<table>
<thead>
<tr>
<th>CONTENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome to the University of Bordeaux</td>
<td>02</td>
</tr>
<tr>
<td>Bordeaux Summer Schools</td>
<td>04</td>
</tr>
<tr>
<td>Disciplinary themes</td>
<td>06</td>
</tr>
<tr>
<td>Philosophy in biology and medicine</td>
<td>08</td>
</tr>
<tr>
<td>African cities in 2030</td>
<td>10</td>
</tr>
<tr>
<td>Percutaneous interventions in congenital heart diseases</td>
<td>12</td>
</tr>
<tr>
<td>Soft matter for functional materials #3: surface patterning and colloidal assembly</td>
<td>14</td>
</tr>
<tr>
<td>Gadgetron</td>
<td>16</td>
</tr>
<tr>
<td>Artificial intelligence: learning and reasoning, the best of both worlds</td>
<td>18</td>
</tr>
<tr>
<td>Cardiac electrophysiology</td>
<td>20</td>
</tr>
<tr>
<td>ECNP Immuno-NeuroPsychiatry</td>
<td>22</td>
</tr>
<tr>
<td>Advanced materials for energy storage and conversion</td>
<td>24</td>
</tr>
<tr>
<td>Introduction to experimental neuroscience</td>
<td>26</td>
</tr>
<tr>
<td>Wine and sake: the cutting-edge of oenology and sakeology</td>
<td>28</td>
</tr>
<tr>
<td>Bordeaux: the place to live and learn!</td>
<td>30</td>
</tr>
</tbody>
</table>
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!
Ranked among the top universities in France for the quality of its academic courses and research, the University of Bordeaux is a confirmed “Campus of Excellence”. This “Initiative of Excellence” 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 at the University of Bordeaux is both multidisciplinary and interdisciplinary. 11 research departments cover the fields of:

› Social sciences of contemporary changes,
› Behavior, organizations and policy evaluation,
› Law and social transformations,
› Bordeaux Neurocampus,
› Biological and medical sciences,
› Public health,
› Health sciences and technologies,
› Environmental sciences,
› Engineering and digital sciences,
› Material and light sciences,
› Archeological sciences.

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, INRAE, CEA, etc.)
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 2020, the Bordeaux Summer Schools program is launching a wide range of disciplinary themes. Courses take place between late May and September and cover very different disciplines ranging from African studies to artificial intelligence to wine sciences to advanced materials to health sciences 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 are examined and accepted based on the criteria of the summer school in question.

Please note:

- **Language**: classes are conducted in English.
- **Location**: classes take place at the University of Bordeaux.
- **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.

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 field of doctoral studies in collaboration with eight doctoral schools that ensure support and guidance for doctoral 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.

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 further details.

**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 and from Bordeaux and 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 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.
May 2020

Philosophy

Philosophy in biology and medicine
May 25th - May 29th

Public Health, Economics, Political Science

African cities in 2030
June 8th - June 12th

June 2020

Cardiology

Percutaneous interventions in congenital heart diseases
June 8th - June 11th

Materials of the Future

Soft matter for functional materials #3: surface patterning and colloidal assembly
June 8th - June 12th

Imaging

Gadgetron
June 17th - June 19th
Artificial intelligence: learning and reasoning, the best of both worlds
June 24th – June 30th

Cardiac electrophysiology
June 29th – July 3rd

Advanced materials for energy storage and conversion
July 20th – July 24th

ECNP Immuno-NeuroPsychiatry
July 15th – July 17th

Introduction to experimental neuroscience
July 20th – August 1st

Wine and sake: the cutting-edge of oenology and sakeology
August 31st – September 4th
Philosophy in biology and medicine
May 25th – May 29th, 2020

In a nutshell...
This summer school is open to doctoral and post-doctoral students from the fields of philosophy, life sciences and medicine. Participants will learn to use interdisciplinary methods to address conceptual issues in scientific research.

Course leaders will be present throughout the week to give examples of interdisciplinary research from their own career, as well as to interact and advise participants on their own projects.

Expertise upon completion
This summer school is a unique opportunity for participants to develop new interdisciplinary approaches that will benefit them throughout their career.

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

Program*

Day 1: May 25th
› Arrival of participants
› Welcome and first work session

Day 2: May 26th
› Plenary lecture followed by discussions
› Working groups
› Presentation of results followed by discussions

Day 3: May 27th
› Plenary lecture followed by discussions
› Working groups
› Presentation of results followed by discussions

Day 4: May 28th
› Plenary lecture followed by discussions
› Working groups
› Presentation of results followed by discussions

Day 5: May 29th
› Final work session
› Closing remarks
› Departure of participants

*Program may be subject to change.
Bordeaux is fast becoming an international hotspot for the emerging field of philosophy “in” 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 includes philosophers, biologists and medical doctors among its members, and has organized over 60 seminars, 20 workshops and 6 conferences. In November 2018, the University of Bordeaux hosted the first international meeting of the network, followed by the second meeting in October 2019, thus affirming its leading international position in this domain.

Other associate institutions 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*

*Speakers may be subject to change.

› C. Craver: Professor of philosophy of neuroscience, Washington University, St. Louis, USA
› P. Griffiths: Professor of philosophy, Charles Perkins Center, University of Sydney, Australia
› L. Laplane: Junior investigator, French National Center for Scientific Research (CNRS), Institute for the History and Philosophy of Science and Technology (IHPST), Gustave Roussy, France
› M. Lemoine: Professor of philosophy of medicine, ImmunoConcEpT, University of Bordeaux - CNRS, France
› K. MacCord: Program administrator and McDonnell Foundation fellow, MBL, USA
› T. Pradeu: Senior investigator, ImmunoConcEpT, University of Bordeaux - CNRS, France
› F. Rohwer: Professor of biology, San Diego State University, USA
› G. Wagner: Professor of ecology and evolutionary biology, Yale University, USA

Previous editions!

The first edition of this summer school took place in 2019 and focused on microbiota, symbiosis and individuality. Participants learnt how the microbiome shapes the development, health and behaviour of the host, thus modifying the definition of individuality.

Practical information

N° participants: 20
Language: classes are conducted in English.
Location: classes take place in Carcans, France.

Participant profile: the course is designed for doctoral and post-doctoral students from the fields of philosophy of sciences, life sciences and medicine.
Applications: candidates must send a short CV (2 pages maximum) as well as an abstract (1,500 words) of their research project detailing the project’s connection to both philosophy and the life / medical sciences to: contact@philinbiomed.org.

Participation fee: 300€ per participant incl. VAT. Lodging and boarding costs will be covered for all participants. Traveling fees remain at the participant’s expense.
Grants: a limited number of grants may be awarded to participants upon request. 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 grant request.

