Classrooms and laboratories are equipped with the latest teaching and experiment facilities, providing a high-level learning environment.

From the campus, the city center is accessible via the tram in less than 20 minutes.

SOCIAL ACTIVITIES

Breakfast and lunch are served in a restaurant located at a distance of approximately 10 minutes by foot from the residence and summer school classes. Most summer schools hold an opening welcome cocktail the first evening to launch the event and then conclude with a gala dinner to celebrate the end of the course.

Participants also benefit from an extensive social program. Half-day excursions are often organized in order to discover the surrounding region and to promote integration and networking with fellow participants.

DISCIPLINARY THEMES

MAY 2019

NEUROSCIENCES

Brain homeostasis and neurovascular coupling

May 19th - June 8th

PUBLIC HEALTH

Bordeaux School of public health

May 20th - June 28th

JUNE 2019

ENVIRONMENT

Ecology and society: frontiers and boundaries

June 3rd - June 7th

APPLIED CHEMISTRY

Advanced mass spectrometry applied to cultural heritage

June 17th - June 21st

NEUROSCIENCES

Biosensors and actuators for cellular and systems neuroscience

June 23rd - July 13th

OPTICS, PHOTONICS, LASERS

Short-pulse lasers and applications

June 25th - June 28th

JULY 2019

IMMUNOLOGY

Microbiota, symbiosis and individuality: conceptual and philosophical issues

July 1st - July 5th

CARDIOLOGY

Cardiac electrophysiology

July 8th - July 12th

MATERIALS OF THE FUTURE

Organic electronics

July 8th - July 11th

POLITICAL SCIENCE

Africa 2030: diagnosis and policies

July 9th - July 11th

INFORMATICS

Robots and artificial intelligence: from motor-control to intelligent decisions

September 16th - September 21st

MATERIALS OF THE FUTURE

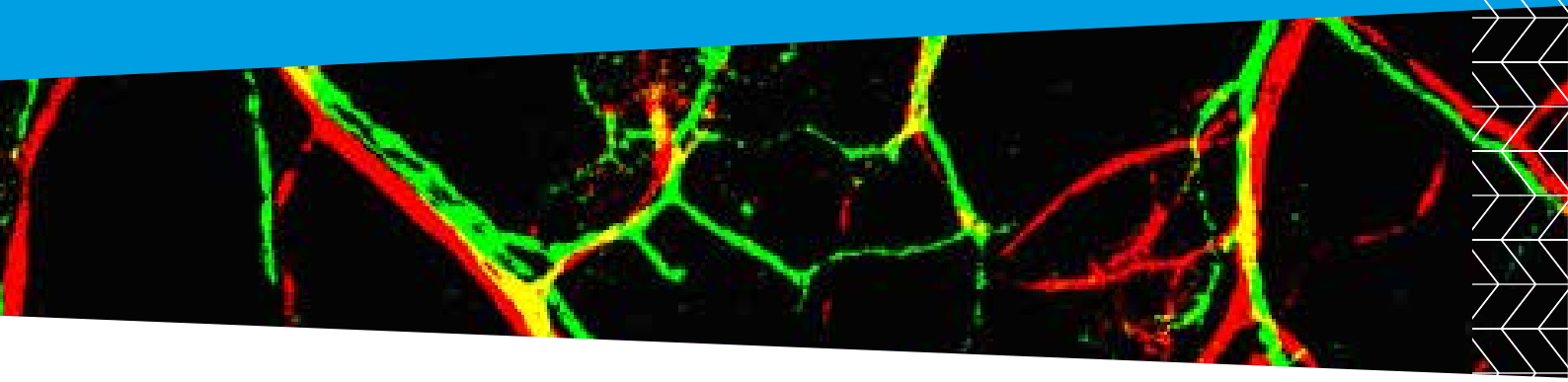
Advanced materials for energy storage and conversion

This summer school has been postponed until 2020

Summer School

Brain homeostasis and neurovascular coupling

May 19th – June 8th, 2019

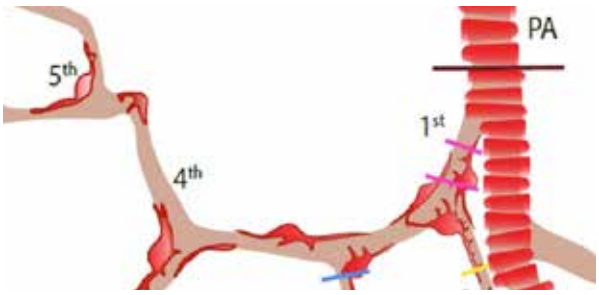


In a nutshell...

This intensive course, within the framework of the CAJAL Advanced Neuroscience Training Program, will provide students with a strong foundation of knowledge in NVU research and give them the opportunity to learn the latest research techniques.

Attendees will experience hands-on training with various techniques, such as *in vivo* and *ex vivo* high-resolution imaging, magnetic resonance imaging, brain vascular pathology rodent models and *in vitro* BBB models.

The training laboratory at the University of Bordeaux, dedicated to the course, is fully equipped for practical sessions on the neurovascular function and brain homeostasis.



Expertise upon completion

This project-based course, designed by leading scientists in the field, will allow young students and researchers to better understand and use the latest technology in NVU research.

A certificate of participation will be awarded to the students upon completion of the course.

› *Program*

The Neurovascular Unit (NVU) is a physiological entity that consists of fine-tuned interactions between cerebral blood vessels, pericytes, astrocytes, immune cells and neurons in order to maintain brain homeostasis. The NVU contributes to brain vessel properties such as blood-brain barrier (BBB) and cerebral blood flow regulation, and several brain disorders associated with NVU dysfunction. Recently, there has been significant progress in both the understanding and in the technologies available to study the NVU.

This advanced course will allow students to gain fundamental knowledge and hands-on experience with *in vivo* and *ex vivo* high-resolution imaging, notably 2-photon microscopy, fluorescence lifetime imaging, STED microscopy, optogenetics, vascular molecular biology and magnetic resonance imaging.

The leading scientists in the field of NVU research have designed a rigorous program including both theoretical and methodology courses for attendees, as well as several extracurricular activities including evening sessions with open discussions and social events.

Each day begins with a keynote lecture followed by presentations from established instructors and up-and-coming scientists in the field. The afternoon and early evening is spent on mini-projects in order to provide hands-on training in small groups. This activity is divided into two blocks over the intensive three week period.

Participants will have the option to work on the mini-projects described in detail on the website and will be able to prioritize between projects in both the first and second block.

The first block is dedicated to neurovascular coupling issues while the second block is dedicated to brain ion and water homeostasis, the blood-brain barrier, vascular biology and magnetic resonance imaging of rodent brains.

A panel of experts

Course Director:

› M. Lauritzen: *Department of Neuroscience, University of Copenhagen and Rigshopitalet, Denmark*

Co-Directors:

› J. Badaut: *Brain Molecular Imaging laboratory, University of Bordeaux - National Center for Scientific research (CNRS) - Institut de Neurosciences Cognitives et Intégratives d'Aquitaine (INCIA), France*

› E. Hamel: *Montréal Neurological Institute, McGill University, Canada*

Keynote speakers:

› D. Attwell: *Department of Neuroscience, Physiology & Pharmacology, University College London, UK*

› A. Devor: *Department of Neurosciences, UC San Diego School of Medicine, USA*

› U. Dirnagl: *Department of Experimental Neurology, Charité Universitätsmedizin Berlin, Germany*

› B. Engelhardt: *Theodor Kocher Institute, University of Bern, Switzerland*

› J.-F. Ghersi-Egea: *Fluids and barriers of the CNS, Lyon Neuroscience Research Center, France*

› C. Iadecola: *Feil Family Brain & Mind Research Institute, Weill Cornell Medicine, New York, USA*

› F. Lesage: *Department of Electrical Engineering, Polytechnique Montréal, Canada*

› M. Tanter: *French National Institute for Health and Medical Research, Institut Langevin, City of Paris Industrial Physics and Chemistry Higher Educational Institution (ESPCI), Paris, France*

› R. G. Thorne: *Denali Therapeutics, South San Francisco, California, USA; Pharmaceutical Sciences Division, University of Wisconsin-Madison, USA*

› B. Weber: *Institute of Pharmacology and Toxicology, University of Zurich, Switzerland*

WHY BORDEAUX?

The CAJAL Advanced Neuroscience Training Program selected the Bordeaux Neurocampus for its state-of-the-art training in neuroscience. The site benefits from the implementation of the Bordeaux School of Neuroscience and excellent neuroscience research teams within the University of Bordeaux.

The Bordeaux School of Neuroscience offers the international scientific community hands-on training with a modern technology laboratory where PhD students learn cutting edge techniques in neuroscience. It is also equipped for the organization of courses and has close connections with other technological platforms of the University of Bordeaux (Bordeaux Imaging Centre, OptoPath, Genome-Transcriptome facility of Bordeaux, etc.).

The CAJAL Advanced Neuroscience Training Program and the Bordeaux School of Neuroscience invites hundreds of students, researchers and renowned scientists from all over the world every year, thus further enriching the neuroscience community of the University of Bordeaux.

Practical information

Dates: May 19th – June 8th, 2019.
N° participants: 20
Language: classes are conducted in English.
Location: classes take place at the Bordeaux School of Neuroscience, University of Bordeaux - Carreire campus.

