

Seasonal  
School







**Sant'Anna**

Scuola Universitaria Superiore Pisa

**Seasonal  
School**

**2021/22**



# Benvenute/i alla Scuola Superiore Sant'Anna

Sono lieta di presentarvi le “**Seasonal School**” della Scuola Superiore Sant'Anna di Pisa destinate a brillanti studenti universitari e dottorandi italiani e stranieri.

Fin dalla sua costituzione, la Scuola si è distinta per essere una **learning community** in cui docenti e allievi interagiscono ed affrontano tematiche di ricerca di frontiera con un approccio interdisciplinare. La missione della Scuola è, infatti, quella di essere una istituzione pubblica di riferimento e di qualità, dove il talento è messo in campo per prendersi cura del mondo e per contribuire con responsabilità alla sua crescita culturale e alla sua sostenibilità, nel rispetto dei valori costituzionali.

Con questa missione, ci rivolgiamo agli studenti e studentesse universitari italiani e stranieri di alto merito desiderosi di mettere in gioco il proprio talento partecipando ad una Seasonal School: un corso intensivo, di una o due settimane, a carattere residenziale o in modalità on line, dedicato a tematiche di frontiera interdisciplinari.

Mi auguro di potervi incontrare presto per accogliervi nella nostra comunità scientifica ricca di stimoli, in cui la ricerca diventa la palestra di apprendimento per la formazione.

Sabina Nuti  
Rettrice

# Welcome to Sant'Anna School

I am delighted to present to you the “**Seasonal Schools**” offered by the Sant'Anna School of Advanced Studies of Pisa and designed for brilliant Italian and foreign undergraduate and graduate students.

Since its establishment, the School has distinguished as a **learning community** in which faculty and students closely interact to address frontier research topics with an interdisciplinary approach. The School's mission is indeed to be a high-quality public institution of reference, where talent is nurtured to take care of the world and to contribute with a strong sense of responsibility to its cultural growth and its sustainability, in line with our constitutional values.

With this mission in mind, we call on the gifted Italian and foreign students who are eager to bring their talent into play by participating in a Seasonal School: an intensive course, of one or two weeks, on-site or online, focused on interdisciplinary frontier research topics.

I hope I will soon have an opportunity to meet you and to welcome you into our lively scientific community, where research becomes the training ground for education.

Sabina Nuti  
Rector



# Rankings

**Times Higher Education World University Rankings 2021**

**2° posto** a livello nazionale su 49 istituzioni censite

**170° posto** a livello mondiale su 1.527 istituzioni censite

**7° posto** a livello mondiale fra le giovani università con meno di 50 anni

**Times Higher Education World University Rankings 2021**

**2<sup>nd</sup>** at the national level on a census of 49 institutions

**170<sup>th</sup>** at the international level on a census of 1.527 institutions

**7<sup>th</sup>** at world level of best young universities under 50 years old

## Chi siamo

**“A research university, a school of talent, for a more sustainable and inclusive world”**

Questo è il motto della Scuola Superiore Sant’Anna, che si qualifica innanzitutto come una research university riconosciuta a livello internazionale per la qualità della ricerca condotta nei suoi Istituti e laboratori.

La Scuola Superiore Sant’Anna è un istituto universitario pubblico a statuto speciale, che si propone di promuovere, a livello nazionale e internazionale, lo sviluppo della cultura e della ricerca scientifica e tecnologica nell’ambito delle Scienze Economiche e Manageriali, Scienze Giuridiche, Scienze Politiche, Scienze Agrarie e Biotecnologie vegetali, Scienze Mediche e Ingegneria Industriale e dell’Informazione.

La Scuola ha, da sempre, l’obiettivo di sperimentare percorsi innovativi nella ricerca e formazione in un contesto interdisciplinare e di continuo scambio culturale e intellettuale tra docenti ed allievi.

Da qui nascono idee innovative, sviluppate in collaborazione con università, enti, aziende e istituti di ricerca stranieri. Grazie al suo carattere internazionale, alla formazione di eccellenza e alla comunità scientifica, la Scuola Superiore Sant’Anna vuole essere punto di riferimento in Italia e all’estero.

## About us

**“A research university, a school of talent, for a more sustainable and inclusive world”**

This is the motto of the Sant’Anna School of Advanced Studies, which, first and foremost, qualifies itself as a research university, internationally renowned for the quality of the research carried out in its Institutes and laboratories.

Sant’Anna School is a special-statute public university that aims to promote, on a national and international level, the development of culture and scientific and technological research in the fields of Economic and Managerial Sciences, Legal Sciences, Political Science, Agricultural sciences and Plant biotechnology, Medical Sciences and Industrial and Information Engineering.

Since its foundation, Sant’Anna School has had the goal of experimenting innovative programmes in research and training activities, with an interdisciplinary approach and in a context of continuous cultural and intellectual exchange between faculty and students.

Innovative ideas are born and developed in this environment, in collaboration with foreign universities, institutions, companies and research centres. Sant’Anna School wants to grow its role as a point of reference in Italy and abroad, thanks to its international nature, its focus on excellence, and its active scientific community.



## Ricerca di frontiera

Affrontare i problemi con un approccio interdisciplinare e condividere le conoscenze acquisite in ambiti diversi rappresenta la nuova sfida della ricerca.

Gli Istituti e i laboratori di ricerca della Scuola si aprono agli studenti di talento per coinvolgerli nei loro progetti sulle tematiche di avanguardia per il progresso della scienza e della società.

## Dove siamo

Pisa, città d'arte, di cultura e di scienza è un museo a cielo aperto famosa non solo per la bellissima Piazza dei Miracoli, patrimonio dell'UNESCO, ma anche per le sue istituzioni universitarie e di ricerca che costituiscono un centro d'eccellenza e di innovazione per la formazione e la ricerca tra i più avanzati del mondo. A Pisa hanno studiato illustri scienziati come Galileo Galilei, Enrico Fermi, Antonio Pacinotti, Carlo Rubbia e ospita tuttora talenti che danno vita ad un ambiente accademico vivace ed attivo che contribuisce ad arricchire l'esperienza universitaria degli studenti che vi entrino in contatto. Strade e piazze popolate da turisti e studenti provenienti da ogni parte del mondo la rendono una città accogliente e stimolante anche per concludere una intensa giornata di studio.

## Frontier Research

Addressing problems with an interdisciplinary approach and sharing the knowledge acquired in different environments represents the research challenge of the future.

The School's Institutes and laboratories now open their doors to talented students and involve them in their cutting-edge research projects for the progress of science and society.

## Where we are

Pisa is a city of art, science and culture, an open-air museum that is not only famous for the beautiful "Piazza dei Miracoli", a UNESCO World Heritage Site, but also for its universities and research centres, which constitute a cluster of excellence and innovation in education and research among the most advanced in the world.

Illustrious scientists such as Galileo Galilei, Enrico Fermi, Antonio Pacinotti, Carlo Rubbia studied in Pisa, and the city continues to hosts talents that create an active and lively academic environment, contributing to a richer university experience for all students who take part in it.

Pisa's streets and squares, populated by tourists and students from all over the world, make it a welcoming and stimulating city to discover after an intense day of study!



# Le Seasonal School

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## Cosa sono

Le **Seasonal School** sono percorsi formativi di eccellenza a carattere fortemente interdisciplinare, focalizzati sulle tematiche di ricerca di frontiera della Scuola.

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## Durata

Le Seasonal School hanno la durata di **una o due settimane**, si svolgono prevalentemente in **lingua inglese** e possono avere **carattere residenziale** oppure svolgersi con modalità di **didattica a distanza**. Al termine del percorso, successivamente al superamento di una prova finale, è previsto il rilascio di un attestato di partecipazione con il riconoscimento dei CFU indicati nei singoli bandi.