Bordeaux is fast becoming an international hotspot for the emerging field of philosophy “in” 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 includes philosophers, biologists and medical doctors among its members, and has organized over 60 seminars, 20 workshops and 6 conferences. In November 2018, the University of Bordeaux hosted the first international meeting of the network, followed by the second meeting in October 2019, thus affirming its leading international position in this domain.

Other associate institutions 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*

*Speakers may be subject to change.

› C. Craver: Professor of philosophy of neuroscience, Washington University, St. Louis, USA
› P. Griffiths: Professor of philosophy, Charles Perkins Center, University of Sydney, Australia
› L. Laplane: Junior investigator, French National Center for Scientific Research (CNRS), Institute for the History and Philosophy of Science and Technology (IHPST), Gustave Roussy, France
› M. Lemoine: Professor of philosophy of medicine, ImmunoConcEpT, University of Bordeaux - CNRS, France
› K. MacCord: Program administrator and McDonnell Foundation fellow, MBL, USA
› T. Pradeu: Senior investigator, ImmunoConcEpT, University of Bordeaux - CNRS, France
› F. Rohwer: Professor of biology, San Diego State University, USA
› G. Wagner: Professor of ecology and evolutionary biology, Yale University, USA

Previous editions!

The first edition of this summer school took place in 2019 and focused on microbiota, symbiosis and individuality. Participants learnt how the microbiome shapes the development, health and behaviour of the host, thus modifying the definition of individuality.

Practical information

N° participants: 20
Language: classes are conducted in English.
Location: classes take place in Carcans, France.

Participant profile: the course is designed for doctoral and post-doctoral students from the fields of philosophy of sciences, life sciences and medicine.
Applications: candidates must send a short CV (2 pages maximum) as well as an abstract (1,500 words) of their research project detailing the project’s connection to both philosophy and the life / medical sciences to: contact@philinbiomed.org.

Participation fee: 300€ per participant incl. VAT. Lodging and boarding costs will be covered for all participants. Traveling fees remain at the participant’s expense.
Grants: a limited number of grants may be awarded to participants upon request. 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 grant request.
African cities in 2030: multidisciplinary research to meet health, demographic, economic and political challenges
June 8th – June 12th, 2020

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, and especially the unique challenges facing African cities. These include: rapid urbanization within a context of limited economic growth, threats resulting from climate change, uncontrolled road traffic and the expansion of polluting industries.

Course content will provide participants with a critical and complementary analysis of the evolution of African cities over the past 20 years, as well as the challenges and opportunities for the next ten years in the context of the Sustainable Development Goals agenda (SDG).

The program offers a variety of learning experiences, including:
› Lectures and discussions with experts on major development issues for African cities over the next ten years;
› Multi- and interdisciplinary discussions and debates on diverse policy and development sectors (health, land, food security, urban governance, technology, climate and environment, etc.) and on interventions towards reaching the SDGs in these fields;
› Collaboration within a multidisciplinary group on a multidisciplinary project (health, demographics, economics, political approaches) that addresses a key topic for African cities in 2030.

Previous editions!
The first edition of the Africa 2030 Bordeaux Summer School took place in 2019 and addressed a broad scope of challenges and transitions for Africa at the horizon of the 2030 agenda for SDGs. The course focused on African cities as a key topic for research and intervention for African development over the next 10 years.

Program*

Day 1: June 8th
› Participant arrival and welcome coffee
› Overview of the summer school
› Creation of working groups and discussion of project themes per group
› Growing urbanization
› Slums and camps, new cities?
› Production, jobs and income in African cities: informal sector, networks and policy innovations

Day 2: June 9th
› Feeding the cities: agriculture and urban agriculture
› Urban agriculture, pesticides & environment
› Methodological lecture
› Tutored group work session
› Obesity and dietary transitions in urban contexts
› Nutrition and chronic diseases
› Visit of Bordeaux and dinner

Day 3: June 10th
› Socio-economic stratification in African cities: emerging middle classes and persistent vulnerability
› Citizenship in the cities
› Tutored group work session
› Methodological lecture
› Vulnerable and key populations in African cities (example of STI/HIV)
› Environmental risks (floods and heat waves) and living conditions in urban sub-Saharan Africa
› Senses and/in the cities: perception of environmental and health risks in urban slums
› Cinema and debate

Day 4: June 11th
› Measured air pollution levels in Abidjan and other African cities
› Lung health and air pollution in Africa 2030
› Urbanization, transport, pollution
› Methodological lecture
› Tutored group work session

Day 5: June 12th
› Oral presentation of multidisciplinary projects and discussions

*Program may be subject to change.
WHY BORDEAUX?

Since 1959, the African continent has been a focus of research for 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 collaboration with exceptional research teams, including those within the fields of public health and epidemiology (Bordeaux Population Health Center – IDLIC team / Inserm U1219; Bordeaux School of Public Health / ISPED), economics (Theoretical and Applied Economics Research Group – GREThA), political sciences, geography and anthropology (Les Afriques dans le Monde – LAM / Sciences Po Bordeaux). Strong partnerships also exist with a number of African universities and research institutions.

Thanks to this unique association of academic and scientific facilities and collaborations, the University of Bordeaux has developed great expertise and ambition in terms of research and action for African cities.

This summer school will follow on from the 28th Africa–France Summit, held in Bordeaux from June 4th to 6th 2020, which will be dedicated to "cities and sustainable territories".

Expertise upon completion
Participants will have access to the most recent data and knowledge, as well as fresh insights into public policy processes, development challenges, and multidisciplinary interventions aiming to reach the SDGs 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.

A panel of experts*

Speakers may be subject to change.

Lecturers and tutors include renowned French and international researchers and experts in public health, economics and social sciences, who are involved in research and action for African cities.