Participant profile: the course is designed for doctoral students and post-doctoral researchers.
Applications: to be completed online via the CAJAL Advanced Neuroscience Training Program website:
fens.org/Training/CAJAL-programme/CAJAL-courses-2019/BHNC-2019/
Deadline: February 11th, 2019.

Participation fee: 3,500€ per participant. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.
Grants: a limited number of grants are available upon demand. For more information or to apply, please consult our online application form.

CAJAL
Bordeaux Neurocampus Graduate Program

BORDEAUX SCHOOL OF NEUROSCIENCE

université de BORDEAUX

More information:
fens.org/Training/CAJAL-programme/

Summer School

Bordeaux School of public health

May 20th – June 14th, 2019

In a nutshell...

Organized by the Bordeaux School of Public Health (ISPED), this summer school provides participants with knowledge of population health studies through a series of short courses.

Each participant may take part in one or more modules, depending on their needs and interests. Seminars will also be hosted throughout the course.

In addition to the lectures and practical sessions, each module proposes shared lunches and dinners with students and lecturers, in an environment which encourages exchange and reflection.

A panel of experts

Courses are organized by professors, associate professors and researchers from the University of Bordeaux and the French National Institute of Health and Medical Research (Inserm) - "Bordeaux Population Health Center". Guest lecturers are scientific experts from governmental research institutions or organizations dedicated to public health research in France, the UK, the Netherlands and the USA.

› *Program**

Course n°1: Advanced R: tools for development & performance

This course showcases state-of-the-art tools for developing fast and efficient R code, and is designed for participants who are not professional software developers, but wish to produce performing code.

Course n°2: Web-based data processing & analysis

Driven by case-based teaching, practical sessions and conceptual and theoretical courses, this module shows students how to carry out public health studies integrating data from social networks and web forums, linked open data and mobile data. Participants practice using environmental and geo-tagged data, web forums data and a large mobile data set.

Course n°3: Statistical analysis of big data in systems immunology

Course content focuses on key ideas about various statistical approaches currently used for the analysis of data generated by systems immunology studies. Systems immunology involves high dimensional data issued from high throughput technologies such as RNA sequencing and flow cytometry data. The statistical analysis of this data, as well as the understanding of the published papers on this topic, requires knowledge in specific statistical approaches.

Course n°4: Introduction to Bayesian analysis

The basic ideas underlying the Bayesian framework are covered by this course, and practical tools to perform Bayesian analysis are provided. Bayesian methods are an alternative to traditional statistical frequentist methods. Course content covers Bayesian modeling, including prior specification, as well as posterior estimation and decision theory. Modern numerical solutions implemented to perform Bayesian analysis using the BUGS language and JAGS software from within R will also be studied, with a focus on the specific contexts of epidemiology, clinical trial analysis and pharmacology.

Course n°5: Measurement and analysis of cost-effectiveness data

Fundamentals of cost measurement, the concept of utility and the methods to estimate it are covered by this course. Participants learn how to calculate and interpret an incremental cost-effectiveness ratio. The notion of incremental net benefit, and the methods (parametric and non-parametric) to estimate the cost-effectiveness probability will be introduced. The limits of a cost-effectiveness probability and the importance of value of information analyses to interpret cost-effectiveness results and inform decision-making will also be presented.

Course n°6: Health communication

Course content provides students with theory and practice on communication for health, with a focus on health research communication strategies and the translation of scientific results for policy-makers, financers, health providers, patients and the general public. Multiple levels of communication, different communicative channels and the use of diverse communication media and technologies will be studied. The role of communication in designing the agenda and objectives of health policies will be analyzed. Finally, the importance of the Internet in health communication will be explored.

**Program may be subject to change.*

Expertise upon completion

Course n°1: participants will be able to understand the statistical analysis used in papers published on systems immunology studies.

Course n°2: participants will be capable of performing public health studies integrating data from social networks and web forums, linked open data and mobile data.

Course n°3: participants will be able to identify computational bottlenecks in one's code, optimize a function using C++ integration through Rcpp, harvest multicore's speed by easy parallelization of code, and evaluate and compare speed-up gains of competing implementations.

Course n°4: participants will comprehend the fundamentals underlying Bayesian methods, become familiar with the practical tools needed to perform Bayesian analysis, and be able to carry out simple Bayesian analysis in R using JAGS.

Course n°5: participants learn how to: measure and interpret a cost; measure and interpret a QALY; estimate and interpret an incremental cost-effectiveness ratio; estimate and interpret an incremental net benefit and a cost-effectiveness probability; and conduct a value of information analysis and interpret its results.

Course n°6: participants will be able to identify a variety of health communication tools and supports, understand the theoretical foundations of communication about health, and identify new strategies for generating successful health-related communication.

WHY BORDEAUX?

This summer school will gather faculty members from the Bordeaux School of Public Health, as well as internationally renowned experts in population health studies, biostatistics, social determinants of health and health communication.

Course content provides a unique opportunity for participants to learn cutting edge research methods and to interact with renowned international experts.

Practical information

N° participants: 24
Language: classes are conducted in English.
Location: classes and guest lectures take place on the Carreire and Talence campus sites of the University of Bordeaux.
Application deadline: April 30th, 2019.
Grants: grants may be awarded to applicants from developing countries. A cover letter is necessary to apply.

Course n°1: May 20th – May 21st
Participant profile: working knowledge of R is necessary. Participants must know how to write simple functions, and must be familiar with the concept of R package. This course is not suitable for R beginners.
Participation fee: 300€ for academics, 600€ for industrials.

Course n°2: May 20th – May 23rd
Participant profile: programming skills and data management ability is obligatory.
Participation fee: 600€ for academics, 1,200€ for industrials.

Course n°3: May 20th – May 24th
Participant profile: experience in immunology and data analysis (PCA, regression analysis, R software) is welcome.
Participation fee: 750€ for academics, 1,500€ for industrials.

Course n°4: May 22nd – May 23rd
Participant profile: experience in statistical inference (likelihood maximization, hypothesis testing, linear regression, etc.).
Participation fee: 300€ for academics, 600€ for industrials.

Course n°5: June 4th – June 5th
Participant profile: participants with an interest in learning about analyses of cost-effectiveness data.
Participation fee: 300€ for academics, 600€ for industrials.

Course n°6: June 14th - June 15th
Participant profile: participants with an interest in health communication.
Participation fee: 300€ for academics, 600€ for industrials.

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More information:
bss-publichealth.u-bordeaux.fr/en

Summer School

Ecology and society: frontiers and boundaries

June 3rd – June 7th, 2019

In a nutshell...

This summer school is part of the COTE Cluster of Excellence training program and is intended for PhD students in environmental sciences. It offers a comprehensive and multidisciplinary approach to frontiers and boundaries in ecology and society.

During the five day session, participants learn in a variety of ways with a program that offers:

› Open discussions with an integrated approach to environmental sciences,

› Expert interventions on integrative ecology,

› A field trip to illustrate specific problems related to each COTE ecosystem (forests, agroecosystems, hydrosystems).

Expertise upon completion

Every year, the COTE Summer School opens its doors to around thirty PhD students (French and international) for one week. This year, the curriculum is multidisciplinary and focuses on frontiers and boundaries in ecology and society. Case studies and field trips supplement the training. The summer school allows participants to broaden their knowledge, meet recognized experts in various fields and establish contacts for future scientific and professional cooperation.

A certificate of participation will be awarded to students upon completion of the course.

› *Program**

Day 1: June 3rd, 2019

› Ecology and society: frontiers and boundaries

› Wine tasting

Day 2: June 4th, 2019

› Field trip to the Ciron Valley and vineyard

Day 3: June 5th, 2019

› Issues in fisheries (law, economics and politics)

› Human and ecological migrations

Day 4: June 6th, 2019

› Pollutant transfers

› Atmospheric frontiers

› Guided tour of Bordeaux city center

Day 5: June 7th, 2019

› Global changes, local changes

› Student work reports

**Program may be subject to change.*

A panel of experts

› E. Augeraud Véron: *Professor of economics, University of Bordeaux, France*

› J. Behagel: *Assistant Professor, Wageningen University, Netherlands*

› H. Budzinski: *Research Director, National Center for Scientific Research (CNRS) - COTE Cluster of Excellence co-director, France*

› C. Carter: *Research Director in political science, IRSTEA Bordeaux, France*

› J. Dachary-Bernard: *Senior Researcher, National Institute for Environmental and Agricultural Science and Research (IRSTEA) Bordeaux, France*

› M.-H. Dévier: *Associate Professor, University of Bordeaux, France*

› I. Garcia de Cortazar-Atauri: *Research Engineer, National Institute of Agricultural Research (INRA) Avignon, France*

› P. Leroy: *Professor, Nijmegen School of Management, Radboud University, Netherlands*

› B. Oliveira: *Facilitator, Ecosynergy, Netherlands*

› P. Ozer: *Professor of environmental sciences, University of Liège, Belgium*

› C. Schoemaecker: *Senior Researcher, CNRS, Lille, France*

› E. Villenave: *Professor of atmospheric chemistry, University of Bordeaux, COTE Cluster of Excellence education Deputy Director, France*

› I. Zhuravleva: *Mapping Lab Head at Greenpeace, Russia*

WHY BORDEAUX?

The COTE Summer School, part of an official Cluster of Excellence (LabEx - Laboratory of Excellence), proposes an interdisciplinary program. The panel of experts are all engaged in projects that unite various research units dedicated to different environmental topics. The Bordeaux region is a mix of aquatic ecosystems, forests, agrosystems and urban zones, making it an ideal spot to identify interactions and flux between ecosystems.