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## A chi si rivolgono

Sono destinate a studenti universitari iscritti ai corsi di Laurea triennale, di Laurea Magistrale e ai corsi PhD che abbiano le medesime caratteristiche di profitto degli studenti della Scuola. Le Seasonal School sono occasioni di incontro e confronto per entrare in contatto con altri studenti di merito provenienti da tutta Italia e dall'estero, da vivere "dentro" le nostre strutture e i nostri laboratori.

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## Requisiti

Sono ammessi gli studenti iscritti ad un corso di laurea o di dottorato di università italiane e straniere in pari con gli esami previsti dai diversi regolamenti didattici e con una media di profitto pari almeno a 27/30 per il sistema italiano o almeno B per quello internazionale. L'accesso alle Seasonal School prevede il possesso della conoscenza autocertificata della lingua in cui si svolgerà il corso pari o superiore al livello B2 qualora gli studenti non siano di madre lingua.

# The Seasonal Schools

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## What the Seasonal Schools are

The Seasonal Schools are training programmes "of excellence", which are strongly interdisciplinary, and focused on the School's frontier research topics.

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## Duration

The Seasonal Schools have a duration of **one or two weeks**; they are held predominantly in **English** and may be held **on-site** or **online**. Participants will be awarded a certificate of attendance at the end of the programme after passing a final examination, with full recognition of the credits (CFU) indicated in each call.

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## Addressees

They are open to university students enrolled in Bachelor Degree, Masters' Degree and PhD courses, and who have the same advancement characteristics as the School's students. The Seasonal Schools are also opportunities for meetings and exchanges with other high-performing students from all over Italy as well as from abroad, to be experienced "inside" our facilities and laboratories.

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## Admission requirements

Candidates eligible for admission will be: students enrolled in a Bachelor degree, Masters' Degree or PhD course at an Italian or foreign university, and who are on track relative to the examinations required by their educational institutions and with an average examination mark at least equal to 27/30 in the Italian system, or at least B in international system. Access to Seasonal Schools requires a self-certified knowledge of the teaching language at or above B2 level if students are not mother tongue speakers.



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## Come accedere alle Seasonal School

Per ogni Seasonal School viene pubblicato un bando di concorso dove si trovano tutte le informazioni sulle modalità di partecipazione e sulla documentazione necessaria per inviare la candidatura. I bandi vengono pubblicati sulla pagina: [www.santannapisa.it/it/seasonal-school](http://www.santannapisa.it/it/seasonal-school).

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## Costi

I costi e le modalità di pagamento sono indicati nei bandi delle singole Seasonal School.

La quota di iscrizione include oltre alla partecipazione alle lezioni anche il materiale di studio, il vitto e l'alloggio nel caso di iniziative in presenza.

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## Agevolazioni e premi

In base al proprio ISEE universitario sono previste riduzioni della quota di iscrizione. Le Università italiane e straniere convenzionate hanno diritto ad un posto riservato e alla tariffa agevolata del 10% sui costi di iscrizione.

Ai tre partecipanti che, al termine del corso, avranno conseguito la valutazione migliore verrà erogata una borsa di studio pari a 450 euro finanziata dalla Fondazione Talento all'Opera Onlus ([www.santannapisa.it/it/il-talento-allopera](http://www.santannapisa.it/it/il-talento-allopera)).

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## Alloggi

Gli studenti delle Seasonal School sono ospitati nelle strutture della Scuola, foresteria o residenze del collegio, o in alberghi convenzionati, secondo disponibilità. Le strutture sono collocate nelle immediate vicinanze della Scuola così da permettere ai partecipanti di godere appieno della città di Pisa e del suo centro storico.

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## How to apply to the Seasonal Schools

The Calls for Application published at [www.santannapisa.it/en/seasonal-schools](http://www.santannapisa.it/en/seasonal-schools) contain all the necessary information on how to participate and what documentation is required in order to submit the application online.

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## Costs

The costs and methods of payment are indicated in the Calls of the individual Seasonal Schools.

Besides attending the lessons, the enrolment fee also includes the study materials, in addition to full board and lodging in the case of on-site courses.

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## Preferential rates and prizes

A reduction in the enrolment fee is available based on the applicant's income.

Italian and foreign Universities with specific agreements with Sant'Anna School are entitled to reserved places and to a 10% reduction in the enrolment costs.

A 450 € scholarship provided by Fondazione Talento all'Opera Onlus will be assigned to the three best performing participants of each course.

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## Accommodation

Students are accommodated in the School's facilities, guesthouses or residences of the college, or in affiliated hotels, subject to availability. The facilities are located close to the School in order to allow participants to fully enjoy the city of Pisa and its historic center.

# Il network del talento

Forte della sua esperienza, la Scuola Superiore Sant'Anna si propone quale soggetto facilitatore e di coordinamento per la costituzione della rete del talento attraverso la collaborazione con università italiane e straniere e altri soggetti istituzionali interessati ad offrire ai propri studenti di merito una formazione integrativa sulle tematiche di ricerca più avanzate.

Al momento hanno aderito al progetto le seguenti università ed enti: **Fondazione Onaosi, Politecnico delle Marche, Università di Bolzano, Università della Calabria, Università di Camerino, Università di Catania, Università di Macerata, Università di Messina, Università di Palermo, Università di Trento, Università della Toscana, Università della Valle d'Aosta.**

Alle Università convenzionate è riservato almeno un posto per ogni corso in programma oltre ad una riduzione del 10% delle spese di iscrizione a tutti gli studenti e le studentesse, fermi restando i criteri di selezione previsti dal bando di ammissione.

➔ **Il network delle collaborazioni è in costante evoluzione, le Università interessate ad aderire al progetto Talento in rete possono contattarci per avere maggiori dettagli e informazioni [seasonalschools@santannapisa.it](mailto:seasonalschools@santannapisa.it) Tel. +39 050 883204**

# The talent network

On the strength of its experience, the Sant'Anna School of Advanced Studies proposes itself as a facilitator and coordinator for the establishment of a talent network through collaboration with Italian and foreign universities and other institutional subjects in order to offer their students of merit an integrative training on the most advanced research topics.

At the moment, the following Universities and associations have joined the project: **Fondazione Onaosi, University of Catania, University of Tuscia, University of Trento, University of Messina, University of Macerata, University of Camerino, University of Calabria, University of Palermo, Aosta Valley University, Free University of Bozen-Bolzano, Marche Polytechnic University.**

Affiliated universities are reserved at least one place for each course included in the program as well as a 10% reduction in enrolment costs for all students, without prejudice to the selection criteria set out in the admission call.

➔ **The network of collaborations is constantly evolving. Universities interested in joining the Talento in Rete project can contact us for more details and information [seasonalschools@santannapisa.it](mailto:seasonalschools@santannapisa.it) Ph. +39 050 883204**

### I collegi di merito

Il Protocollo d'intesa sottoscritto nel gennaio 2021 tra la Scuola Superiore Sant'Anna e la Conferenza dei Collegi Universitari di Merito prevede l'attivazione di una collaborazione strutturata tra le due istituzioni, aprendo la partecipazione alle Seasonal School a studentesse e a studenti dei 52 **Collegi Universitari di Merito** aderenti alla Conferenza con una tariffa agevolata del 10%. Fermi restando i criteri di selezione previsti dal bando di ammissione, la Scuola riserva almeno un posto per ogni corso ad una studentessa o studente dei Collegi Universitari di Merito segnalato dalla Conferenza.

### Italian university colleges of merit

As provided in the Memorandum of Understanding finalized by Sant'Anna School and the Conferenza dei Collegi Universitari di Merito (CCUM) in January 2021, students of the 52 **Italian University Colleges of Merit** joining the association, can participate to Seasonal School with a 10% reduction in enrolment costs.