- Prof. T. Bernard: Professor of economics, Theoretical and Applied Economics Research Group (GREThA), University of Bordeaux, France
- Dr. M. Clément: Economist, GREThA, University of Bordeaux, France
- Dr. F. Combarnous: Professor of economics, GREThA, University of Bordeaux, France
- Dr. A. Corbet: Researcher in anthropology, Les Afriques dans le Monde (LAM) – Sciences Po Bordeaux, France
- Prof. D. Darbon: Researcher in anthropology, Les Afriques dans le Monde (LAM) – Sciences Po Bordeaux, France
- Prof. S. Eholie: Professor of infectious and tropical diseases, Félix Houphouët Boigny University, Abidjan, Côte d’Ivoire
- Prof. D. Ekouevi: Medical epidemiologist and professor in public health, University of Lomé, University of Bordeaux – UMR 1219, France
- Prof. L. Fouchard: Historian and politist, Center for International Studies, Sciences Po Paris, France
- Prof. T. Lowanson: Associate professor of urban planning, University of Lagos, Nigeria
- Dr. A. Meunié: Senior lecturer in economics, GRETha, University of Bordeaux, France
- Dr. R. Nakankabu Dialect: Lecturer in political sciences, LAM – Sciences Po Bordeaux, France
- Dr. J. Orne-Gliemann: Researcher in social sciences/public health, University of Bordeaux – UMR 1219, France
- Prof. C. Raherison-Semjen: Pneumonologist, Bordeaux University Hospital, University of Bordeaux – UMR 1219, France
- Dr. E. Rougier: Senior lecturer in economics, GREThA, University of Bordeaux, France
- Dr. M. Savy: Nutritional epidemiologist, Research Institute for Development / IRD, France
- Dr. J. Tantchou: Anthropologist, LAM – Sciences Po Bordeaux, France
- Prof. V. Yoboue: Senior lecturer in physics-chemistry, Félix Houphouët Boigny University, Abidjan, Côte d’Ivoire
- Prof. L. Fouchard: Historian and politist, Center for International Studies, Sciences Po Paris, France
- Dr. F. Combarnous: Professor of economics, GREThA, University of Bordeaux, France
- Dr. M. Clément: Economist, GREThA, University of Bordeaux, France
- Dr. F. Combarnous: Professor of economics, GREThA, University of Bordeaux, France
- Dr. A. Corbet: Researcher in anthropology, Les Afriques dans le Monde (LAM) – Sciences Po Bordeaux, France
- Prof. D. Darbon: Researcher in anthropology, Les Afriques dans le Monde (LAM) – Sciences Po Bordeaux, France
- Prof. S. Eholie: Professor of infectious and tropical diseases, Félix Houphouët Boigny University, Abidjan, Côte d’Ivoire
- Prof. D. Ekouevi: Medical epidemiologist and professor in public health, University of Lomé, University of Bordeaux – UMR 1219, France
- Prof. L. Fouchard: Historian and politist, Center for International Studies, Sciences Po Paris, France
- Prof. T. Lowanson: Associate professor of urban planning, University of Lagos, Nigeria
- Dr. A. Meunié: Senior lecturer in economics, GRETha, University of Bordeaux, France
- Dr. R. Nakankabu Dialect: Lecturer in political sciences, LAM – Sciences Po Bordeaux, France
- Dr. J. Orne-Gliemann: Researcher in social sciences/public health, University of Bordeaux – UMR 1219, France
- Prof. C. Raherison-Semjen: Pneumonologist, Bordeaux University Hospital, University of Bordeaux – UMR 1219, France
- Dr. E. Rougier: Senior lecturer in economics, GREThA, University of Bordeaux, France
- Dr. M. Savy: Nutritional epidemiologist, Research Institute for Development / IRD, France
- Dr. J. Tantchou: Anthropologist, LAM – Sciences Po Bordeaux, France
- Prof. V. Yoboue: Senior lecturer in physics-chemistry, Félix Houphouët Boigny University, Abidjan, Côte d’Ivoire

Practical information

Dates: June 8th - June 12th, 2020.
N° participants: 20
Language: classes 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 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 who wish to increase their knowledge and improve their methodological and interdisciplinary skills in terms of research and action for African cities.
Applications: to be completed online via our website: bss-africanstudies.u-bordeaux.fr
A CV and cover letter will be necessary.

Participation fee: 450€ per participant incl. VAT. Lodging, partial boarding and social program costs will be covered for all participants coming from outside of Bordeaux. Travelling fees remain at the participants’ expense.
Grants: a limited number of grants will be awarded to participants upon request. To apply for an exemption, participants must send a cover letter along with their application, detailing why they would like to participate and justifying their request.

More information: bss-africanstudies.u-bordeaux.fr
In a nutshell...

This summer school, dedicated to congenital heart diseases and percutaneous therapies, is open to international science and medical students, engineers and experienced researchers wishing to improve their background knowledge.

During the four day session, this course offers intensive practical classes about the technological aspects of CHD transcatheter interventions, from innovative concepts to clinical practice, including all aspects of device development.

Participants will meet with world leading experts in transcatheter interventions, imaging and biomaterials, as well as industrial stakeholders. They will also discover and use cutting-edge technologies and equipment.

Expertise upon completion

This summer school offers a unique opportunity for participants to acquire in-depth knowledge in congenital heart diseases.

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

Program*

Day 1: June 8th – Introduction

- Introduction to cardiac embryology and anatomy: from normal cardiac development to congenital heart defects
- Hemodynamic basic principles
- Biomaterials and percutaneous devices
  - Overview of device designs and history
  - Components, device specificities
  - Imaging techniques overview
  - Legal aspects

Day 2: June 9th – Shunt interventions

- Anatomy
- Hemodynamic evaluation
- Imaging: pre and per-procedural guidance
- Techniques
- Experimental development of devices
- Industry

Day 3: June 10th – Vascular stenoses

- Anatomy
- Hemodynamic evaluation
- Imaging: pre and per-procedural guidance
- Techniques
- Experimental development of devices
- Industry

Day 4: June 11th – Valvular therapies

- Anatomy
- Hemodynamic evaluation
- Imaging: pre and per-procedural guidance
- Techniques
- Experimental development of devices
- Industry

*Program may be subject to change.
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. Its strength lies in its scientific expertise and close collaboration with world leading clinical teams.

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

The congenital heart disease team of Prof. Jean-Benoit Thambo is involved in several translational research and education programs, especially in the field of percutaneous therapies.

As part of its mission to disseminate knowledge gained from research, Liryc is committed to university training in cardiovascular medicine with the University of Bordeaux.

A panel of experts*

*Speakers may be subject to change.

Lecturers include leading clinicians and researchers in congenital heart diseases.

**Course director:**
- J.B. Thambo, MD-PhD: Bordeaux University Hospital, Bordeaux, France

**Keynote speakers:**
- Y. Boudjemline, MD-PhD: Sidra Center – Doha, Qatar
- R. Dubois, PhD: LIRYC (Electrophysiology and Heart Modeling Institute), University of Bordeaux, France
- M. Friedberg, MD-PhD: SickKids Hospital – Toronto, Canada
- M. Gewillig, MD-PhD: UZ Leuven, Belgium
- L. Houyel, MD-PhD: Necker Hospital, Paris, France
- X. Iriart, MD: Bordeaux University Hospital, Bordeaux, France
- Z. Jalal, MD-PhD: Bordeaux University Hospital, Bordeaux, France
- J. Van Humbeeck, PhD: Department of Metallurgy and Materials Engineering, UZ Leuven, Belgium
- O. Villemain: SickKids Hospital – Toronto, Canada

**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. Its strength lies in its scientific expertise and close collaboration with world leading clinical teams.