Previous editions!

› **2013**: Global ecology for global change

› **2014**: Transfers and interactions between ecosystems

› **2015**: Ecology and society: Biodiversity and global change

› **2016**: Ecology and global change

› **2017**: Weak signals and emerging issues in ecological transition

› **2018**: Interactions between ecosystems and rural-urban fringes

Practical information

Dates: June 3rd – June 7th, 2019.
N° participants: 30
Language: classes are conducted in English.
Location: classes take place on the outskirts of Bordeaux. Shuttle buses between the town center and the host location will be available on the Monday morning and Friday evening.

Participant profile: the course is designed for graduate students who are currently completing a PhD in environmental sciences.
Applications: to be completed online via our website: **cotesummerschool.u-bordeaux.fr/registration**
A CV, cover letter, and a short letter of support from one's supervisor will be necessary.
Deadline: March 31st, 2019. Selected participants will be notified by mid-April.

Participation fee: free of charge. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.
Grants: a limited number of mobility grants will be awarded by the COTE Cluster of Excellence for students in need upon demand. To apply for a mobility grant, a letter justifying the request will also be necessary.

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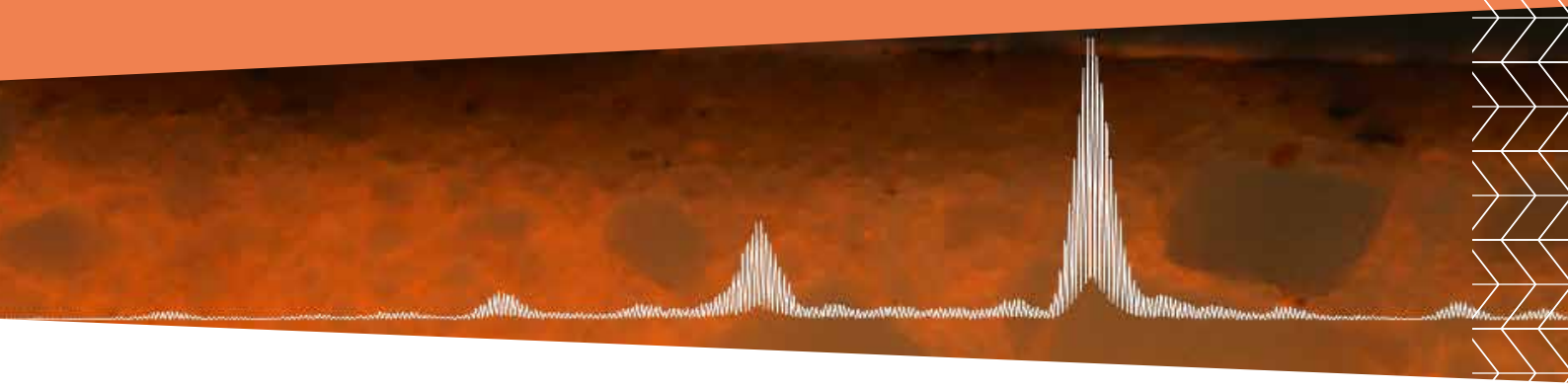
More information:
cotesummerschool.u-bordeaux.fr/en

Summer School

Advanced mass spectrometry applied to cultural heritage

June 17th – June 21st, 2019



In a nutshell...

This summer school is an innovative and inter/multi-disciplinary training based on advanced mass spectrometry to decipher the complexity of cultural heritage material, i.e. artworks, archaeological and palaeological materials, *via* their organic macromolecular signatures uncoding (proteins, lipids, polysaccharides).

This five-day course combines lectures and hands-on workshops in sample preparation, current mainstream mass spectrometry techniques and their most recent improvements, omics, and bioinformatics, all within the framework of cultural heritage. The school is open to graduate students, doctoral students, post-doctoral researchers, academics and private actors in analytical and heritage sciences.

Expertise upon completion

This summer school offers a unique opportunity to develop strong knowledge in advanced mass spectrometry within a inter and multidisciplinary program which links analytical chemists, physicists, chemists, experts in formulation, computational modeling experts, conservators, restorers and archaeologists.

A certificate of participation will be awarded to students upon completion of the course.

› *Program**

Day 1: June 17th, 2019

› Participant arrival and welcome

› Plenary speakers and lectures on sample preparation for art, archaeological and palaeological samples (video-based)

› Welcome cocktail - introduction and presentations from the attendees

Day 2: June 18th, 2019

› Bottom-up and top-down proteomics lectures

› Portable and minimally invasive methods for protein analysis

› Evening poster session and flash presentations

Day 3: June 19th, 2019

› Lipids and polysaccharides using MS

› Mass spectrometry imaging

Day 4: June 20th, 2019

› Cross-linkings, interactions, chemical changes and molecular breakdowns

› Bioinformatics: current tools and new developments

Day 5: June 21st, 2019

› **Advanced Mass Spectrometry in Cultural Heritage Symposium** (open to external attendees)

› Gala dinner

*Lectures and practical sessions cover sample preparation, bottom-up and top-down proteomics (MALDI-based and LC MS/MS), MS imaging, lipid and polysaccharide analysis, data treatment - bioinformatics).

Two training levels are proposed: initiation versus advanced training.

Why Bordeaux?

Benefiting from a rich cultural and historical environment, Bordeaux and the region of Nouvelle Aquitaine promote the development of a strong scientific network in the field of cultural heritage. The city and region are now internationally recognized as a hot spot grouping influent experts in art, archaeology, palaeontology and analytics (e.g. LaScArBx Cluster of Excellence).

International initiatives such as JPI-JHEP LeadArt, ETN TEMPERA or CNRS LIA ARCHE, have already succesfully demonstrated how mass spectrometry, with innovative analytical solutions and developments, is the keystone in the field of cultural heritage. By providing molecular and structural evidences, it connects a broad range of complementary disciplines.

Strengthened by the development policy of the University of Bordeaux and supported by an exceptional international network of experts who pioneer these disciplines, the organization of this Advanced mass spectrometry applied to cultural heritage Summer School will promote high-level technical training for students and favorably contribute to national and international scientific crossfertilization.

Beyond these gains, such an event will drive cultural, societal and economic benefits on a local, national and international level.

A PANEL OF EXPERTS

Training will be delivered by a consortium of researchers who have pioneered this applied research and representatives from several of the most famous museums in the world.

› J. Arslanoglu: *The Metropolitan Museum of Art, New York, USA*

› L. Birolo: *University of Naples, Italy*

› I. Bonaduce: *University of Pisa, Italy*

› A. Brunelle: *Sorbonne University - National Center for Scientific Research (CNRS), Paris, France*

› E. Cappellini: *Natural History Museum of Denmark, University of Copenhagen, Denmark*

› M. Collins: *University of Cambridge, UK - Natural History Museum of Denmark, University of Copenhagen, Denmark*

› J. Cox: *Max Planck Institute, Germany*

› C. Kelstrup: *Novo Nordisk Foundation Center for Protein Research, Denmark*

› K. Keune: *Rijksmuseum, Amsterdam, Netherlands*

› C. Tokarski: *University of Bordeaux - CNRS, France*

› K. J. van den Berg: *Cultural Heritage Agency of the Netherlands, Amsterdam, Netherlands*

› P. Walter: *Sorbonne University - CNRS, Paris, France*

Practical information

Dates: June 17th – June 21st, 2019.
N° participants: 30
Language: all courses and exchanges are conducted in English.
Location: classes take place on the Carreire campus of the University of Bordeaux.

Participant profile: the course is designed for doctoral students, post-doctoral researchers, academics and researchers in private companies focusing on analytical and heritage sciences; knowledge in mass spectrometry (fundamentals) is required.
Applications: a CV, cover letter including details of current / past projects and a letter of recommendation from one's supervisor will be necessary.
These documents must be submitted during the application process via the website: **bss-appliedchemistry.u-bordeaux.fr/en**
Deadline: May 30th, 2019.

Participation fee: please consult the dedicated website for more information concerning fees. Lodging costs and social activities will be covered for all participants. Travelling fees remain at the participants' expense.

