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FRP++ WORKSHOP 2023

France



European Master Course in Advanced Structural
Analysis and Design using Composite Materials

May 24 to 26, 2023



UNIVERSITÀ DEGLI STUDI
di NAPOLI FEDERICO II



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CONTENT

Organizing Committee	5
Welcome	5
Venue	5
Suggested Hotels	8
Hotels near Institut Clément Ader	8
Hotels near the city center	9
How to Get to the ICA in Toulouse	10
By Plane:	10
By Train:	10
By Bus:.....	10
By Car:.....	11
Overall Programme.....	12
Detailed Programme.....	13
Keynote Lectures	14
Seminar	15
MSC Dissertation Pitch.....	16
Job Fair	18



All the hybrid events will be accessed through the following **Zoom link**:
<https://videoconf-colibri.zoom.us/meeting/register/tJAsc-2qrT0qE9XxwCRVdw5LOoLiZo8FU0jc>



ORGANIZING COMMITTEE

Bruno Castanié, **INSA/UT3**
Luís Correia, **UMinho**
José Sena-Cruz, **UMinho**
Rita Oliveira, **UMinho**

Cristina Barris, **UdG**
Marco Di Ludovico, **UNINA**
Andrea Prota, **UNINA**

WELCOME

The FRP++ Workshop 2023 will take place at the *Institut Clément Ader* France, between May 24th and 26th, 2023. The programme includes a series of relevant activities, namely: (i) gaining additional knowledge supported in keynote lectures from Associated Partners, (ii) performing technical visits to Institut Clément Ader, (iii) developing additional soft skills, namely in the seminar “How to prepare my CV”, (iv) discussion about the ongoing MSc dissertations and, v) social interactions, e.g. visiting the downtown of Toulouse, visiting the Museum AEROSCOPIA or social dinner. All the EMJM FRP++ students are invited to attend this event in person. Welcome to Toulouse!

VENUE



Institut Clément Ader (ICA) is a research laboratory that focuses on the study of structures, systems and mechanical processes. Our activity sectors are in the mechanical industries with a particular focus on aerospace, space, transportation and energy. Our work usually focus on behavior modeling, instrumentation and the study of the durability of the structures or products considered. A large part of our research focus on composite materials, which play today an important role in structures. ICA has about 80 research professors, 20 temporary researchers, 20 administratives, engineers and technicians, 100 doctoral students, as well as many students. With the peculiarity of counting:

- **Institutionally**, people belonging to four major institutions: UPS and INSA from the Ministry of Higher Education and Research, ISAE from the Ministry of Defence, and IMT Mines Albi from the Ministry of Industry.

- **Geographically**, staff is distributed in four cities of the Midi-Pyrénées region: Albi, Figeac, Tarbes and Toulouse.

Management is composed of a director and two deputy directors, three ministries are represented in this trio. The technical support team is organized into three components, one for each ministry.

Each research group brings together staff from different institutions and at different locations. ICA is a restricted area.