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

The congenital heart disease team of Prof. Jean-Benoit Thambo is involved in several translational research and education programs, especially in the field of percutaneous therapies.

As part of its mission to disseminate knowledge gained from research, Liryc is committed to university training in cardiovascular medicine with the University of Bordeaux.

**Practical information**

**Dates:** June 8th – June 11th, 2020.

**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 graduate and doctoral science and medical students, as well as to more experienced researchers wishing to improve their background in the field of congenital heart diseases.

**Applications:** to be completed online via our website: bss-congenital-heartdisease.u-bordeaux.fr

A CV and cover letter will be necessary.

**Deadline:** April 8th, 2020.

**Participation fee:** 500€ per participant incl. VAT. Lodging, partial boarding and social program costs will be covered for all participants. Travelling fees remain at the participants’ expense.
In a nutshell...

The SoFun’3 Summer School offers innovative and multidisciplinary training for researchers working in fields related to surface science and colloidal assembly. Renowned and dynamic lecturers will share their expertise, from the fundamentals to state-of-the-art methods, techniques and strategies to design functional colloidal particles and guide their assembly on surfaces, forming materials with tailored properties.

Course content will provide participants with an in-depth understanding of the principles behind the design and applications of structured surfaces employing colloidal building blocks.

The course is open to doctoral students, post-doctoral fellows, academics and private actors in materials science.

Program*

Day 1: June 8th
› Participant registration
› Engineering of building blocks for colloidal assembly
› Welcome ceremony and cocktail

Day 2: June 9th
› Directed self-assembly and nanofabrication methods
› Participant flash presentations

Day 3: June 10th
› Surface manipulation and characterization
› Seashore activities

Day 4: June 11th
› Advanced scattering techniques for surface characterization
› Gala dinner

Day 5: June 12th
› Functional applications of nanostructured surfaces
› Departure

*Program may be subject to change.

Expertise upon completion

This summer school offers a unique opportunity to develop deep knowledge in surface patterning and colloidal assembly through a multidisciplinary program which aims to link engineering of building blocks with nanofabrication methods and advanced characterization techniques to the functional properties of nanostructured surfaces.

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

*Speakers may be subject to change.

Lecturers include leading international researchers from different areas of soft matter.

› Dr. G. Bellot: Nanostructuration and nanomachines based on DNA origami - Centre de Biologie Structurale de Montpellier (CBS), France

› Dr. F. Cousin: Scattering techniques applied to soft matter structures - Laboratoire Léon Brillouin Saclay, France

› Dr. B. Dagens: Nanostructured materials for light manipulation – Paris-Sud University, France

› Dr. G. Drisko: Advanced deposition techniques for nanostructuration - Institute for Condensed Matter Chemistry of Bordeaux (ICMCB), France

› Dr. G. Fleurys: Directed self-assembly of block copolymers - Laboratoire de Chimie des Polymères Organiques (LCPO), Bordeaux, France

› Prof. G. Markowitch: Colloidal nanostructures – Tel Aviv University, Israel

› Dr. A. Mihi: Nanofabrication of photonic structures – Spanish National Research Council (CSIC), Barcelona, Spain

› Dr. D. Peyrade: Bio-sensors via self-assembly - Laboratoire des Technologies de la Microélectronique (LTM), Grenoble, France

› Prof. L. Ressier: Colloidal assembly by nanoxerography – Institut National des Sciences Appliquées (INSA), Toulouse, France

› Prof. G.-R. Yi: Shape-controlled synthesis of nanoparticles – Sungkyunkwan University, South Korea

Previous editions!

This third edition of the SoFun Summer School is based on the success of two previous courses organized in Carcans (2015) and in Latresne (2018), each gathering between 50 and 60 international participants passionate about the emerging field of Soft Matter for Functional Materials.

N° participants: 60
Language: classes and exchanges are conducted in English.
Location: lectures and practical sessions take place in Lège-Cap Ferret, France.

Participant profile: the course is primarily designed for young scientists (doctoral students, post-doctoral fellows and young researchers), but is also open to all researchers with experience or knowledge within the domain of Soft Matter for Functional Materials.

Applications: to be completed online via our website: bss-sofun.u-bordeaux.fr
A CV and cover letter including current and past projects and detailing your motivation to attend this particular summer school will be required.

Participation fee: 340€ for doctoral students and post-doctoral fellows; 500€ for academic attendees; 800€ for industrial professionals, incl. VAT. Lodging, meals and social program costs will be covered for all participants. Transport from Bordeaux to Lège by bus is organized on June 8th (returning on June 12th). Travelling fees to Bordeaux remain at the participants’ expense.
In a nutshell...

Gadgetron is an open-source magnetic resonance image reconstruction framework that can be interfaced with major MRI manufacturers, and that provides state-of-the-art image processing tools and algorithms. “Gadgetron” is a key tool for prototyping advanced reconstruction methods as well as for conducting large-scale clinical studies for magnetic resonance imaging.

This summer school is open to international students, engineers, and researchers wishing to understand the basics of the Gadgetron framework and the latest Gadgetron functionalities. It consists of tutorial lectures, coding and MRI scanner sessions.

Course content will provide participants with an in-depth understanding of the Gadgetron framework and will present its multiple applications, from prototyping to clinical routines.

Program*

Days 1 & 2: June 17th & June 18th

› Introduction to the ISMRM raw data format
› Converting k-space data from different MRI vendors to the ISMRM raw data format
› “Gadgetron” installation on Ubuntu and Windows stations
› “Gadgetron” installation on MRI scanners (Siemens and GE)
› Introduction to the Gadgetron framework
› Discovery of cartesian, radial, spiral and multiband reconstructions
› Python or Matlab interaction inside the Gadgetron
› In-line reconstruction using BART or Sigpy inside the Gadgetron
› Practical coding sessions
› C++ and OpenMP programming in the Gadgetron
› How to debug and optimize the Gadgetron?
› Distributed reconstruction on a local cluster
› In-line reconstruction on a remote cloud
› 1.5T clinical MRI scanner session
› Machine learning inside the Gadgetron

Day 3: June 19th

› Scientific sessions
› Interactive debugging session based on participants’ k-space data
› Closing remarks

*Program may be subject to change.

Expertise upon completion

This coding-oriented course, designed by researchers and developers, will help participants better understand and use the Gadgetron framework in their MRI research.

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

*Speakers may be subject to change.

Lecturers include international speakers and local contributors.