TEMPERA

CULTURAL HERITAGE

université de BORDEAUX

cnrs

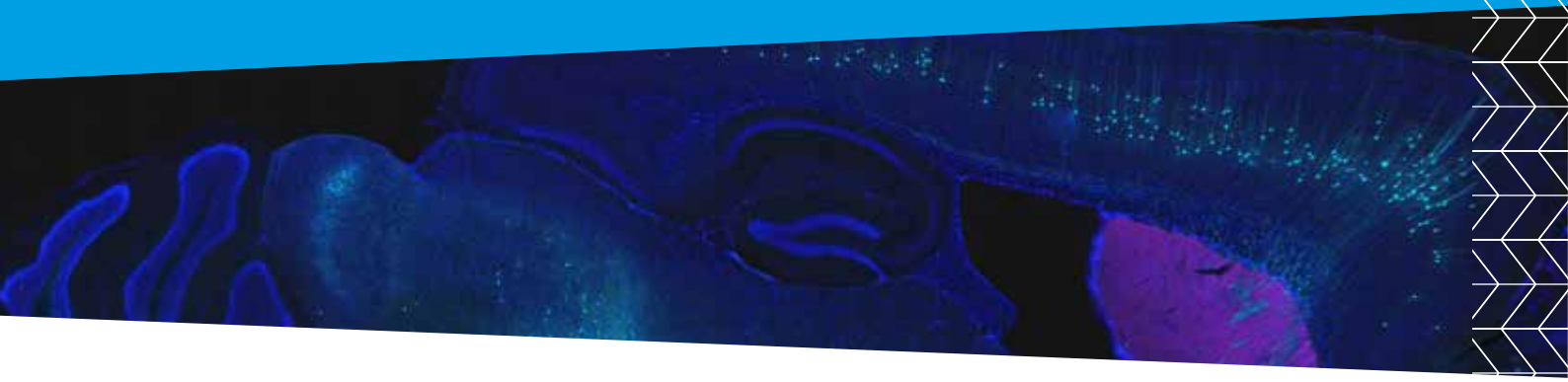
cbmn

More information:
bss-appliedchemistry.u-bordeaux.fr/en

Summer School

Biosensors and actuators for cellular and systems neuroscience

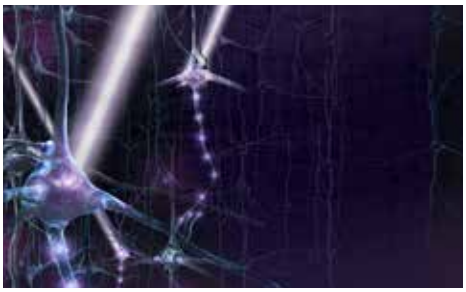
June 23rd – July 13th, 2019



In a nutshell...

This intensive course, within the framework of the CAJAL Advanced Neuroscience Training Program, is open to young researchers completing their doctorate or post doctoral fellowship.

Course content will provide participants with an in-depth understanding of the principles behind the design and application of optical techniques, and enable hands-on experience with optogenetic and chemogenetic actuators as well as with genetically encoded reporters of calcium, voltage, and metabolism.



› *Program*

Since the discovery of channelrhodopsins and their utilization as optogenetic tools, the field has vastly expanded over recent years.

Nowadays, the optogenetic toolbox has grown to an optogenetic "home depot" in which it is quite difficult to find your way around. More and more actuators and sensors are published.
However, often these tools won't behave as expected and sometimes show undesired side effects. A better understanding of the molecular machinery and the biophysical principles underlying the specific properties of a given optogenetic tool may help to circumvent any experimental limitations. Such knowledge allows experimental conditions to be better tailored to the properties of a given tool and enables the selection of appropriate actuators and sensors that meet the demands and limitations of the experimental system.

This course characterizes both excitatory and inhibitory optogenetic actuators in a simple experimental system. A better understanding of how these tools work will provide a solid background for appropriate experimental design and troubleshooting. Course content will focus on various biophysical properties such as spectral sensitivity, kinetics and the photocycle of selected tools, including unpublished ones. The combined use of optogenetic actuators for dual color manipulation of cellular activity and combination with optical sensors to achieve all-optical control and read-out of cellular function will also be explored.

Why Bordeaux?

The CAJAL Advanced Neuroscience Training Program selected the Bordeaux Neurocampus for its state-of-the-art training in neuroscience. The site benefits from the implementation of the Bordeaux School of Neuroscience and excellent neuroscience research teams within the University of Bordeaux.

The Bordeaux School of Neuroscience offers the international scientific community hands-on training with a modern technology laboratory where PhD students learn cutting edge techniques in neuroscience. It is also equipped for the organization of courses and has close connections with other technological platforms of the University of Bordeaux (Bordeaux Imaging Centre, OptoPath, Genome-Transcriptome facility of Bordeaux, etc.).

The CAJAL Advanced Neuroscience Training Program and the Bordeaux School of Neuroscience invites hundreds of students, researchers and renowned scientists from all over the world every year, thus further enriching the neuroscience community of the University of Bordeaux.

A panel of experts

Course Director:

› **O. Yizhar**: *Weizmann Institute of Science, Israel*

Co-Directors:

› **M. Lin**: *Stanford University, USA*

› **S. Pouvreau**: *Institute for Interdisciplinary Neuroscience (IINS), University of Bordeaux, France*

Keynote speakers:

› **H. Bito**: *University of Tokyo, Japan*

› **K. Deisseroth**: *Stanford University, USA*

› **S. Dieudonné**: *French National Institute of Health and Medical Research (Inserm) - Institut de Biologie de l'École Normale Supérieure (IBENS), France*

› **V. Emiliani**: *Paris Descartes University, France*

› **O. Griesbeck**: *Max Planck Institute of Neurobiology, Germany*

› **P. Hegemann**: *Humboldt University of Berlin, Germany*

› **T. Kash**: *University of North Carolina, USA*

› **T. Oertner**: *Hamburg Eppendorf University, Germany*

› **M. J. Schnitzer**: *Stanford University, USA*

› **S. Sternson**: *Janelia Research Campus, Howard Hughes Medical Institute (HHMI), USA*

› **R. Yasuda**: *Max Planck Florida Institute for Neuroscience, USA*

EXPERTISE UPON COMPLETION

Completing this project-based course designed by first-class neuroscientists will equip participants to better understand and use modern optogenetic technology in neuroscience research.

A certificate of participation will be awarded to students upon completion of the course.

"It was incredible to have access to so many state of the art techniques and have the opportunity to interact on a daily basis with experts on each technique. The course will definitely influence my future work and experimental design and I will not hesitate to get back in touch with people of the course – students, instructors or speakers – for help or advice. This is an outstanding opportunity and an incredible experience."

CAJAL Advanced Neuroscience Training Program
Participant from the 2017 program

Practical information

Dates: June 23rd – July 13th, 2019.
N° participants: 20
Language: classes are conducted in English.
Location: classes take place at the Bordeaux School of Neuroscience, University of Bordeaux - Carreire campus.

Participant profile: the course is designed for doctoral students and post-doctoral researchers.
Applications: to be completed online via the CAJAL Advanced Neuroscience Training Program website:
fens.org/Training/CAJAL-programme/CAJAL-courses-2019/BACSN-2019/Application-Form/
Deadline: March 4th, 2019.

Participation fee: 3,500€ per participant. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.
Grants: a limited number of grants are available upon demand. For more information or to apply, please consult our online application form.

CAJAL
Bordeaux Neurocampus Graduate Program

BORDEAUX SCHOOL OF NEUROSCIENCE

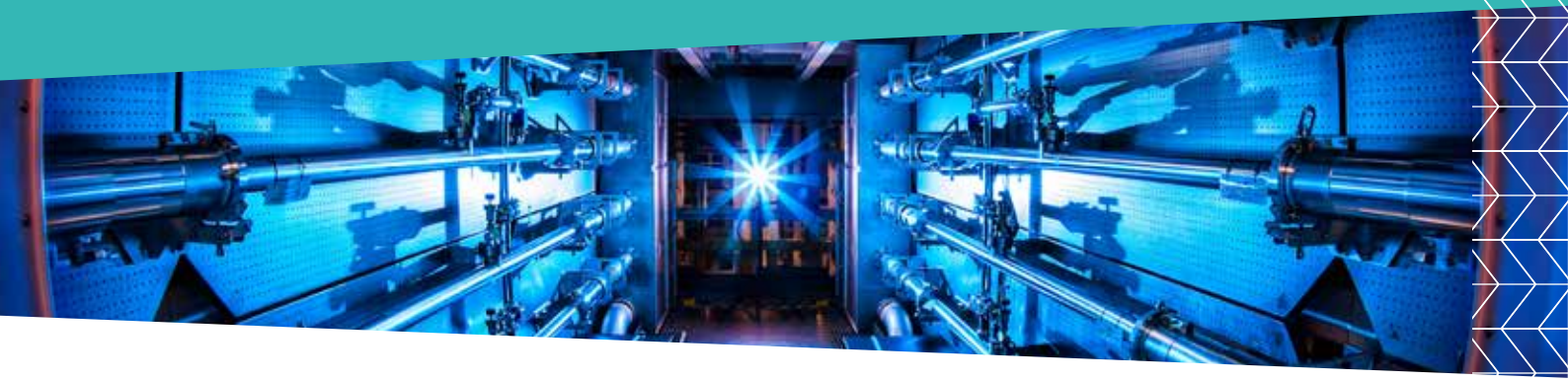
université de BORDEAUX

More information:
fens.org/Training/CAJAL-programme/

Summer School

Short-pulse lasers and applications

June 25th - June 28th, 2019



In a nutshell...

The recent development of the chirped pulse amplification technique in 1985 by Gérard Mourou and Donna Strickland (2018 Nobel Prize recipients), has permitted tremendous progress in available laser intensities, and paved the way to many new laser applications.

An up-to-date panorama of these latest developments and some of their selected uses will be explored during this summer school, "Short-pulse lasers and applications", organized by the University of Bordeaux Graduate School Program in Light Sciences and Technologies. Open to graduate students, doctoral students, post-doctoral researchers, engineers, industrials and professionals, the summer school introduces the physics of short pulse lasers and short pulse laser matter interaction.

During the week, participants will also visit the state-of-the-art University of Bordeaux laser training infrastructures, as well as the Megajoule Laser facility.