Moreover, for every course, Sant'Anna reserves at least 1 position for a student coming from a University College of Merit, upon appointment of CCUM and the fulfilment of the selection criteria provided by the call for admission of every course.



### Il progetto EELISA

**EELISA, European Engineering Learning Innovation and Science Alliance**, è un network del programma European Universities a cui partecipa la Scuola Superiore Sant'Anna, che riunisce nove istituzioni universitarie europee con l'obiettivo di definire e implementare un modello condiviso di ingegnere europeo radicato nella società contemporanea. Per gli studenti e le studentesse delle Università partner (**Universidad Politécnica de Madrid, Budapesti Műszaki és Gazdaságtudományi Egyetem, École Nationale des Ponts et Chaussées, Friedrich-Alexander-Universität Erlangen-Nürnberg, İstanbul Teknik Üniversitesi, Scuola Normale Superiore, Universitatea Politehnica din București, Université Paris Sciences et Lettres**) non è previsto il pagamento della quota di iscrizione ma solo delle spese di viaggio e alloggio.

### EELISA – European Universities

**EELISA, European Engineering Learning Innovation and Science Alliance**, is a project developed within the framework of the European Universities program which brings together nine Higher Education Institutions from seven different countries in Europe with the aim of defining and implementing a shared model of European engineer rooted in society. Students enrolled in the following Universities, partner of the network: **Universidad Politécnica de Madrid, Budapesti Műszaki és Gazdaságtudományi Egyetem, École Nationale des Ponts et Chaussées, Friedrich-Alexander-Universität Erlangen-Nürnberg, İstanbul Teknik Üniversitesi, Scuola Normale Superiore, Universitatea Politehnica din București and Université Paris Sciences et Lettres** are waived from the enrollment fees and have to pay only for travel and accommodation.

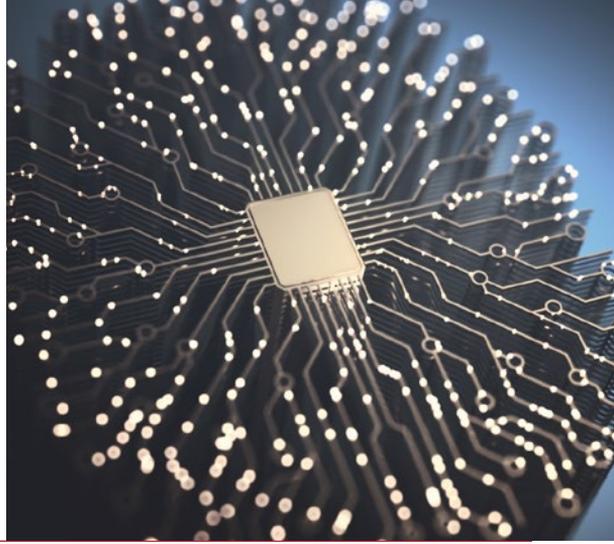


Seasonal  
School  
Program



# Next-Generation Cyber-Physical Systems Software Technologies, Artificial Intelligence, and Design Methodologies

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## Period

13-17 September 2021

## Deadline for Registration

22 August 2021

## Learning objectives

The Seasonal School will provide participants with competences required to face the design, the analysis, and the realization of cyber-physical systems (CPS) that are safe, secure, and predictable from a timing perspective. Particular attention will be devoted to CPS that make use of Artificial Intelligence algorithms, which are more exposed to safety and security threats. The courses offered by the Seasonal School will cover real-time computing, design of embedded systems, machine learning, cyber-security, operating systems and hypervisors, and edge computing with hardware acceleration. Transversal skills will also be provided by means of courses on innovation management, management of intellectual property, and civil liability.

## Teaching methodologies

Lectures will be provided in the form of both interactive frontal teaching and practical demonstrations that illustrate the application of the techniques and methodologies addressed during the Seasonal School. Industry experts will also provide lectures.

## Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students with a background on Computer Engineering,

Computer Science, Electronic Engineering, Automation/Robotic Engineering, Physics, and Mathematics.

## Coordinator and key teaching staff

Coordinator: Alessandro Biondi

Key teaching staff: Giorgio Buttazzo,  
Marco Di Natale, Tommaso Cucinotta,  
Luca Abeni



# Cybersecurity

## A multidisciplinary perspective

### Period

20-25 September 2021

### Deadline for Registration

29 August 2021

### Learning objectives

The Seasonal School aims to address the issue of cybersecurity through a cross-disciplinary analytical approach, combining computer science and social sciences, in order to provide participants with the tools to understand and discuss the various dimensions of cybersecurity from a technical, theoretical and legal point of view. The Seasonal School will offer the participants an updated and comprehensive understanding on the different dimensions of cybersecurity, with the aim of raising awareness of the opportunities and risks associated with new technologies, in order to allow them to develop a critical attitude towards the most problematic and controversial aspects of cybersecurity issues.

### Teaching methodologies

In line with the multidisciplinary approach at the base of the Seasonal School, the participants will be exposed to insights and research-based information provided by a qualified faculty of junior/senior academics and experts. The Seasonal School is structured in such a way as to provide all the participants a cross-disciplinary knowledge while ensuring, at the same time, differentiated paths for those who decide to deepen the engineering part or the social

science part. The teaching methodology will privilege an active learning stance; thus, different formats will be included in the didactic programme – lectures, round tables, case studies, simulations and gaming exercises – in order to stimulate the fruitful interaction, critical engagement and problem-solving skills of all participants. During the teaching sessions as well as during the informal social events the participants will have the opportunity to enlarge their networks, getting in touch with experts and academics.

### Who should attend this Seasonal School

BA and MA students enrolled in undergraduate and postgraduate programmes in Political Sciences, Law, Economics, Computer Science, Information Technology, Computer Engineering, Management Engineering.

### Coordinator and key teaching staff

Coordinator: Anna Loretoni

Key teaching staff: Giovanni Comandé, Tommaso Cucinotta, Rocco De Nicola, Luigi Martino, Elisa Piras

# IACH

## InnovAction in

### Health care: strategies, performance and data management



#### Period

27 September-1 October 2021

#### Deadline for Registration

12 September 2021

#### Learning objectives

The IAC School will cover specific research topics underpinning public health care system, with an emphasis on the analysis of real word evidence and data for a better use of assets and resources to achieve better outcomes and improved efficiency of care, as well on the recent managerial implication of the recent pandemic of coronavirus disease 2019 (COVID-19). Students will explore, with both a theoretical and empirical approach, tools and frameworks related to data management, business and process reengineering, innovation strategies, decision-making process and performance assessment in the field of health care services. Moreover, innovative solution to boost patients and community participation, engagement and co-production in the care process will be discussed and analysed in different setting of care. Students will be able to discuss challenging research issues, such as: how to measure and assess the performance of a care; what are possible data driven solutions to cope with variation; how to develop innovative interventions based on patients centred care; what are the main levers to improve quality and appropriateness of care and how to address challenges facing the pandemic crisis from the organizational perspective. Finally, different research

methodological approach will be discussed.

#### Teaching methodologies

The IAC School is a full online web-based programme. Participants will be asked to join the online class once or twice a week. A mix of lecture-based and laboratory classes will be developed by professors and researches. Participants will be actively engaged through a balanced mix of interactive theoretical lectures and simulations, debates and real case studies discussions. Moreover, facilitators will be available in order to facilitate the interactions and improve the discussion during the lab classes.

#### Who should attend this Seasonal School

The seasonal school is open to undergraduate, postgraduate and PhD students from various backgrounds who are interested in the field of health care management.