› H. Xue: National Heart, Lung, and Blood Institute, Bethesda, USA
› D. C. Hansen: Gradient Software, Aarhus, Denmark
› K. L. Knudsen: Gradient Software, Aarhus, Denmark
› O. Joseph: University College London, United Kingdom
› V. Roopchansingh: National Institute of Mental Health, Bethesda, USA
› J. A. Derbyshire: National Institute of Mental Health, Bethesda, USA
› A. Trotier: Magnetic Resonance Center (CRMSB), Bordeaux, France
› S. Rapacchi: Center for Magnetic Resonance in Biology and Medicine (CRMBM), Marseille, France
› M. You: Electrophysiology and Heart Modeling Institute (Liryc), Bordeaux, France
› P. Bour: Liryc, Bordeaux, France
› V. Ozenne: Liryc, Bordeaux, France

WHY BORDEAUX?

Bordeaux boasts a long tradition of excellence in magnetic resonance imaging research, from hardware to MR-sequence development. This expertise is shared by the Electrophysiology and Heart Modeling Institute (Liryc), specializing in cardiovascular medicine, and the Bordeaux Magnetic Resonance Center (CRMSB), specializing in neurology.

Both of these institutions offer unique technological platforms with cutting-edge equipment dedicated to clinical and preclinical studies, and benefit from the support of multidisciplinary teams. Both utilize the Gadgetron on a daily basis for real-time image processing, monitoring MR-guided therapies, and advanced quantitative imaging with innovative sequences.

These innovations have led to multiple collaborations between the two groups, for medical applications in cardiology or neurology with the Neurofunction Imaging Group (GIN), as well as for the post-processing of neuroimaging on large-cohorts. Methodological developments initiated in Bordeaux have also been deployed within several French groups: the Brain & Spine Institute (ICM) from Paris, ICube from Strasbourg, Creatis from Lyon, and the Center for Magnetic Resonance in Biology and Medicine (CRMBM) from Marseille.

Our objective is to consolidate the research-based knowledge in Bordeaux and to share it with the French and international community in order to increase the visibility of research carried out in Bordeaux.

Liryc and the CRMSB, in collaboration with the Translational Research and Advanced Imaging Laboratory Cluster of Excellence, will provide students with internationally recognized training courses in magnetic resonance imaging.

Practical information

N° participants: 52
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 designed for international students, engineers and researchers wishing to acquire knowledge about the Gadgetron or to develop their understanding of the software and its latest functionalities.

Applications: to be completed online via our website: bss-gadgetron.u-bordeaux.fr
A CV and cover letter will be necessary.

Participation fee: 100€ per academic participant; 400€ per non academic participant, incl. VAT. Partial boarding costs will be covered for all participants. Lodging and travelling fees remain at the participants’ expense.
Artificial intelligence: learning and reasoning, the best of both worlds
June 24th – June 30th, 2020

In a nutshell...
This summer school, open to doctoral students, consists of a combination of lectures and practical sessions dedicated to the two future pillars of artificial intelligence: machine learning and symbolic reasoning.

The future of artificial intelligence technologies will almost surely involve a combination of statistics and symbolic artificial intelligence. Machine learning is key to perceiving the world and discovering patterns that would otherwise be impossible to detect. Symbolic reasoning enables sophisticated problem solving and explainable decision making.

Code your own Alphago player!
Course content will start with machine learning techniques based on statistics, and will progressively move towards abstract representations and reasoning about the world, and finally the formalisms that combine elements of both. Practical sessions will allow participants to entirely code their own self learning Go player, and to prepare for a competition at the end of the week.

These coding sessions will be held in small groups, and will concentrate on explaining the mechanisms of the Alphago player. Participants will thus discover the power of machine learning and symbolic artificial intelligence when combined.

> Program*

Day 1: June 24th
> Participant arrival and registration
> Welcome reception and initiation to the game of Go

Day 2: June 25th
> Morning lecture - Machine learning
> Practical session - Coding a Monte Carlo tree search on the game of Go
> Gala dinner

Day 3: June 26th
> Morning lecture - Reinforcement learning
> Practical session - Essential strategy and tactics (observation of leading Go players)

Day 4: June 27th
> Morning lecture - Knowledge representation
> Excursion to the international RoboCup event
> Free evening in Bordeaux

Day 5: June 28th
> Morning lecture - Reasoning with propositional logic: SAT and knowledge compilation
> Practical session - Reinforcement learning in practice for your GO player

Day 6: June 29th
> Morning lecture - Statistical relational artificial intelligence
> Practical session - Tuning your GO player and competition preparation

Day 7: June 30th
> Live GO tournament
> Awards ceremony

*Program may be subject to change.
Expertise upon completion

This summer school will focus on the core techniques of the two future main pillars of artificial intelligence: machine learning and symbolic reasoning.

Participants will learn, thanks to practical sessions, how reinforcement learning can be deployed in a challenging and exciting context.

A competition will be organized between participant teams. Winners of the competition will receive a special certificate for their achievements.

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

WHY BORDEAUX?

Bordeaux is renowned for its international expertise and excellence in the field of artificial intelligence and boasts one of the largest computer science laboratories in France.

The summer school will be hosted during the 2020 RoboCup in Bordeaux, a major international event in robotics and artificial intelligence. This event provides a unique opportunity for participants to observe artificial intelligence in action and to meet worldwide specialists. On June 27th, they will be able to attend the event and witness some of the best competitions!

Practical information

N° participants: 50
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 doctoral students with good knowledge of programming in Python. Participants must bring their personal laptop.

Applications: to be completed online via our website: bss-ai.u-bordeaux.fr
A CV and cover letter will be necessary.

Participation fee: 700€ per academic participant; 1,000€ per industrial participant, incl. VAT. Lodging for 6 nights, partial boarding (coffee breaks, lunches, Gala dinner, welcome dinner) and social program costs will be covered for all participants. Travelling fees remain at the participants’ expense.

More information: bss-ai.u-bordeaux.fr
In a nutshell...

This summer school is dedicated to the study of fundamental cardiac electrophysiology. It 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, the course offers intensive theoretical and practical sessions concerning all aspects of cardiac electrophysiology, from the molecular level to pre-clinical investigations and patient care.

This summer school, which gathered 42 attendees and over 20 international speakers for its first edition, provides a unique opportunity for participants to meet world leading experts and to learn about state-of-the-art techniques.

Program*

Day 1: June 29th
- Introduction to cardiac anatomy
- Cardiac neuromodulation
- Cardiac hemodynamics
- Introduction to cellular electrophysiology: the action potential and excitation-contraction coupling

Day 2: June 30th
- Atrial fibrillation
- Ventricular fibrillation and sudden cardiac death
- Heart failure and electromechanical remodelling
- Mathematical modelling and simulations

Day 3: July 1st
- Experimental methods in cardiac electrophysiology: from single cells to the whole heart
  - The patch-clamp technique
  - Microspectrofluorimetry and confocal microscopy
  - Optical mapping of cardiac electrical activity
  - Working heart model and evaluation of cardiac bio-energetics
- Experimental laboratory demonstrations

Day 4: July 2nd
- Introduction to cardiac electrophysiology
- Cardiac implantable devices
- Basics in signal processing for cardiac mapping
- Experimental and clinical applications of signal processing techniques

Day 5: July 3rd
- Basics of Magnetic Resonance Imaging (MRI)
- High-field MRI
- Advanced cardiac MRI techniques for clinical applications
- Micro CT imaging of the heart
- Interventional MRI
- Cardiac imaging at the hospital

*Program may be subject to change.