› *Program**

Day 1: June 25th, 2019

› Participant registration and welcome

› Introduction

› Physics of short pulse lasers

› Physics of laser-matter and laser plasma interaction

› Visit of the laser training facility

Day 2: June 26th, 2019

› Visit of the Megajoule Laser facility (LMJ)

› Inertial confinement fusion and laboratory astrophysics

Day 3: June 27th, 2019

› Applications of short pulse lasers at moderate intensities

› Practical sessions: SMILEI code to simulate laser plasma interaction

Day 4: June 28th, 2019

› New laser developments

› Secondary sources produced by laser-matter and laser-plasma interaction

Expertise upon completion

This summer school strongly encourages the pursuit of research projects between local and international participants with the objective of furthering progress in the domain of short pulse lasers and their applications.

A certificate of participation will be awarded to students upon completion of the course.

**Program may be subject to change.*

A panel of experts

Lecturers include top international researchers in the domains of short pulse lasers, laser matter and laser plasma interaction, secondary sources, and inertial confinement fusion.

› Prof. P. Antici: *National Research and Safety Institute for the Prevention of Occupational Accidents and Diseases (INRS), Canada*

› Dr. P. Balcou: *National Center for Scientific Research (CNRS), Center for Intense Lasers and Applications (CELIA), France*

› Prof. D. Batani: *University of Bordeaux, CELIA, France*

› Dr. V. Blanchet: *CNRS, CELIA, France*

› Dr. F. Burgy: *CNRS, CELIA, France*

› Prof. L. Canioni: *University of Bordeaux, CELIA, France*

› Prof. E. Cormier: *University of Bordeaux, CELIA, France*

› Dr. G. Duchateau: *French Alternative Energies and Atomic Energy Commission (CEA), CELIA, France*

› Dr. F. Hannachi: *CNRS, Centre d'Etudes Nucléaires at Bordeaux-Gradignan (CENBG), France*

› Prof. P. Korneev: *National Research Nuclear University, Russia*

› Dr. D. Penninckx: *CEA, France*

› Dr. X. Ribeyre: *CEA, CELIA, France*

› Prof. J. Santos: *University of Bordeaux, CELIA, France*

› S. Skupin: *CNRS, Institute of Light and Matter (ILM), France*

› Prof. V. Tikhonchuk: *University of Bordeaux, CELIA, France and ELI-Beamlines, Czech Republic*

› Dr. L. Volpe: *University of Salamanca, Spanish Center for Pulsed Lasers (CLPU), Spain*

WHY BORDEAUX?

The University of Bordeaux has a long history in lasers, photonics and light bio-imaging, and is renowned as a top French university in these fields. In 2012, the Institute of Optics Graduate School (IOGS), one of the major engineering schools in Europe, opened a branch in Bordeaux, thus further strengthening local expertise within this domain. The same year, research in light sciences and technologies at the University of Bordeaux was boosted by the creation of three clusters of excellence: LAPHIA (Laser and Photonics in Aquitaine), BRAIN (Bordeaux Region Aquitaine Initiative for Neuroscience), and AMADEus (Advanced MAterials by Design).

The interdisciplinary Graduate School Program in Light Sciences and Technologies opened in September 2018. It focuses on three domains of excellence of the University of Bordeaux: light generation, manipulation and detection; extreme regimes of light and light imaging and biophotonics. Its main goal is to generate new knowledge and train a skilled workforce through a research-based, innovative, interdisciplinary and international education.

Practical information

Dates: June 25th – June 28th, 2019.
N° participants: 30
Language: classes are conducted in English.
Location: lectures and practical sessions take place on the Talence campus of the University of Bordeaux.

Participant profile: the course is designed for graduate students, doctoral students, engineers, industrials and researchers with an interest in short pulse lasers and their applications.
Applications: to be completed online via our website: **bss-light.u-bordeaux.fr/en**
A CV, cover letter, and a short letter of support from one's supervisor will be necessary. This specialty requires a good knowledge of mathematics, optics, electrodynamics, experimental physics and basics of quantum mechanics**.**
Deadline: May 1st, 2019.

Participation fee: 600€ per participant. Lodging and partial boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.
Grants: a limited number of grants will be awarded to participants in need upon demand, covering all or part of the participation fee.

Light Sciences and Technologies Graduate Program

université de BORDEAUX

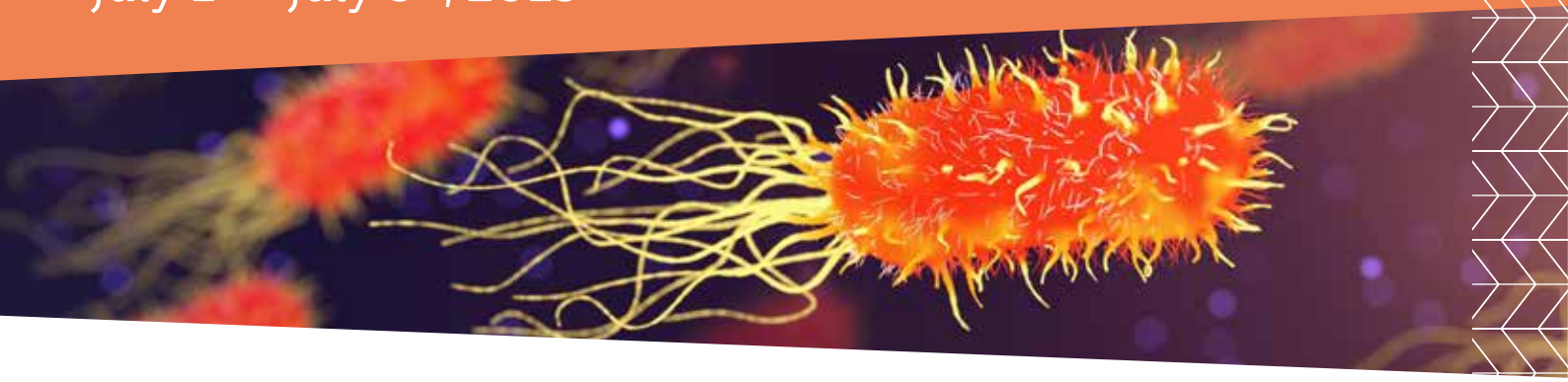
More information:

bss-light.u-bordeaux.fr/en

Summer School

Microbiota, symbiosis and individuality: conceptual and philosophical issues

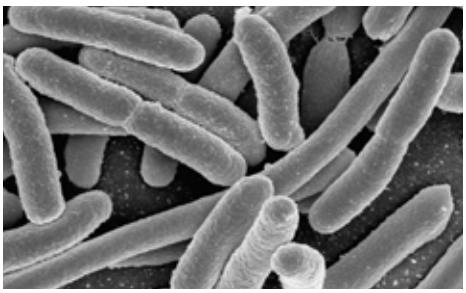
July 1st – July 5th, 2019



In a nutshell...

This interdisciplinary summer school is open to graduate students, doctoral students and post-doctoral researchers from the fields of philosophy, biology, or medicine. Participants will learn and debate how the microbiome shapes the development, health and behavior of the host, and how this changes the definition of individuality.

Internationally renowned philosophers of science as well as scientists from the fields of immunology, developmental biology and the microbiome will present their research, and be available for discussions with participants throughout the entire course.



Expertise upon completion

This summer school is a unique opportunity to develop **new interdisciplinary approaches** that will help participants throughout their career. Course content will not only focus on microbiota, symbiosis and individuality, but will also allow participants to gain new perspectives on their own research subjects.

A certificate of participation will be awarded to students upon completion of the course.

› *Program**

Day 1: July 1st, 2019

› Participant arrival and welcome

› First work session

Day 2: July 2nd, 2019

› Plenary lecture followed by discussion

› Working groups

› Presentation of results followed by discussion

Day 3: July 3rd, 2019

› Plenary lecture followed by discussion

› Working groups

› Presentation of results followed by discussion

Day 4: July 4th, 2019

› Plenary lecture followed by discussion

› Working groups

› Presentation of results followed by discussion

Day 5: July 5th, 2019

› Final work session

› Closing remarks

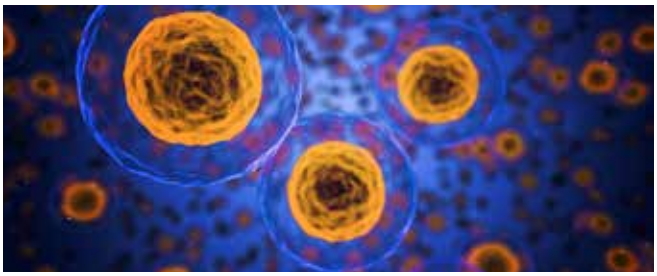
**Program may be subject to change.*

Why Bordeaux?

Bordeaux is fast becoming an international hotspot for the emerging field of "philosophy of science". This unique interdisciplinary topic is central to the PhilInBioMed network, of which the University of Bordeaux is an active associate.

Created in 2017, the PhilInBioMed network counts philosophers, biologists and medical doctors amongst its members, and has organized more than 60 seminars, 20 workshops, and 6 conferences. In November 2018, the University of Bordeaux hosted the first international meeting of the network, thus affirming its leading position in this domain.

Other associate institutions of the PhilInBioMed network include Arizona State University (USA), the University of Sydney (Australia), the University of Cambridge (UK) and the University of Exeter (UK).



A PANEL OF EXPERTS

Plenary speakers include internationally recognized experts from the fields of immunology, developmental biology, neurosciences, the microbiome and philosophy of science.