#### Coordinator and key teaching staff

Coordinator: Sabina De Rosis

assisted by Sara Barsanti

Key teaching staff: Sabina Nuti,

Milena Vainieri, Chiara Seghieri, Michele Emdin,

Claudio Passino, Nicola Bellè, Paola Cantarelli,

Francesca Ferrè, Anna Maria Murante,

Federico Vola

# MEDSKILL

## Development of MEDICAL SKILLS by Simulation



### Period

4-8 October 2021

### Deadline for Registration

9 September 2021

### Learning objectives

As of today, the need for practical skills and problem-solving capabilities remains largely unmet in many medical school curricula across Europe. Medical school education, in fact, remains largely anchored to a traditional paradigm of learning a discrete amount of information about pathophysiology principles and illnesses' descriptions, without worrying about developing the skills necessary to work confidently "on the patient". Digital tools based on macro-and microsimulation, thanks to their flexibility, effectiveness, accuracy and accessibility may give a fundamental contribution in solving this issue, and we want to apply their potential in undergraduate medical students' education. The MEDSKILL school will allow students to:

- 1) get in touch with digital tools that facilitate the study of anatomy, physiology, pathophysiology and clinical reasoning;
- 2) confront virtual patients/mannequins, interpret their artificial symptoms / signs and make decisions, taking into account the appropriateness of the choice, as well as ethical correlates and sustainability;
- 3) mimic clinical situations to test patient communication skills, simulate the use of diagnostic equipment, team leaders and interventional therapies.

### Teaching methodologies

The MEDSKILLS initiative will deliver both lectures and hands-on lab sessions. Each practical session is preceded by an introductory lesson on the theoretical aspects of the maneuvers that will be carried out and followed by a debriefing session. The course aims to provide preparation on transthoracic and abdominal ultrasound methods and the main cardiovascular and abdominal diseases. The course is divided into formal theoretical lessons and practical internships in the Simulabo classroom with the use of the Vimedix ultrasound and advanced echocardiography simulator.

### Who should attend this Seasonal School

Undergraduate medical students (V-VII academic year), postgraduate M.D.s candidacies can be evaluated.

### Coordinator and key teaching staff

Coordinator: Michele Emdin

Key teaching staff: Claudio Passino, Nicola Bellè, Alberto Giannoni, Emilio Pasanisi, Francesco Sbrana, Marco Giardetti, Giuseppe Vergaro, Angelo Monteleone, Vladyslav Chubuchnyi, Claudia Taddei, Elisa Poggianti

## INSIDER

### Innovazioni nel Sistema della Rappresentanza

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#### Period

11-16 October 2021

#### Deadline for Registration

12 September 2021

#### Learning objectives

The seasonal school offers a selective study program open to motivated undergraduate and PhD students, giving them the opportunity to obtain a specific training on the main current issues concerning political representation, electoral and parliamentary law in a comparative and interdisciplinary perspective that includes law, political science, political philosophy, economy as well as the contribution of other fields (e.g., ICTs).

It is a kind of training that no ordinary university course is able to provide, in particular due to the presence of speakers with different background and expertise. The students will therefore acquire skills that will allow them to critically consider from different points of view the various paradigm changes in political representation.

#### Teaching methodologies

The course will be conducted by lecturers of different backgrounds, thus enabling participants to look at the subject matter from an interdisciplinary perspective. The course will be articulated in lectures, working groups, case studies as well as meetings with experts.

Unless otherwise indicated, the lessons will be held in Italian. An advanced knowledge of the Italian language is therefore required.

#### Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds who are interested in the course topics (e.g., law, political science, social sciences, sociology, philosophy, etc.).

#### Coordinator and key teaching staff

Coordinators: Emanuele Rossi, Valerio Di Porto, Fabio Pacini

Key teaching staff: Francesca Biondi, Luca Gori, Elena Vivaldi



# CESM

## Circular Economy And Sustainability Management

### Managing the transition towards a circular economy



#### Period

18-22 October 2021

#### Deadline for Registration

13 September 2021

#### Learning objectives

The main target of the Circular Economy and Sustainability Management (CESM) seasonal school is represented by students from different backgrounds interested in the field of efficient resource management and circular economy. The CESM course explores organizational aspects and innovation facets related to all phases of the product life cycle; moreover, it provides practical overview of how processes, decisions and business models should change in light of the new circular economy paradigm. In more detail, the CESM seasonal school consists of 9 training modules lasting half day each on issues such as: circular economy assessment, circular design, strategy development & business models, communication. Finally, a half-day laboratory is scheduled to apply what students have learned in all previous lessons. Therefore, the learning objectives of CESM encompass: helping participants to acquire a framework of useful skills to seize the opportunities in the economic shift; managing the challenges and transformation processes in a circular logic in order to encourage the practical application of the knowledge gained.

#### Teaching methodologies

Students will be interactively and proactively

engaged in the training process thanks to the integration of the theoretical concepts with the practical experience under the guidance of the trainers, encompassing both academics and practitioners. The use of experiential techniques and the articulation of training and laboratories will allow the participants to consolidate existing skills and increase self-awareness. The innovative teaching methods will also rely extensively on companies' experiences in order to provide real world examples and lessons learnt. Case studies will also be included amongst the teaching tools on the purpose of encouraging the practical

#### Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. management, economics, law, political science, engineering, life sciences) who are interested in understanding how to manage the transition process towards the circular economy paradigm.

#### Coordinator and key teaching staff

Coordinator: Marco Frey

Key teaching staff: Fabio Iraldo, Francesco Testa, Francesco Rizzi, Massimo Battaglia, Tiberio Daddi, Natalia Gusmerotti, Eleonora Annunziata, Filippo Corsini

English / On line 

# UN and FAO 2021 year of Fruits and Vegetables (F&V)

Advancements in postharvest technologies to reduce losses and improve nutritional and functional properties of F&V



## Period

20-29 October 2021

## Deadline for Registration

27 September 2021

## Learning objectives

The United Nations and FAO have declared 2021 as the International Year of Fruits and Vegetables (F&V). The Year aims to direct attention to reducing loss and waste of these highly perishable produce items and to raise awareness of the nutritional and health benefits of consuming more F&V. These two goals can be achieved through concerted actions in the different steps of F&V value chain from the field to the consumer. In this context postharvest strategies and handling protocols play key roles.

Main issues addressed by the Seasonal School are related to higher availability of F&V, reduction of postharvest losses, global quality assurance, including nutritional and functional attributes, and increased convenience to stimulate opportunities of consumption; this will imply improved knowledge of biological and physiological processes of ripening, senescence and host/pathogen interaction, of most advanced innovations in quality evaluation techniques, in minimal-processing, in active and smart packaging, and in state-of-the-art storage technology. Students will develop a comprehensive view of the up-to-date F&V supply-chain innovations and the on-going direction of the research in this multidisciplinary sector.

## Teaching methodologies

Considering the evolution of the COVID-19 pandemic and the related-restrictions, lessons will be offered on-line.

Students will find an interactive and cross-disciplinary learning environment with several experts participating in the program presenting their experience in four didactic modules:

**I – New insights in ripening, senescence, and postharvest physiology of F&V;**  
**II – Storage protocols and postharvest losses: causes and impacts;** **III – Nutritional and functional properties of F&V and quality changes after harvest,** **IV – Postharvest Technology and Biotechnology and F&V quality in a changing world.**

## Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. agricultural science, food technology, plant science, biology) who are interested in understanding key steps, between the producer and the consumer, of the supply and value chain of F&V.