Expertise upon completion

A certificate of participation will be awarded to students upon completion of the course.
Bordeaux boasts a long tradition of excellence in cardiac electrophysiology, in particular with the creation of Liryc – an Electrophysiology and Heart Modeling Institute, led by Prof. Michel Haïssaguerre.

Liryc is a research, treatment, innovation and teaching institute. Its strength lies in its multidisciplinary scientific expertise and close collaboration with world leading clinical teams.

Offering unique experimental platforms with state-of-the-art equipment, the teams at Liryc develop novel diagnostic tools, medical devices and innovative therapies.

The institute has made major scientific contributions in atrial and ventricular fibrillation as well as cardiac resynchronization, which have been disseminated across the world.

As part of its mission to share knowledge gained from research and clinical practice, Liryc is committed to university training in cardiac electrophysiology in collaboration with the University of Bordeaux.

This summer school is fantastic to better understand how experimental and clinical connect.”
–Cardiac electrophysiology” Bordeaux Summer School participant from the 2019 program

### A panel of experts

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

- **D. Benoist**: PhD, University of Bordeaux, France
- **O. Bernus**: PhD, University of Bordeaux, France
- **P. Bordachar**: MD-PhD, Bordeaux University Hospital, University of Bordeaux, France
- **F. Brette**: PhD, University of Bordeaux, France
- **J.-A. Cabrera Rodriguez**: MD-PhD, Hospital Universitario Guirósalud, Madrid, Spain (to be confirmed)
- **P.-S. Chen**: MD-PhD, Editor-in-chief HeartRhythm, Indiana University, USA
- **H. Cochet**: MD-PhD, Bordeaux University Hospital, University of Bordeaux, France
- **R. Coronel**: MD-PhD, Academic Medical Center Amsterdam, the Netherlands (to be confirmed)
- **R. Dubois**: PhD, Researcher, University of Bordeaux, France
- **J. Duchateau**: MD-PhD, Bordeaux University Hospital, University of Bordeaux, France
- **K. Haliot**: doctoral student, Electrophysiology and Heart Modeling Institute (Liryc), France
- **P. Jais**: MD-PhD, Bordeaux University Hospital, University of Bordeaux, France
- **N. Linton**: MD-PhD, Imperial College London, United Kingdom (to be confirmed)
- **J. Lumens**: PhD, CARIM University of Maastricht, the Netherlands (to be confirmed)
- **M. Meo**: PhD, University of Bordeaux, France
- **P. Pasdois**: PhD, University of Bordeaux, France
- **M. Potse**: PhD, University of Bordeaux, France
- **B. Quesson**: PhD, University of Bordeaux, France
- **M. Stuber**: PhD, University of Louvain, Switzerland (to be confirmed)
- **R. Walton**: PhD, University of Bordeaux, France

### Practical information


**Number of 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 graduate and doctoral 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-cardiac-electrophysiology.u-bordeaux.fr

**A CV and cover letter will be necessary.**

**Deadline**: March 31st, 2020.

**Participation fee**: 500€ per participant incl. VAT. Lodging, partial boarding and social program 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 upon request.

**More information**:

bss-cardiac-electrophysiology.u-bordeaux.fr
In a nutshell...

Immune processes are major factors for the health of the central nervous system, as well as for risk or resilience to brain disorders. Exciting scientific insights indicate a highly sensitive and fine-tuned equilibrium of inflammation that modulates our cognitive and social abilities.

This interdisciplinary summer school is open to graduate students, doctoral and post-doctoral researchers from the fields of psychiatry, psychology, biology and medicine. The three-day course combines lectures and practical workshops on dimensional approaches in psychiatry, preclinical models and methods to measure immune markers, as well as educational workshops on how to write a paper or a grant application. Lectures on hot topics in immunopsychiatry will be given by internationally renowned scientists from the field.

In addition to the lectures and practical sessions, students and speakers will share lunches and dinners in an environment encouraging exchange and reflection. To facilitate collaboration, a “speed dating” event with each course leader will be organized.

Courses are developed by researchers belonging to the ECNP immuno-neuropsychiatry network, professors and researchers from the University of Bordeaux and invited experts.

Program*

Day 1: July 15th
- Participant arrival and welcome
- Introduction
- Opening plenary lecture
  - Inflammation, from stress to depression
- Data blitz session – 2 minute poster summaries by each participant
- Bordeaux city tour and dinner

Day 2: July 16th
- Plenary lectures
  - Immune tools to stratify depressed patients: towards an immunological diagnosis of major mood disorders
  - Microbiota and psychiatric disorders
- Working groups on methods and strategies
  - Cytokines measurement
  - Maternal immune activation
  - Auto-immune psychosis
- Poster viewing
- Plenary lectures
  - Immuno-genetic background in psychiatric disorders
  - Infections and auto-immune disorders in psychiatric disorders
- Working group presentations
- Gala dinner and awarding of poster prize

Day 3: July 17th
- Plenary lectures
  - Immuno-metabolism and mood disorders
  - Immune dysfunction and schizophrenia (to be confirmed)
- Workshops
  - Grant application in immunopsychiatry
  - Satellite meeting with industrial perspectives (to be confirmed)
- Poster viewing
  - “Speed dating” with a course leader (5 minutes per person)
  - Preparation of an article based on previous course content

*Program may be subject to change.
A hub for psychoneuroimmunology and immunopsychiatry

The concept that immune system alterations play a major role in the development of neuropsychiatric symptoms emerged in Bordeaux thanks to the pioneering work of Robert Dantzer and Lucile Capuron on depression, in the field of psychoneuroimmunology.

This notion was then extended and applied to the etiopathogeny of multiple psychiatric disorders and was disseminated throughout France by Marion Leboyer, leading to several important discoveries in the field of immunopsychiatry, notably auto-immune psychosis with Laurent Groc (Bordeaux), immuno-genetic background with Ryad Tamouza (Paris), and inflammatory signatures with Nicolas Glaichenhaus (Nice).

A cluster of excellence in neurosciences

Bordeaux is not only a magnificent city, but also an internationally renowned campus for its excellence in neuroscience research. Bordeaux Neurocampus is recognized as one of the strongholds of the field on the international scene. It includes over 50 pluridisciplinary research teams and 700 scientists studying brain function and its pathologies, from the molecular level to patient care.