› Y. Belkaid: *Senior investigator, National Institutes of Health (NIH), USA*

› S. Gilbert: *Senior Research Associate, Swarthmore College, USA*

› R. Knight: *Professor, University of California San Diego, USA*

› J.-P. Konsman: *Researcher, University of Bordeaux - National Center for Scientific Research (CNRS), France*

› S. Okasha: *Professor, University of Bristol, England*

› T. Pradeu: *Senior investigator, University of Bordeaux - CNRS, France*

Practical information

Dates: July 1st – July 5th, 2019.
N° participants: 20
Language: classes are conducted in English.
Location: classes take place in the seaside town of Biarritz.

Participant profile: the course is designed for graduate students, doctoral students and post doctoral fellows with an interest in studying conceptual questions regarding microbiota, symbiosis and individuality. Prerequisites in philosophy of science, biology and medicine are welcome.
Applications: participants must send a short CV as well as a detailed abstract (1500 words) of their project to:
erc-idem@immuconcept.org
Deadline: March 7th, 2019.

Participation fee: 250€ per participant. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.
Grants: a limited amount of grants may be awarded to participants in need upon demand. In some cases, providing that participants have no other means of funding, financial support for travel may also be granted. To apply for an exemption or financial support, participants must send a cover letter along with their application, detailing why they would like to participate and justifying their request.

More information:
bss-msi.u-bordeaux.fr/en

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Summer School

Cardiac electrophysiology

July 8th – July 12th, 2019

In a nutshell...

This summer school, dedicated to fundamental cardiac electrophysiology, is open to international science and medical students as well as to more experienced researchers wishing to improve their background knowledge.

During the five day session, this course offers intensive practical sessions concerning the technological aspects of cardiac electrophysiology, from the molecular and cellular levels to *in vivo* animal and patient experiments.

This summer school is a unique opportunity for participants to meet and engage with leading international experts and build their professional and academic networks. Participants will also discover and use cutting-edge technologies and equipment.

Upon completion of the course

Students will be awarded a certificate of participation.

› *Program**

Day 1: July 8th, 2019

› Participant registration and welcome
› Introduction to cardiac anatomy
› Introduction to cardiac electrophysiology

- › Biophysics of the cardiac cell membrane
- › Cardiac action potential and excitation-contraction coupling
- › Conduction disturbances and arrhythmia mechanism

Day 2: July 9th, 2019

› Cardiac neuromodulation
› Cardiac hemodynamics
› Mathematical modeling and simulations

Day 3: July 10th, 2019

› Experimental methods in cardiac electrophysiology: from single cell to the entire heart

- › The patch-clamp technique
- › Microspectrofluorimetry and confocal microscopy
- › Optical mapping of cardiac electrical activity
- › Working heart model and evaluation of cardiac bio-energetics

› Animal models in cardiac electrophysiology
› Practical session

Day 4: July 11th, 2019

› Basics in signal processing for cardiac mapping

- › Basics in signal processing for cardiac mapping (signal processing techniques, non-invasive cardiac mapping, algorithms)
- › Devices and systems (navigation system for catheter tracking, catheter design, ablation energies)

› Practical session

Day 5: July 12th, 2019

› Imaging in cardiac electrophysiology

- › Experimental imaging (computational approaches, MRI methods, real time MR guidance of catheter ablation, high resolution multi-contrast cardiac imaging, micro-CT)
- › Clinical imaging (cardiac imaging techniques, imaging in patients)

› Practical session

**Program may be subject to change.*

A panel of experts

Lecturers will include top clinicians and researchers from different areas of cardiac electrophysiology.

› Prof. P. Bordachar: *Teaching Director of the Electrophysiology and Heart Modeling Institute (Liryc) – Professor – Clinician, Bordeaux University Hospital, University of Bordeaux, France*

› D. Benoist: *Researcher, University of Bordeaux - Liryc, France*

› Prof. O. Bernus: *Scientific Director, Liryc – Professor - Researcher, University of Bordeaux - Liryc, France*

› F. Brette: *Researcher, University of Bordeaux - Liryc, France*

› Prof. P.-S. Chen: *Professor - Editor-in-Chief HeartRhythm, Indiana University, USA*

› Prof. H. Cochet: *Clinician, Bordeaux University Hospital, University of Bordeaux, France*

› R. Coronel: *Associate Professor – Researcher, Academic Medical Center Amsterdam, Netherlands*

› Dr. J. Duchateau: *Clinician, Bordeaux University Hospital, University of Bordeaux, France*

› R. Dubois: *Director of Innovation, Liryc - Associate Professor – Researcher, University of Bordeaux, France*

› Prof. J. Lumens: *Clinician, CARIM University of Maastricht, Netherlands*

› M. Potse: *Researcher, University of Bordeaux - Liryc, France*

› B. Quesson: *Research Director – Engineer, University of Bordeaux - Liryc, France*

› R. Walton: *Researcher, University of Bordeaux - Liryc, France*

› Prof. E. White: *Associate Professor – Researcher, University of Leeds, UK*

WHY BORDEAUX?

Bordeaux boasts a long tradition of excellence in cardiovascular medicine, in particular with the creation of Liryc - an electrophysiology and heart modeling institute, led by Prof. Michel Haissaguerre.

Liryc is a research, treatment, innovation and teaching institute. It is a hub of scientific expertise and collaborates closely with world leading clinical teams.

Offering unique technology platforms with state-of-the-art equipment, the multidisciplinary teams at Liryc invent diagnostic tools, medical devices and future therapies.

Major scientific progress in atrial and ventricular fibrillation as well as cardiac resynchronization has been achieved by the institute. This has led to the development of therapeutic applications now used throughout the world.

In its mission to disseminate knowledge gained from research, Liryc is committed to university training in cardiac electrophysiology in collaboration with the University of Bordeaux.

This summer school is designed to promote successful research collaboration between Liryc and young researchers, and to boost networking activities for young scientists in Europe."

Prof. Pierre Bordachar, Teaching Director of Liryc

Practical information

Dates: July 8th – July 12th, 2019.
N° participants: 30
Language: classes are conducted in English.
Location: classes take place at LIRYC – Electrophysiology and Heart Modeling Institute – Avenue du Haut Lévêque, 33600 Pessac, France.

Participant profile: the course is tailored to Master and PhD science and medical students, as well as to more experienced researchers wishing to improve their background in the field of cardiac electrophysiology.
Applications: to be completed online via our website: **bss-cardiology.u-bordeaux.fr/en**
A CV and cover letter will be necessary.
Deadline: June 7th, 2019.

Participation fee: 800€ per participant. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.
Grants: a limited number of mobility grants will be awarded by Liryc for students in need upon demand. To apply for a grant, a letter justifying the request will also be necessary.

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More information:
bss-cardiology.u-bordeaux.fr/en

Summer School

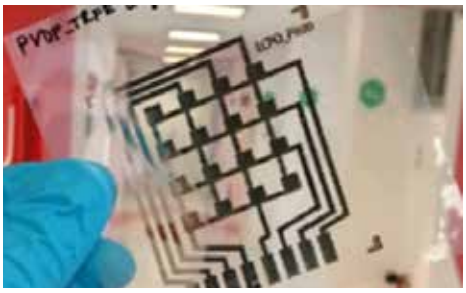
Organic electronics

July 8th – July 11th, 2019

In a nutshell...

This summer school offers a high level of training to meet the diverse needs of researchers in various fields such as chemistry, physics, engineering and electronics.

Highly-skilled, international lecturers will share their expertise in foundational basics to state-of-the-art technologies in formulation, processing, perovskite solar cells, ferroelectrics, printed electronics and sensors.



› *Program**

Day 1: July 8th, 2019

› Participant registration and welcome

› Lectures and practical sessions

› Welcome dinner

Day 2: July 9th, 2019

› Lectures and practical sessions

› Free evening to explore the city of Bordeaux

Day 3: July 10th, 2019

› Practical session - *ELORPrintTec Facility, Bordeaux*

› Free afternoon to explore the city of Bordeaux

› Wine tasting and Gala dinner

Day 4: July 11th, 2019

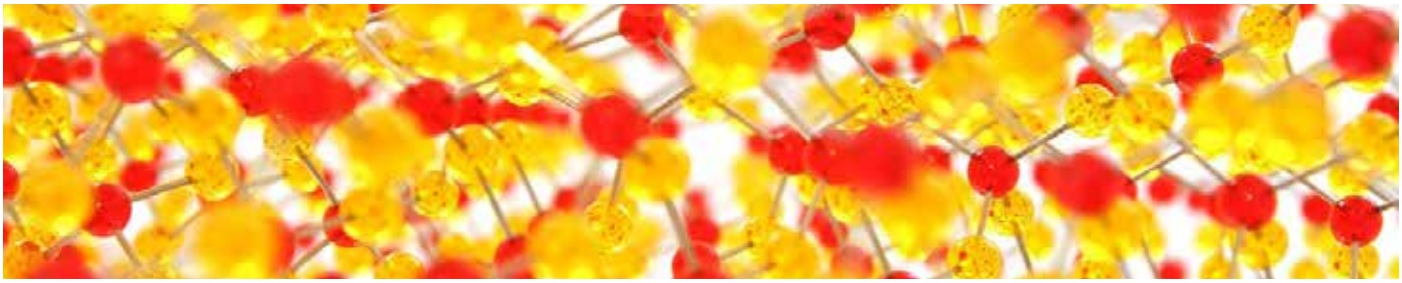
› Lectures and practical sessions

Expertise upon completion

Participants will gain expertise in the fields of formulation, perovskites, ferroelectrics, printed electronics and sensors. In addition to these topics, the practical work session in the ELORPrintTec facility will contribute to a unique and outstanding summer school experience.