## Coordinator and key teaching staff

Coordinator: Pietro Tonutti

Key teaching staff: Luca Sebastiani, Anna Mensuali, Susanna Bartolini, Vincenzo Lionetti, Giancarlo Colelli, Antonio Ferrante (University of Milano)

# PHOTONS-@ Photonic Technologies For Sensing Applications



## 📅 Period

24-28 January 2022

## ✍️ Deadline for Registration

13 December 2021

## Learning objectives

Photonic technologies have played a key role in the last decades to address the high demand for data traffic by telecommunication networks and data centres. The industrial development of Wavelength Division Multiplexing (WDM) optical communications systems and networks in the nineties and the more recent interest in photonic integration for data centres to overcome their well-known electronic bottleneck, have driven the technology to a high level of maturity, opening the way to many other industrial fields and applications. Photonic technologies are becoming extremely attractive for sensing applications in a wide range of industrial fields, including energy, oil & gas, transportation, automotive, aerospace, bio-chemical and medical applications, as well as for structural health and environmental monitoring. Optical fiber sensors and photonic sensors, in general, offer many advantages compared to conventional electronic-based sensors; immunity to electromagnetic interference, small size and weight, high multiplexing capabilities, robustness to harsh environments, as well as the fact of being completely passive at the sensing points.

## Teaching methodologies

The proposed courses, which range from basic optical components to optical fiber sensor systems, imaging sensors and photonic integration for sensing will provide the students with the basic skills to understand the industrial requirement for photonic sensing, including specific niche applications, as for example, aerospace and high energy physics, as well as applications addressing large volume market sectors, like the automotive and transportation sectors, then requiring specific technologies, such as the CMOS compatible silicon photonics platform. Students will find an interactive and cross-disciplinary learning environment with the participation of several experts from industry who will present their experience.

## Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds, including information and industrial engineering, as well as physics and material science. A basic knowledge of maths, algebra, geometry, computer programming, electromagnetism and optics is required.

## Coordinator and key teaching staff

Coordinator: Fabrizio Di Pasquale

Key teaching staff: Antonella Bogoni, Carlo Alberto Avizzano, Philippe Velha, Stefano Faralli, Claudio Oton

# ARTIST

## 5G/6G networks

### trAnsfoRming

## The dIgital SocieTy



#### Period

31 January-4 February 2022

#### Deadline for Registration

10 December 2021

#### Learning objectives

Future mobile network technologies (5G, 6G, etc.) will allow the creation of new applications that will transform the way people live, work and interact with the environment.

The educational objectives of the proposed seasonal school are to understand and to learn:

- the architectures of 5G / 6G cellular systems with regard to the radio interface, the wired component and the software components such as virtualized entities, edge computing and AI-aided resource allocation.
- the main features of data traffic transport and routing technologies in 5G/6G networks, telemetry techniques and advanced traffic conditioning techniques
- the emerging services that may be delivered by 5G/6G networks and how these networks are able to meet the stringent requirements that such services sometimes require.
- the impact of the aforementioned services on the sustainability of the planet and the global challenges of the 21st century

The Seasonal School ARTIST has been designed to critically evaluate and elaborate on these new technologies to stimulate a focused examination of the many facets and challenges offered by 5G and future networks architectures.

#### Teaching methodologies

ARTIST is entirely delivered in English and will comprise two parts: the first part lasting 4 days includes focus session on key issues, industrial talks and brainstorming break-out sessions; the second part lasting one full day includes the laboratory sessions, while the final exam presentation of a brief project work will take place on-line afterwards.

#### Who should attend this Seasonal School

Main candidate for attendance are Master of Science (Laurea Magistrale) students in the area of Computer Science, Telecommunication Engineering, Electronic Engineering, Aerospace Engineering, Biomedical Engineering, Automation Engineering

Postgraduate students and PhD students in the aforementioned disciplines interested in the seasonal school topics are also welcome.

#### Coordinator and key teaching staff

Coordinators: Piero Castoldi, Luca Valcarengi

Key teaching staff: Gabriele Cecchetti, Andrea Sgambelluri, Nicola Sambo, Silvia Fichera, Anna Lina Ruscelli, Davide Scano

# Cibo, sostenibilità e diritti



## Period

7-11 February 2022

## Deadline for Registration

9 January 2022

## Learning objectives

The Seasonal School will introduce participants to the urgent topic of food sustainability, exploring how to build sustainable and climate-resilient agri-food systems through a dialogue between social and life sciences. Regulatory and non-regulatory measures for socially inclusive and environmentally more efficient food systems will be addressed. The policy and legal implications of the transformative approach recently taken by the EU with the European Green Deal and the shift towards more sustainable solutions in a Farm to Fork perspective will be thoroughly analysed during the Seasonal School. Topics such as food security and the right to food, food safety, international trade, digital innovation and blockchain will be at a centre stage. Moreover, issues linked to farming and consumption models will be taken into consideration through seminars given by scholars from the life science Institute.

## Teaching methodologies

Students will find an interactive and cross-disciplinary learning environment that facilitate problem solving as well as strong decision-making, strategic communication, and leadership. Interdisciplinary will characterize both the teaching staff (including

professors of law, economics, management, agronomy, medicine) and the participants. Cross-fertilization among disciplines is in fact the most effective way for designing more sustainable food systems.

## Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. law, political science, life sciences and engineering) who are interested in understanding the agri-food systems governance.

## Coordinator and key teaching staff

Coordinators: Eloisa Cristiani,  
Mariagrazia Alabrese

Key teaching staff: Francesca Capone,  
Natalia Gusmerotti, Laura Ercoli,  
Vincenzo Lionetti, Camilla Moonen,  
Andrea Saba

# TRUST

## TRansparency, Integrity and AnticorrUption in a public-private SysTem



### Period

14-18 February 2022

### Deadline for Registration

28 January 2022

### Learning objectives

The Seasonal School TRUST aims to provide participants with a holistic understanding of corruption. Corruption has increasingly taken on the characteristics of a systemic crime involving both public and private sectors, economy, democracy and civil society. Understanding the multidisciplinary and multidimensional nature of corruption will allow participants to acquire the necessary skills for a comprehensive analysis based on the synergy between the public and private sectors. Participants will experience the crucial cross-fertilization between public and private entities in the broad perspective of the importance of the trade-off between performance, efficiency and Integrity both in public institutions and private corporations. At the end of the Seasonal School participants will be skilled to approach corruption from prevention to repression actions, from legal to ethical and economical questions in line with the current best practice adopted at a European and international level.

### Teaching methodologies

Students will find an interactive and multi-disciplinary learning environment that facilitate comprehensive understanding and analysis as well as strong decision-making, strategic communication, and leadership.

Several experts coming from public and private sectors will participate to the program presenting their experience.

### Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. law, social and political science, economics...) who are interested in understanding how to prevent and fight corruption in the aforementioned comprehensive approach.

### Coordinator and key teaching staff

Coordinator: Gaetana Morgante

Co-coordinator: Giuseppe Di Vetta

Key teaching staff: Elena Vivaldi, Giuseppe Martinico, Giacomo Delle Donne, Alberto Pirni, David Natali, Francesco Testa, Maria Francesca Romano, Tommaso Cucinotta

# ECLIRE

## The ethics of climate change

### Reshaping Responsibilities for Present and Future Generations

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#### 📅 Period

21-25 February 2022

#### ✍️ Deadline for Registration

23 January 2022

#### 🎯 Learning objectives

The seasonal school aims to train participants on the ethics of climate change through a triple perspective: individual, global and intergenerational. It will also do so by opening up to disciplines beyond political and moral philosophy, such as political science, metaphysics, sociology and economics. The overall objective is to provide participants with the normative keys to analyse climate mitigation policies in the light of criteria such as historical responsibility, global asymmetries of economic power and adaptive capacity, and duties of justice towards future generations. The issue of social acceptability and socio-economic consequences will also be taken into account through the contribution of sociologists and social scientists. This will be preceded by an opening day with hard scientists dedicated to the introduction to climate change and the discussion of possible future risk scenarios.