Expertise upon completion

This summer school will provide participants with basic and practical education on immuno-psychiatry. It is a unique opportunity for young scientists to improve their academic and professional networks and gain feedback on their own research from renowned experts.

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

Practical information

**Dates:** July 15th – July 17th, 2020.

**N° participants:** 40

**Language:** classes are conducted in English.

**Location:** lectures and practical sessions take place at the Bordeaux Neurocampus on the Carreire campus of the University of Bordeaux.

**Participant profile:** the course is designed for graduate and doctoral students from various disciplines: biology, psychology, psychiatry, medicine, pharmacy, immunology, etc.

**Applications:** to be completed online via our website: bss-immunoneuropsychiatry.u-bordeaux.fr

A CV, cover letter and poster abstract will be necessary.

**Deadline:** March 31st, 2020.

**Participation fee:** 300€ for students from the University of Bordeaux; 660€ per external participant, incl. VAT. Partial boarding and social program costs will be covered for all participants. Lodging costs will be covered for external participants. Travelling fees remain at the participants’ expense.

**Grants:** a limited number of grants will be awarded to participants upon request.

For more information: bss-immunoneuropsychiatry.u-bordeaux.fr
Advanced materials for energy storage and conversion

July 20th – July 24th, 2020

In a nutshell...

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

Throughout this summer school, the problems linked to the collection of renewable energies (photovoltaic, wind, etc.), their transformation (producing hydrogen, etc.) and their storage (supercapacitors, batteries, etc.) will be analyzed.

Issues related to the systems needing to be implemented for such procedures with renewable energies will also be covered.

Program*

Day 1: July 20th

› Opening session
› Batteries and supercapacitors
› The capstone expectation – installing a renewable energy system on a "hostile" or unusual site
› Visit of Bordeaux
› Opening cocktail

Day 2: July 21st

› Fuel cell and hydrogen
› Set-up of the capstone
› Lab-work – laboratory visits on campus
› Capstone brainstorming session
› Dinner and group work

Day 3: July 22nd

› Renewable energies (photovoltaics, wind turbines, etc.)
› Industrial visit
› Free evening

Day 4: July 23rd

› Integrated systems for new energy sources
› Case study – laboratory visits on campus
› Capstone brainstorming session
› Gala dinner

Day 5: July 24th

› Round table discussion with industrial stakeholders about the future of "new green energy".
› Capstone presentations about visions of new energy integration
› Closing session and remarks
› Award ceremony for the top capstone presentation

*Program may be subject to change.

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.
A panel of experts*

*Speakers may be subject to change.

› B. Dunn: University of California Los Angeles, USA
› O. Joubert: University of Nantes – Institute of Materials by Jean Rouxel (IMN), French National Center for Scientific Research (CNRS), France
› D. Larcher: Laboratoire de Réactivité et Chimie des Solides (LRCS), France
› S. Lascaud: EDF Store & Forecast, France
› M. Latroche: Institut de Chimie et des Matériaux Paris–Est (ICMPE), CNRS, France
› H. Snaith: University of Oxford, United Kingdom
› J.-M. Tarascon: Collège de France, Solid state chemistry–energy laboratory, France
› U. Würfel: Fraunhofer Institute for Solar Energy Systems (ISE), Germany

Organizing committee:

› J.-L. Battaglia: University of Bordeaux – Institute of Mechanics and Mechanical Engineering (I2M), CNRS, France
› J.-L. Bobet: University of Bordeaux – Institute for Solid State Chemistry Bordeaux (ICMCB), CNRS, France
› E. Cloutet: University of Bordeaux – Laboratoire de Chimie des Polymères Organiques (LCPO), CNRS, France
› L. Croguennec: University of Bordeaux – ICMCB, CNRS, France
› L. Hirsch: University of Bordeaux – Integration: from Material to Systems laboratory (IMS), CNRS, France
› M. Maglione: University of Bordeaux – ICMCB, CNRS, France
› A. Rougier: University of Bordeaux – ICMCB, CNRS, France
› T. Toupance: University of Bordeaux – Institute of Molecular Sciences (ISM), CNRS, France

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 industrial collaborations (numerous patents, licenses, start-ups, common laboratories, etc.) makes Bordeaux the ideal place to study advanced materials for energy storage and conversion.

Finally, the significant number of small and medium-sized enterprises dedicated to energy materials (largest solar farm in Europe, SAFT, Solvay, etc.) in the Nouvelle-Aquitaine region reinforces 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” Bordeaux Summer School

Practical information

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 and doctoral students.
Applications: to be completed online via our website: bss-energy.u-bordeaux.fr
A CV and cover or recommendation letter will be necessary.

Participation fee: 800€ per participant incl. VAT, early bird fees 700€ per participant. Lodging, partial boarding and social program 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 upon request.
Introduction to experimental neuroscience
July 20th – August 1st, 2020

In a nutshell...
This summer school offers participants the unique opportunity to discover neuroscience research with hands-on experiments and practical sessions.

Students from various disciplines with little to no experience in the field will be welcomed to the Bordeaux School of Neuroscience, a high-end facility fully dedicated to training.

Participants will take part in a series of mini-projects under the supervision of experienced doctoral students. These projects will benefit from the cutting-edge expertise of the Bordeaux Neurocampus research laboratories and the University of Bordeaux’s Bordeaux Neurocampus Graduate Program.

Program*

Driven by case-based teaching, this workshop focuses on basic neuroscience concepts and methods. Short lectures and two series of 10 mini-projects complement the training, which is based on experiments in groups of maximum three students, followed by oral presentations of each project.

Hands-on experiments through mini-projects covering questions and techniques used in modern neuroscience research laboratories will take place throughout the two week session. Topics covered will include:

› Cell biology and imaging (confocal, super-resolution microscopy)
› Molecular and cellular biology, transcriptomics
› In vivo surgery, gene transfer
› Anatomy, brain clearing, connectomics and electron microscopy
› In vitro electrophysiology and optogenetics
› In vivo electrophysiology and imaging
› Behavior (rodents, etc.)
› Human neuroscience
› Neurocomputation

The summer school also benefits from a varied social program, including a Gala dinner allowing participants to meet and network with internationally renowned speakers and other cohort members.

*Program may be subject to change.

Expertise upon completion
Completing this project-based course will allow participants to better understand and practice basic experimental approaches within neuroscience or related scientific fields.

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

*Speakers may be subject to change.

International experts from different areas of neuroscience supervise the program organization.