A certificate of participation will be awarded to students upon completion of the course.

**Program may be subject to change.*



A panel of experts

Lecturers include highly-skilled, international and local researchers and leaders in the field of organic electronics.

› S. Berson: *Director of the Organic Photovoltaic Modules Laboratory Atomic, Energy and Alternative Energies Commission (CEA), Grenoble, France*

› E. Cloutet: *Researcher, University of Bordeaux, France*

› F. Domingues Dos Santos: *Scientific Director, Piezotech-Arkema, France*

› P. Guichard: *Design and Development Director, Armor, France*

› H. Kellay: *Professor, University of Bordeaux, France*

› M. Maglione: *Director of the Institute for Solid State Chemistry Bordeaux (ICMCB), University of Bordeaux, France*

› H. Segawa: *Professor, University of Tokyo, Japan*

› T. Someya: *Professor, University of Tokyo, Japan*

› N. Stingelin: *Professor, Georgia Institute of Technology, USA - University of Bordeaux, France*

WHY BORDEAUX?

The Nouvelle-Aquitaine region has become a major player in the emerging field of organic electronics over the past ten years. The University of Bordeaux has contributed to this development with the establishment of a strong scientific core for this new cluster.

The field of organic electronics has now reached a critical mass within the campus of the University of Bordeaux. With its state-of-the-art infrastructure, as well as the combined potential and size of its professional and student population, the University of Bordeaux is well on its way to becoming a world leader in terms of training for the next generation, inspiring future evolutions in the industry of organic electronics and nanotechnology.

Previous editions!

The fourth edition of this summer school is based on the success of three previous courses organized in Biarritz (2013 and 2015) and in Cadillac (2017), each gathering between 40 and 50 international attendees passionate about the emerging field of organic electronics.

Practical information

Dates: July 8th – July 11th, 2019.
N° participants: 40
Language: classes are conducted in English.
Location: lectures and practical sessions take place on the Pessac Campus of the University of Bordeaux.

Participant profile: the course is designed for young researchers, senior scientists and industrial engineers who are interested in the most recent developments in the field of organic electronics.
Applications: to be completed online via our website: **oess.u-bordeaux.fr/en/Registration**
Deadline: June 21st, 2019.

Participation fee: 300€ for students from institutions other than the University of Bordeaux; 500€ for academic attendees (including professors and post-doctoral researchers); 800€ for industrial professionals. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.

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More information:
oess.u-bordeaux.fr/en

Summer School

Africa 2030

Multidisciplinary research approaches to challenges in health, demographics, economics and policies

July 9th – July 11th, 2019

In a nutshell...

This summer school is open to graduate and doctoral students as well as professionals interested in the topic of development in Africa. It provides participants with a critical and complementary analysis of the major challenges that have affected the African continent over the past 20 years as well as the challenges for the next ten years and that concern the fields of health, demographics, economics and policies.
The program offers a variety of learning experiences including:

› Expert interventions on major development issues in Africa over the next ten years;

› Multi- and interdisciplinary debates on diverse policy and development sectors (health, land, food security, urban governance, technology, climate and environment, etc.);

› Collaboration within a multidisciplinary group on a multidisciplinary project (health, demographics, economics, political approaches) that addresses a key topic for Africa 2030.

› *Program**

Day 1: July 9th, 2019

› Participant arrival and welcome breakfast

› Creation of working groups and identification of project themes per group

› Global health challenges for Africa 2030 - *Prof. D. Ekouevi*

› Structural change: sectoral transformation of African economies since the 2000's - *Dr. E. Rougier*

› Elections and democratization in Africa: the role(s) of the diaspora - *Dr. E. Smith*

› Urbanization, transport, pollution - *Prof. A. Meunié*

› Lung health and air pollution in Africa 2030 - *Prof. C. Raherison-Semjen*

› Tutored group work session

› Dinner

Day 2: July 10th, 2019

› Food: how the 2008 surge in international cereal prices has affected food policies in African countries - *Prof. T. Bernard*

› From malnutrition to obesity and diabetes - nutritional perspectives for Africa 2030

› Policymaking, public administration and international aid in Africa - *Dr. R. Nakanabo Diallo*

› Risk analysis and scenarios - *Les Afriques dans le Monde*

› Indicators, data sources and measurement strategies - *Prof. T. Bernard, Dr. C. Buire, Dr. O. Marcy*

› Implementation research and science - *Dr. J. Orne-Gliemann*

› Tutored group work session

Day 3: July 11th, 2019

› Demographic trends and internal/international migrations

› Social justice and the production of urban space - *Dr. C. Buire*

› Health systems and universal health coverage in Africa 2030 - *Dr. E. Paul*

› Tutored group work session

› Oral presentation of multidisciplinary projects and discussion

› Climate change and organization of international research: how will the next 20 years differ from the last 20? - *Dr. X. Anglaret*

**Program may be subject to change.*

A panel of experts*

Lecturers include renowned French researchers and international experts from associated fields of public health, economics and social sciences.

› Dr. X. Anglaret: *Senior researcher, head of the "Infectious diseases in lower income countries" team, University of Bordeaux - UMR 1219 French National Institute of Health and Medical Research (Inserm), France*

› Prof. T. Bernard: *Professor, University of Bordeaux, France*

› Dr. C. Buire: *Researcher, National Center for Scientific Research (CNRS) - Les Afriques dans le Monde (LAM) - Sciences Po Bordeaux, France*

› Prof. D. Ekouevi: *Professor, University of Lomé, University of Bordeaux - UMR 1219, France*

› Dr. O. Marcy: *Project director and Coordinating investigator of TB-Speed, University of Bordeaux, France*

› Prof. A. Meunié: *Professor, Theoretical and Applied Economics Research Group (GREThA), University of Bordeaux, France*

› Dr. R. Nakanabo Diallo: *Researcher, LAM - Sciences Po Bordeaux, France*

› Dr. J. Orne-Gliemann: *Researcher, University of Bordeaux - UMR 1219, France*

› Dr. E. Paul: *Researcher, University of Liege, Belgium*

› Prof. C. Raherison-Semjen: *Pneumonologist, Bordeaux University Hospital - University of Bordeaux, Epidemiology of cancer and environmental exposures (Epicene), UMR 1219, France*

› Dr. E. Rougier: *Senior lecturer, University of Bordeaux, France*

› Dr. E. Smith: *Researcher, LAM - Sciences Po Bordeaux, France*

**To be confirmed.*

Expertise upon completion

Participants will have access to the most recent data and knowledge, as well as fresh insights into public policy processes in African contexts. They will also have the opportunity to interact and connect with the experts, researchers and professors present.

A certificate of participation will be awarded to students upon completion of the course.

WHY BORDEAUX?

Since 1959, the field of African studies has been a focus of the University of Bordeaux. Over the years, a number of research centers, Master and PhD diplomas as well as leading research programs have been developed in association with exceptional research teams. A variety of education facilities exist covering the domains of: public health and epidemiology analysis (Bordeaux School of Public Health - ISPED, Bordeaux Population Health Centre - IDLIC team), economics (Theoretical and Applied Economics Research Group - GREThA), political science, geography and anthropology (*Les Afriques dans le Monde* - LAM). This unique association of academic facilities makes the Bordeaux African studies community one of Europe's main research centers dedicated to the topic.

Bordeaux's African studies community is closely related to the main European networks including AEGIS/ECAS in the field of social sciences and public health, and is also a core supporter of the French review "*Politique africaine*".

Practical information

Dates: July 9th – July 11th, 2019.
N° participants: 20
Language: lectures are conducted in English. Discussions and group work will be in both French and English. Candidates should have a B2 level of English or equivalent.
Location: lectures and practical sessions take place on the Talence campus of the University of Bordeaux.

Participant profile: the course is designed for graduate and doctoral students, as well as professionals with an interest in African studies and societies, who wish to increase their knowledge and improve their methodological skills.
Applications: to be completed online via our website: **bss-africanstudies.u-bordeaux.fr/en**
A CV and cover letter will be necessary.

Participation fee: 360€ per participant. Lodging and boarding costs will be covered for all participants. Travelling fees remain at the participants' expense.

GREThA · LAM Les Afriques dans le monde · Sciences Po Bordeaux

université de BORDEAUX / ISPED Institut de Santé Publique d'Epidémiologie et de Développement

IDLIC / Infectious diseases in lower-income countries

More information:
bss-africanstudies.u-bordeaux.fr/en

Mai 2019 - réalisation : direction des relations internationales université de Bordeaux - crédit photos : université de Bordeaux

Summer School

Advanced materials for energy storage and conversion

This summer school has been postponed until 2020

In a nutshell...

Research in the field of renewable energies has greatly intensified due to reducing fossil energy resources and an increase in greenhouse gas concentration (in particular carbon dioxide).

Throughout this summer school, the problems linked to collecting renewable energies (photovoltaic, wind, etc.), transforming them (producing hydrogen, etc.) and storing them (supercapacitors, batteries, etc.) will be analyzed.

Issues related to the systems needing to be implemented will also be covered.

Expertise upon completion

This summer school will train future leaders in the field of energy materials for energy conversion and storage. Practical laboratory sessions as well as a capstone will be organized, thus complementing theoretical sessions.
The presence of industrial stakeholders will allow participants to benefit from a practical and engineering science-based approach to teaching.