#### 📚 Teaching methodologies

The seasonal school includes interactive face-to-face lectures led by pairs of lecturers, climate policy-making simulations and interdisciplinary workshops (also open to personalities from the world of communication, business and European institutions).

#### 👤 Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. philosophy, law, political science, life sciences, engineering, economics, management, communication, development studies) who are interested in understanding risks, solutions and opportunities of climate change mitigation.

#### 👤 Coordinator and key teaching staff

Coordinator: Alberto Pirni

Key teaching staff: Roberto Buizza, Francesca Capone, Franco Flandoli, Barbara Henry, David Natali

# Management of Innovation and common good



## Period

28 February-4 March 2022

## Deadline for Registration

17 January 2022

## Learning objectives

This Seasonal School addresses some of the main issues regarding innovation management and knowledge exchange (including technology transfer) with a broad vision which includes sustainability and health management. The specific approach of this Seasonal School (1) aims at arousing the interest of participants from different scientific disciplines and (2) focuses on the goal of contributing to the common good (at the level of universities, companies, territories). The theories and tools for managing innovation will be presented and discussed not so much with the objective of creating competitive advantage, but as a support to the ability to launch new initiatives of various kinds aimed at creating value for the society as a whole, especially in coherence with the need to rethink the current capitalism system. Emphasis will be given to the role of purpose-driven organizations, their capacity to trigger architectural innovation to address societal problems, as well as on the emergence of new ways of interacting with social, environmental and cultural contexts. In this regard, some paradigms that are today at the center of the debate on the transformation of the economy which is urgently needed will be presented, such as those of the creation of shared value, integral

ecology and civil economy. The role of the United Nations Sustainable Development Goals will also be addressed.

## Teaching methodologies

The Seasonal School will include lectures by professors as well as presentations by entrepreneurs and other people and organizations active with different types of profit and non-profit initiatives aimed at contributing to the common good. Students will be also asked to contribute not only with questions but also with short presentations about specific issues as well as their personal experiences.

## Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds interested in acquiring knowledge, competences and experiences in the broad field of innovation and common good.

## Coordinator and key teaching staff

Coordinator: Andrea Piccaluga  
Key teaching staff: Milena Vainieri,  
Marco Frey, Alberto Di Minin,  
Francesco Testa, Tiberio Daddi,  
Sara Barsanti, Gianluca Gionfriddo

# African Perspectives: Change, Conflicts, Connections



## Period

7-11 March 2022

## Deadline for Registration

7 February 2022

## Learning objectives

Africa is the target of political attention by international actors (including Italy and Europe). Challenging simplistic interpretations and stereotypical representations, this Seasonal School provides participants with advanced tools for a critical understanding of key political dynamics, which, starting from the African continent, shed light on global dynamics – e.g., migration, violent extremism and extractivism. The learning objectives of the Seasonal School thus include:

- Developing a critical, interdisciplinary view of challenges and opportunities arising from dynamics of transformation and conflict in Africa;
- Familiarizing students with cutting-edge analytical perspectives for the study of diversity and social change that are derived from comparative-historical sociology, post-colonial and gender studies (including immersive and digital ethnography and audiovisual media);
- Enabling the acquisition of the theoretical knowledge and essential skills that are relevant to a variety of professional domains and careers.

## Teaching methodologies

Building on a multidisciplinary approach, the School offers to its participants a wide range of analytical tools, drawing from political science, international relations, political economy, communication, conflict studies,

ecology and area studies. The School lays particular emphasis on perspectives such as post-colonial and gender studies, digital ethnography and critical sociology. We adopt different teaching formats to stimulate the active engagement of all participants: frontal lectures will be complemented by dialogue sessions between academics and practitioners, round tables with established and junior scholars, as well as informal social events (movies, music, dinners). Interaction with key experts from UN Agencies, EU and AU institutions in the faculty will help students sharpen their hands-on understanding and develop a network of professional and academic contacts.

## Who should attend this Seasonal School

Undergraduate, post-graduate and PhD students from different backgrounds, who have already obtained at least 60 credits from in areas such as: political science, sociology, economics, history, philosophy, law, foreign languages, geography, area studies.

## Coordinator and key teaching staff

Coordinator: Francesco Strazzari

Key teaching staff: Dr Luca Raineri, Enrico Pé, Elisa Piras, Marco Roventini

# The Data Society: Rules and Methods for AI and Privacy



## Period

4-9 April 2022

## Deadline for Registration

21 March 2022

## Learning objectives

The digital economy harnesses the power of big data, modern high computing capacity, Artificial Intelligence, and innovation. It also leverages their interconnection allowing information technology to mediate all human activities. These innovations should be properly framed within the existing legal and ethical framework, in order to strike the right balance between the protection of fundamental rights and freedoms and the need to preserve the regulatory flexibility necessary for all market players to enjoy and be empowered by the wealth of big data in an open society. Data protection plays a significant role for these purposes. Although the legal and ethical framework of the data society is increasingly central to the international debate and for future jobs, there are few opportunities for would-be jurists, technologists and social scientists to acquire the necessary skills to govern the interaction between technological innovation in data science and the regulatory and fundamental rights protection framework. The Responsible Data Society School intervenes on this gap, with the aims of enabling students: i) to develop a responsible approach to Machine Learning techniques, data mining, algorithms, AI in technical, as well as social analytics activities; ii) to be aware of the interaction

between technologies and regulatory standards; iii) to develop, by design, a robust methodology to comply with the applicable legal framework.

## Teaching methodologies

Students will find an interactive and cross-disciplinary learning environment to enhance theoretical and empirical skills to strengthen problem solving, as well as strong decision-making attitudes within various scenarios. Several experts coming from e.g. research & innovation, industries, policy-making, and public authorities will participate in the programme addressing the identified challenges from a multidimensional perspective. This will help to improve transversal skills, for example, strategic communication, teamwork and leadership.

## Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. law, economics and political sciences, life sciences, computer science, physics, and engineering) who are interested in understanding the legal and ethical thorns and twists of big data and AI.

## Coordinator and key teaching staff

Coordinator: Giovanni Comandé  
Key teaching staff: Denise Amram,  
Maria Gagliardi, Caterina Sganga

# AgriDev

## Climate resilient, biodiversity-based agriculture for sustainable development

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### 📅 Period

2-6 May 2022

### ✍️ Deadline for Registration

14 February 2022

### Learning objectives

Cropping systems face complex challenges that cannot be addressed with unidimensional solutions. This seasonal school is a 5-days full immersion in transdisciplinary approaches aimed at enhancing the sustainability of cropping systems in the wake of climate change, spanning from climate science, to genetics, to socioeconomics. Course participants will have the opportunity to develop a portfolio of knowledge at the base of cutting-edge scientific approaches in agronomic research for sustainable development with a focus on smallholder farming systems.

The seasonal school is structured in four interconnected modules. The first module will deal with climate science, focusing on climate change, weather forecasting, climate prediction, and climate-agriculture nexus. The second module will deal with all levels of agrobiodiversity and their relevance for sustainability and provision of ecosystem services. The third module will deal with molecular breeding, discussing genomics and participatory applications in crop improvement, including genome-wide association studies and genomic selection. The fourth module will discuss socioeconomic aspects of farming systems and introduce data-driven participatory

breeding methods joining climate, agronomy, genetics, and crowd-sourcing approaches to improve local adaptation of crop varieties.

### Teaching methodologies

The seasonal school runs over 5 days in Pisa, Italy, and is organized in lectures, hands-on exercises, and panel discussions. We value interaction with training staff to foster discussion outside the classroom, so expect city tours and aperitivi (a staple of Italian lifestyle). Trainees will be involved in roundtable discussions and will be given opportunities to present themselves, their background, and their research ambitions.