› M. Darnaudery: Rodent behavior, NutriNeuro, University of Bordeaux – French National Institute of Agricultural, Food and Environmental Research (INRAE), France

› X. Fioramonti: Electrophysiology, NutriNeuro, University of Bordeaux – INRAE, France

› J.-L. Guilloux: Rodent behavior, University of Bordeaux – Cognitive and Integrative Neuroscience Aquitaine Institut (INcia), France

› M. Landry: Microscopy, Institute for Interdisciplinary Neuroscience (IINS), University of Bordeaux – French National Center for Scientific Research (CNRS), France

› A. Leblois: Networks and neurocomputation, Institute of Neurodegenerative Diseases (IMN), University of Bordeaux – CNRS, France

› C. Mulle: Electrophysiology, Bordeaux Neurocampus Graduate Program Director, University of Bordeaux – CNRS, France

› D. Perrais: Cellular neurobiology, IINS, University of Bordeaux – CNRS, France

Each mini-project is supervised by experienced doctoral students from the University of Bordeaux and our partners the Hotchkiss Brain Institute – University of Calgary and Université Laval (Canada), as well as the Florey Institute of Neuroscience and Mental Health of Melbourne (Australia).

WHY BORDEAUX?

Bordeaux Neurocampus is a vibrant international community of neuroscientists that includes over 700 researchers, over 700 scientists, and the Bordeaux School of Neuroscience.

These world-renowned research teams address topics covering all fields of modern neuroscience, including the complexity of brain functions and diseases with complementary expertise, high-resolution imaging and cell biology of the neuron, animal and human behavior and cognition, physiology of neural networks, sensorimotor information processing, mechanisms of neurodegenerative and mental disorders, neuroinflammation, as well as addiction and the links between nutrition and the brain.

Multidisciplinary, technological approaches and multiscale analyses are employed at the molecular, cellular, systemic, behavioral and clinical levels.

The Bordeaux School of Neuroscience, experienced in hosting the international CAJAL courses, offers participants optimal experimental conditions within the framework of a real research laboratory. The school is equipped with a wet lab, an in vitro and in vivo electrophysiology room, information and technology facilities, a standard cellular imaging room, and a behavioral animal facility.

Practical information

**Dates:** July 20th – August 1st, 2020.

**N° participants:** 25

**Language:** classes are conducted in English or French, depending on the public.

**Location:** lectures and practical sessions take place at the Bordeaux School of Neuroscience, on the Carreire campus of the University of Bordeaux.

**Participant profile:** the course is designed for master and doctoral students from various disciplines: biology, physics, chemistry, mathematics and computer science, psychology, medicine, pharmacy, etc.

**Applications:** to be completed online via our website: bss-neurosciences.u-bordeaux.fr

A CV and cover letter will be necessary.

**Deadline:** March 31st, 2020.

**Participation fee:** free of charge for University of Bordeaux participants; 1,000€ per external participant without lodging; 1,700€ lodging included, incl. VAT. Partial boarding and social program 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 upon request. To apply for an exemption, participants must send a cover letter along with their application, detailing why they would like to participate and justifying their request.

More information: bss-neurosciences.u-bordeaux.fr
**Wine and sake: the cutting-edge of oenology and sakeology**

August 31st – September 4th, 2020

**In a nutshell...**

This summer school is organized within the framework of bilateral collaborations between the University of Bordeaux and the University of Niigata (Japan). Promoting joint scientific activities in sakeology and oenology, it is open to graduate students, doctoral students, researchers and professionals.

The current scientific, technical and economic issues facing the wine and sake industries will be presented by experts, who will also outline current research questions and new evolutions for these disciplines. Tutored work sessions will allow participants to develop research ideas for project proposals in their areas of expertise.

**Expertise upon completion**

This course is a unique opportunity for participants to acquire multidisciplinary skills in sakeology and oenology and to participate actively in scientific projects in order to meet the current challenges of the sake and wine industries.

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

**Program**

**Day 1: August 31st**

- Participant arrival and welcome
- Introduction to sakeology and oenology, as well as the current challenges in both industries
- Participant introductions and presentations
- Creation of tutored working groups
- Welcome dinner

**Day 2: September 1st**

- Producing sake rice and wine grapes: frontiers of science, challenges and opportunities
- Tutored session: working groups
- Visit of the Institute of Vine and Wine Sciences and the French National Institute of Agricultural, Food and Environmental Research experimental vineyard

**Day 3: September 2nd**

- Controlling microorganisms and fermentations: frontiers of science, challenges and opportunities
- Tutored session: working groups
- Visit of the “Musée d’Aquitaine” museum

**Day 4: September 3rd**

- Quality, typicity and authenticity of sake and wine: frontiers of science, challenges and opportunities
- Tutored session: working groups
- Industrial visit - sake and wine tasting session

**Day 5: September 4th**

- Economics, distribution, sales: frontiers of science, challenges and opportunities
- Tutored projects presentation
- Introduction to Taiwan oolong tea - tea tasting session
- Visit of the “Cité du Vin” museum – closing dinner

*Program may be subject to change.*
Bordeaux is at the heart of one of the most famous wine regions in the world, renowned for the diversity and quality of its wines. This success is not only linked to the excellence of its terroirs and the know-how of the winemakers in the region, but also to the quality of the Bordeaux School of Oenology that has supported professionals in the sector for nearly 150 years.

The prominence of the vine and wine sector in the region of Bordeaux has been further strengthened by the creation of the University of Bordeaux’s Institute of Vine and Wine Sciences in 2009, and in 2016 by the opening of the "Cité du Vin" museum, both promoting the oenological and cultural heritage of wine around the world.

In this context, it is only natural that Bordeaux has been chosen to initiate links between wine and sake, two products that share the same cultural values.

This summer school is a unique opportunity for participants to learn about the frontiers of science in oenology and sakeology, and to discover the laboratories that will launch a partnership of the two disciplines."

Prof. A. Blanchard, Director of the Institute of Vine and Wine Sciences, University of Bordeaux
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”, capital of the Nouvelle-Aquitaine region in south-west France and last but not least, the wine capital of the world!

Home to the largest vineyards in the world with 7,000 châteaux and Grand Crus Classés wine estates, Bordeaux has become one of Europe’s most popular destinations and a real epicenter of the French “art de vivre”.

Be sure not to miss some of the city’s “must sees”, such as the water mirror, the Cité du Vin, museums, outdoor cafés and wine bars, to name but a few. Whether you be on foot, on your bike, taking the tram that serves the city center and suburbs or even by boat, there’s always a way to enjoy the unique atmosphere of Bordeaux, with its landscaped waterfronts, parks and trendy districts.

The city is ideally located on the doorstep of the Gironde estuary, less than an hour from the famous Saint-Emilion historical village, the Atlantic ocean and the Arcachon bay with its oyster ports, sandy beaches, pine forests and the Dune of Pyla, the highest sand dune in Europe.

Easily accessible thanks to an international airport with over 90 direct destinations, two hours from Paris by train, come 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

© université de Bordeaux
International Office
January 2020

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.