A certificate of participation will be awarded to students upon completion of the course.

› *Program**

Day 1

› Opening session

› Batteries and supercapacitors

› The capstone expectation - installing a renewable energy system on an unusual or "hostile" site

› Dinner

Day 2

› Fuel cell and hydrogen storage and production

› Practical session and laboratory visit

› Capstone brainstorming session

› Dinner and group work

Day 3

› Renewable energies (photovoltaics, wind turbines, etc.)

› Industrial visits

› Visit of Bordeaux city center and the Luchey Halde vineyards

› Dinner and group work

Day 4

› Integrated systems for new energy sources

› Practical session and laboratory visit

› Capstone brainstorming session

› Dinner

Day 5

› Round table discussion with industrial stakeholders about the future of "new green energy"

› Capstone presentations - visions of new energy integration

› Closing session and remarks

› Award ceremony for the top capstone presentation

**Program may be subject to change.*

A panel of experts*

› B. Dunn: *University of California Los Angeles, USA*

› O. Joubert: *University of Nantes - Institute of Materials by Jean Rouxel (IMN), National Center for Scientific Research (CNRS), Nantes, France*

› D. Larcher: *Laboratoire de Réactivité et Chimie des Solides (LRCS), Amiens, France*

› S. Lascaud: *EDF Store & Forecast, France*

› M. Latroche: *Institut de Chimie et des Matériaux Paris-Est (ICMPE), CNRS, Thiais, France*

› H. Snaith: *University of Oxford, UK*

› J.-M. Tarascon: *Collège de France, Solid state chemistry-energy laboratory, Paris, France*

› U. Würfel: *Fraunhofer Institute for Solar Energy Systems (ISE), Germany*

Local committee:

› J.-L. Battaglia: *University of Bordeaux - Institut de Mécanique et d'Ingénierie (I2M), CNRS, France*

› J.-L. Bobet: *University of Bordeaux - Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), CNRS, France*

› L. Croguennec: *University of Bordeaux - Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), CNRS, France*

› E. Cloutet: University of Bordeaux - Laboratoire de Chimie des Polymères Organiques (LCPO), CNRS, France

› L. Hirsch: *University of Bordeaux - Integration: from Material to Systems laboratory (IMS), CNRS, France*

› M. Maglione: *University of Bordeaux - Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), CNRS, France*

› A. Rougier: *University of Bordeaux - Institut de Chimie de la Matière Condensée de Bordeaux (ICMCB), CNRS, France*

› T. Toupance: *University of Bordeaux - Institute of Molecular Sciences (ISM), CNRS, France*

**To be confirmed.*

WHY BORDEAUX?

Research in Bordeaux within the field of materials for energy is highly active, with more than 400 publications per year since the early 2000's.

At the University of Bordeaux, over 200 researchers are involved in the field, thus guaranteeing a high level of research-intensive training for students.

Bordeaux's added value lies in the existence of recognized laboratories dedicated to the domain of materials for energy storage and conversion (batteries, solar cell, fuel cells, hydrogen, smart grids, etc.), each with their specificities and their complementary expertise.

The University of Bordeaux's Master program in advanced materials, its active role in national and European research networks dedicated to energy storage and conversion, as well as the regular organization of leading international conferences (such as the LiBD conference) are testimony to our internationally recognized expertise.

The renowned academic excellence on site (H2020, ERC, IUF, etc.) along with strong industrialcollaborations (numerous patents, licenses, start-ups, common laboratories, etc.) makes Bordeaux the ideal place to study advanced materials for energy storage and conversion.

Finally, the consequent number of small and medium-sized enterprises dedicated to energy materials (largest solar farm in Europe, SAFT, Solvay, etc.) in the Nouvelle-Aquitaine region reinforce the industrial approach of this summer school.

Since the advent of the industrial era, energy has always been a subject of primary importance. It is therefore crucial for young researchers to grasp the latest developments in this sector."

Jean-Louis Bobet - Chairman of the Advanced materials for energy storage and conversion Summer School

Practical information

Dates: this summer school has been postponed until 2020.
N° participants: 30
Language: classes are conducted in English.
Location: lectures and practical sessions take place at the University of Bordeaux.

Participant profile: the course is designed for doctoral students and engineers.
Applications: to be completed online via our website: **bss-advancedmaterials.u-bordeaux.fr/en**

Participation fee: 800€ per participant.
Grants: a limited number of grants will be awarded to participants in need upon demand.

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More information:

bss-advancedmaterials.u-bordeaux.fr/en

Summer School

Robots and artificial intelligence: from motor-control to intelligent decisions

This summer school has been postponed until 2020

Get ready for the 2020 Robocup!

This summer school is a unique opportunity for participants to build their own 3-wheeled robot with raspberry pi and a camera, and even take it home!

Course content will allow participants to master the entire robot and artificial intelligence chain, from screwing components to deep learning for vision and higher level strategies.

The program also offers insights on the missing piece of artificial intelligence, and explains how to combine statistics and symbolic artificial intelligence.

During the course, participants will meet the triple Robocup world champions, Humanoïd Kid-Size, and discover their best practices in order to prepare their own team for the 2020 Robocup which will be taking place here in Bordeaux!

Expertise upon completion

Participants will have the opportunity to compete as teams in a challenging Robocup style event, and the winners will be rewarded with a special certificate for their achievements.

A certificate of participation will be awarded to all students upon completion of the course.

› *Program**

Day 1: How to build a robot?

› Practical session: build your robot and discover the application programming interface to pilot it

› Open lecture: discover the Robocup - rules and tricks

Day 2: Machine learning for understanding the world

› Practical session: allow your robot to see the world - handling your robots' vision and sensors

› Open lecture: symbolic *vs* statistical artificial intelligence

› Gala dinner in a vineyard

Day 3: Q-learning for your robot - strategies to explore the world

› Practical session: navigating a labyrinth

Day 4: Artificial intelligence tricks from the video game industry

› Practical session: set up your competition team and design your high-level strategies

› Open lecture: limitations of robots and artificial intelligence

Day 5: Higher level reasoning - making logical decisions

› Practical session: work on your robot team for the competition aided by specialists. This session, which takes place on the national "Festival of Music" day, will be accompanied by live music throughout the night!

› Open lecture: curiosity as a reward function

Day 6: Competition and results

› Robocup style event

› Awards ceremony

**Program may be subject to change.*

A panel of experts

This summer school is organized in collaboration with the Bordeaux INP FabLab, where the robots participating in the Robocup are built. Participants will exchange and learn from triple Robocup winners (Humanoid Kid-Size).

Lecturers present are international experts in their given fields: robots, machine learning, Q-learning for decision, symbolic artificial intelligence, etc.

All practical sessions involve the teaching assistants who have designed the robots and the application programming interface used throughout the summer school.

WHY BORDEAUX?

Bordeaux is renowned for its international expertise and excellence in the field of robots and artificial intelligence.

The organizing committee of this summer school (which includes the triple Robocup world champions in the kids-size soccer championship), along with the regions' strong industrial link with the Aquitaine Robotics cluster, makes Bordeaux the ideal place to learn about this cutting edge topic!

Practical information

Dates: September 16th – September 21nd, 2019. Participant arrival scheduled for September 15th, departure scheduled for September 21st after lunch.
N° participants: 20
Language: classes are conducted in English.
Location: lectures and practical sessions take place in Bordeaux.

Participant profile: the course is designed for doctoral students with an interest in robots and artificial intelligence.

Participation fee: 900€ per participant.
Grants: a limited number of registration grants will be awarded to students in need upon demand. To apply for a grant, please contact the organizers for more information.

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Bordeaux INP AQUITAINE

More information:

bss-informatics.u-bordeaux.fr/en

BORDEAUX:
THE PLACE TO **LIVE** AND **LEARN!**

BORDEAUX AND THE REGION OF NOUVELLE-AQUITAINE

Bordeaux, a city renowned for many good things: listed as part of the UNESCO World Heritage list, described as "an outstanding urban and architectural ensemble", classified as "City of Art and History" and last but not least, the wine capital of the world!

Home to over 360 historical monuments, Bordeaux is capital of the Nouvelle-Aquitaine region in south-west France, where over 10,000 wine-producing châteaux are situated. It is the largest region in France and thanks to its advantageous location and mild climate, Nouvelle-Aquitaine is renowned for its high quality of life.

Making the most of your stay!

Whilst you're here, be sure not to miss out on some of the city's "must sees", such as the water mirror, the opera house and the docks, to name but a few. Whether you be on foot, on your bike or taking the tram that serves the city center and suburbs, it's easy to get around and see for yourself just why people say that Bordeaux is the place to live and learn!

For more information about the Bordeaux Summer Schools, please contact:
summerschools@u-bordeaux.fr

University of Bordeaux
351 cours de la Libération, 33405 Talence Cedex, France
www.u-bordeaux.com

International Office
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The Initiative of Excellence aims to support the development of the University of Bordeaux as a world-class research university, and to reinforce the partnerships contributing to this objective. This program has received financial support from the French State within the framework of the Investments for the Future program.

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In partnership with:

National research bodies: cnrs, Inserm, INRA SCIENCE & IMPACT, cea, Inria inventeurs du monde numérique, irstea

Associated institutions: Bordeaux INP AQUITAINE, Sciences Po Bordeaux

Other partners: Bordeaux Sciences Agro, CHU Hôpitaux de Bordeaux, Université Bordeaux Montaigne

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