### Who should attend this Seasonal School

The seasonal school is designed for undergraduate students, but graduate students may also apply. We expect a background in life sciences, yet students from a social science background can also participate: any student with a strong interest in modern agronomic approaches aimed at sustainability is welcome.

### Coordinator and key teaching staff

Coordinator: Matteo Dell'Acqua

Key teaching staff: Roberto Buizza, Paolo Barberi, Alessandro Nuvolari, Mario Enrico Pè, Anna-Camilla Moonen, Martina Occelli, Mara Miculan

## TWIST

### Trasformazioni del Welfare, Innovazione Sociale, Diritti e Terzo Settore

#### Period

9-13 May 2022

#### Deadline for Registration

4 April 2022

#### Learning objectives

The season school is aimed at acquire knowledge and skills on the organization of welfare systems and access to fundamental rights, focusing on the innovative elements of the relationship between public and private entities, with a particular reference to the analysis of community's needs and to the identification of innovative solutions to cope with it. The Course combines, in an interdisciplinary perspective, the institutional profiles of welfare systems with the analysis of some specific social sectors related to the reduction of inequalities, the fight against social exclusion and the creation of inclusive societies (objectives of the United Nations 2030 Agenda). These main objectives represent the most important challenges that, in the current historical context, await the welfare systems and require specific skills for the design and implementation of innovative paths, also to mitigate the economic and social impact of the Covid-19 pandemic. Moreover, a specific attention will be devoted to the NextGenerationEU program, aimed at making economies and societies in EU Member States more sustainable, resilient and prepared for the challenges and opportunities of the ecological and digital transition. In this framework, the Course also offers a key to understanding the measures that, in line



with this EU program, will be envisaged and implemented as part of the National Recovery and Resilience Plan, which identifies, among others, innovation, health, education and inclusion as strategic axes.

#### Teaching methodologies

The seasonal school promote an interactive and cross-disciplinary learning environment that facilitate problem solving as well as strong decision-making and strategic communication. The course will be articulated in lectures, working groups, case studies as well as meetings with social innovation experts.

#### Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds who are interested in the course topics (e.g., law, political science, social sciences, sociology, philosophy, etc.).

#### Coordinator and key teaching staff

Coordinators: Emanuele Rossi, Elena Vivaldi, Luca Gori

Key teaching staff: Francesca Biondi Dal Monte, David Natali, Giuseppe Martinico, Cristina Napoli, Paolo Addis

## CROSSROADS

### The never-ending EU crises and the COVID-19 pandemic outbreak



#### Period

23-27 May 2022

#### Deadline for Registration

11 April 2022

#### Learning objectives

The Seasonal School aims to offer a critical assessment of the current governance structure of the EU and the key policies designed to tackle the COVID-19 pandemic. It will evaluate the impact of the pandemic crisis together with the previous crises which had hit the EU at least since 2010. In such a difficult context, the pandemic crisis could represent both a factor of disintegration and an opportunity to deepen integration and create a more supranational union. The Seasonal School delves deep into these scenarios, focusing on the new tools and institutions set up to manage the effects of the pandemic crisis and the complex relationship between the Union and the member states. In order to understand the tensions and interpret the changes brought about by this unprecedented crisis, the School will provide an interdisciplinary perspective based on public and comparative law, EU and comparative politics, and policy analysis.

By the end of the School, students will be able to:

1) Critically analyse the recent key events and developments in the pandemic and other EU crises and their impact at the national, supranational and transnational levels;

2) Develop methodological skills – across different disciplines, perspectives and approaches – to assess the complexity of the crisis;

3) Gain advanced knowledge of EU politics and law and acquire transferable skills to work in the EU institutions, think-tanks, interest groups, and in academia.

#### Teaching methodologies

Students will be exposed to a problem-based and research-led teaching methodology and will be asked to actively contribute to the programme. Classes will be interactive and mix frontal teaching with case-studies, simulations, group discussions and presentations. Practitioners and policy experts will participate to the program presenting their experience.

#### Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students from different backgrounds (e.g. law, political science, economics, management, languages, history, philosophy) who are keen to develop an advanced understanding of EU law and politics.

#### Coordinator and key teaching staff

Coordinators: Giuseppe Martinico, David Natali, Edoardo Bressanelli

Key teaching staff: Francesca Biondi Dal Monte, Giacomo Delle Donne, Serena Giusti, Andrea Terlizzi

# Issues on Contemporary China: Society, Innovation and Culture.

## Filippo Nicosia Seasonal School



### Period

13-17 June 2022

### Deadline for Registration

8 May 2022

### Learning objectives

The Seasonal School is a five-day dynamic and intensive program, that offers an introduction to economic, social, political and legal aspects of modern China through the lens of leading research activities promoted by Sant' Anna Institutes.

Participants will have the opportunity to develop the necessary background to comprehend some of the major China's issues, while emphasizing the traditional and modern roots of contemporary China.

The seasonal school aims at promoting the knowledge of the role of People's Republic of China, within the new global order and its role in the reconfiguration of international relations from different perspectives.

More specifically, the 40 hours-long school will be characterized by a strong interdisciplinary approach and will be focused on **the encounter** with people, countries, way of thinking and systems connected with China. In other words, in order to guarantee the pluralism of disciplinary and intellectual perspectives, the seasonal school will explore aspects related to the phenomenon of tourism, geopolitical and international relation issues, technology transfer and legal systems. The Seasonal School is dedicated to the memory of the former Consul General of Italy in Chongqing, Filippo Nicosia.

### Teaching methodologies

Lectures, led by experts from Sant'Anna faculty and distinguished specialists from the academic and business environment tied to China, will be complemented by an introductory course of basic Chinese language and culture offered by professional native-speaking instructors.

In this interactive and cross-disciplinary learning environment, students will have the chance to attend frontal lessons, Q&A sessions and workshops.

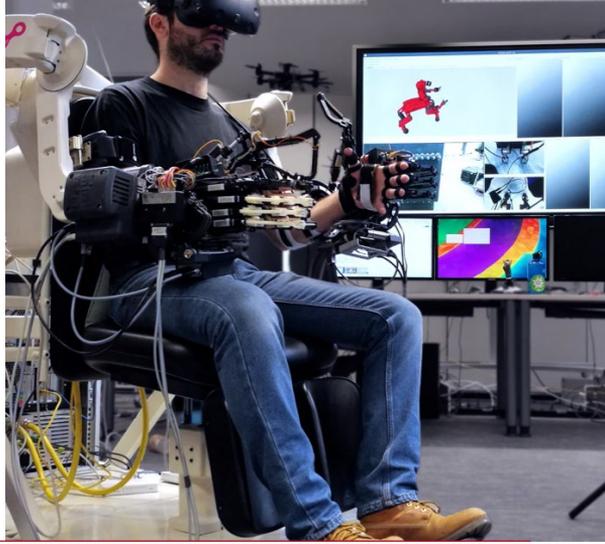
### Who should attend this Seasonal School

Highly motivated students (Undergraduate, Postgraduate) from any university degree programs (e.g. law, political science, life sciences, medicine and engineering) are welcome to take part in online seasonal school.

### Coordinator and key teaching staff

Coordinator: Alberto Di Minin

Key teaching staff: Nicola Bellini (Pisa Confucius Institute Teachers) in collaboration with Galileo Galilei Italian Institute, Chongqing



# AIRONE

## Artificial Intelligence and Robotics in extended Reality

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### Period

20-24 June 2022

### Deadline for Registration

10 April 2022

### Learning objectives

In the forthcoming decade, technologies of eXtended Reality (XR), i.e., Virtual, Augmented and Mixed Reality, and collaborative robots will become ubiquitous. Then, the XR combination with robots and human-centric Artificial Intelligence will enable distributed environments where humans, robots and virtual entities coexist and may become the sentient embodiment of remote human operators. The AIRONE School will cover specific research topics underpinning this paradigm shift affecting technology, perception and interaction ways.

At the end of the AIRONE School, participants will learn the main aspects of eXtended Reality, the basics for the design and control of collaborative and wearable robots for immersive telepresence, and the fundamentals of Machine Learning and AI applied to Robotics and artificial vision systems.

### Teaching methodologies

The AIRONE initiative will deliver both lectures and hands-on lab sessions. Primary teachers active in the international research community will offer AIRONE participants a live experience of research at the intersection of Robotics, Artificial Intelligence and XR.

### Who should attend this Seasonal School

Undergraduate, postgraduate and PhD students in engineering and related disciplines who are interested in research and technology and in exploring the potential of combining eXtended Reality, Robotics, and Artificial Intelligence.

### Coordinator and key teaching staff

Coordinator: Massimo Bergamasco

Key teaching staff: Antonio Frisoli, Carlo Alberto Avizzano, Massimiliano Solazzi, Marco Fontana, Marcello Carrozzino, Franco Tecchia and other teachers still to be confirmed

# Climate Change and International Law: Interdisciplinary Perspectives



## Period

4-8 July 2022

## Deadline for Registration

3 June 2022

## Learning objectives

The main focus of the Seasonal School will be on the international legal context of climate change and on the global governance efforts addressing this phenomenon. However, in light of the complexity of climate change and the intrinsic need to adopt an interdisciplinary perspective, the Seasonal School will also provide the participants with the opportunity to acquire a basic knowledge of the scientific, economic and ethical aspects related to climate change. Notably, the legal perspective itself will be characterized by a multidisciplinary approach in order to reflect not only on the evolution of the specific body of international climate change law, but also on the role of other areas of law, such as human rights law, public comparative law, agricultural law and migration law.

## Teaching methodologies

The Seasonal School is characterized by a unique combination of lectures and interactive sessions. The main goal of such an innovative approach is to provide the participants with the opportunity to apply to a practical scenario the theoretical skills acquired during the frontal sessions. In addition to the frontal lectures and the interactive sessions, also a high-level expert workshop on a timely and relevant issue will

be included in the programme.

## Who should attend this Seasonal School

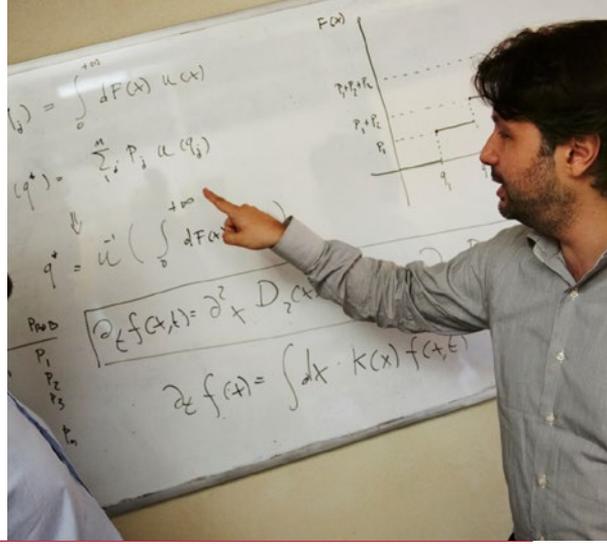
The course is intended for (Italian or foreign) undergraduate, postgraduate and PhD students. This Seasonal School's main target is represented by undergraduate students; however, Master and Ph.D. students are also encouraged to apply given the fact that the Seasonal School will fill an important gap in the current educational offer of Italian Universities, as well as of many foreign academic institutions.

## Coordinator and key teaching staff

Coordinator: Francesca Capone

Key teaching staff: Christine Bakke, Mariagrazia Alabrese, Roberto Buizza, Eclorardo Chiti, Andrea de Guttry, Alberto Pirmi

# Agent-based models in Economics: theory, toolkit and policy laboratories



## Period

11-15 July 2022

## Deadline for Registration

30 April 2022

## Learning objectives

The study of economies seen as complex evolving systems has proven to be an appropriate lens of analysis to interpret and provide diagnoses of the many instances of the structure of capitalism. Heterogeneity, non-linearity, interdependent and cumulative processes, structural crises, regime changes, path-dependence and inequalities are among the key properties of both micro and macroeconomic phenomena. Agent-based models are a powerful and growing tool to develop theoretical models disciplined by empirical evidence, able to address the complex and evolving nature of economies; additionally they constitute a natural policy laboratory enabling the possibility to perform scenarios analysis useful to inform policy choices.

The Institute of Economics of Sant'Anna School of Advanced Studies launches the first Seasonal School in "Agent based models in Economics: theory, toolkit and policy laboratories".

The Seasonal School is intended to achieve the following objectives:

- Learning of agent-based modelling techniques (ABMs) as a tool of analysis and interpretation of economic and social processes.
- Development and design of agent-based

models through software laboratories (Laboratory for Simulation Development platform).

- Introduction to statistical and econometric techniques for the analysis of macro-evolutionary agent-based models (R software).

Competencies provided include:

- Theories and applications of agent-based models in micro and macroeconomics uncovering diverse thematic areas such as technical progress, economic cycles, labour markets, economic growth, climate change.
- Empirical validation and analysis of models' parametric space.
- Scenarios-based analysis and policy experiments.

## Teaching methodologies

Frontal lectures, laboratories and seminars.

## Who should attend this Seasonal School

Master and PhD students enrolled in Economics curricula. Applicants from other disciplines are welcomed.

## Coordinator and key teaching staff

Coordinator: Maria Enrica Virgillito  
Key teaching staff: Giovanni Dosi, Francesco Lamperti, Andrea Roventini, Giorgio Fagiolo, Francesco Lamperti, Alessio Moneta, Lilit Popoyan, Emanuele Russo, Marcelo C. Pereira

# Exploring sea and space: technologies, opportunities and challenges



## Period

18-22 July 2022

## Deadline for Registration

6 June 2022

## Learning objectives

In the last centuries, humanity has fully explored and mapped the emerged fraction of Earth surface; today it has growing interest in exploring and exploiting the submerged fraction of the Earth as well as the nearby space regions, intensively. To this aim, engineers provide new powerful means (robots, underwater and space communication systems, new nano-satellite solutions, energy extraction from the sea); the exploration and exploitation of resources also pose problems relating to the biology of living beings. Moreover a wide range of new issues arise, about the economic implications and legal implications.

The School aims to provide a concise overview of the relevant scientific challenges and development prospects in a unitary framework where issues of economic and environmental impact, potential conflicts and regulatory assessments are also addressed. The Seasonal School will take an holistic approach and will introduce participants to the key technologies in a unitary framework, where the engineering role is viewed together with biological and medical issues, economic aspects and legal problems.

At the end of the Seasonal School, the participants will have a comprehensive overview of the future trends in the challenging

topics of space and sea exploration.

## Teaching methodologies

Students will find a cross-disciplinary learning environment, interacting with professors and industrial managers that are leaders in their research areas. They will also be given the opportunity to visit the labs of Scuola Superiore Sant'Anna and experience latest research approaches.

## Who should attend this Seasonal School

Advanced Undergraduate, postgraduate and PhD students from engineering or physics.

## Coordinator and key teaching staff

Coordinator: Ernesto Ciaramella  
Key teaching staff: Cecilia Laschi,  
Debora Angeloni, Emanuele Sommario,  
Giulio Cossu, Giuseppe Turchetti,  
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