Basilica de Saint-Sernin de Toulouse

Place du Capitole

INSA

Institut national des sciences appliquées de Toulouse

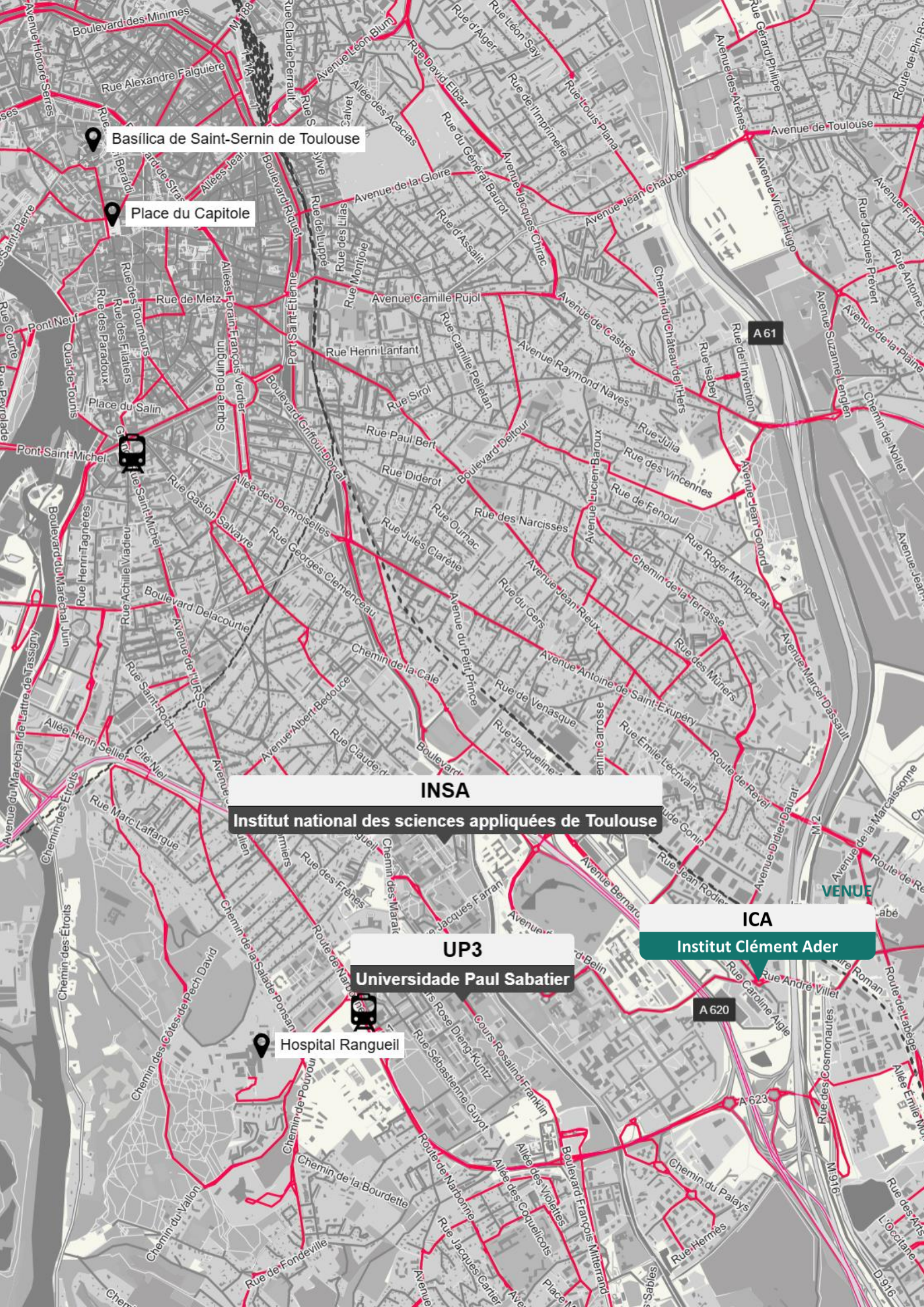
UP3

Universidade Paul Sabatier

Hospital Rangueil

ICA

Institut Clément Ader



SUGGESTED HOTELS

If you are looking for a comfortable and convenient place to stay during the workshop, we have selected some hotels that offer great value and service. You can choose between two options: hotels near *Institut Clément Ader* or hotels near the city center.

HOTELS NEAR INSTITUT CLÉMENT ADER

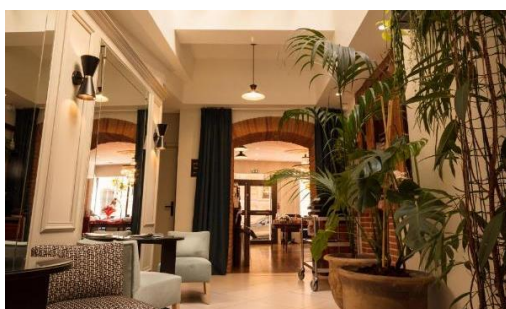
Hotels near Institut Clément Ader (ICA) are within walking distance or a short drive from the workshop venue. They are ideal if you want to save time and money on transportation and enjoy a quiet and green environment. Here are some hotels near INSA Toulouse that we recommend:



Appart Hôtel Clément Ader:

a 4-star apartment hotel with a fitness center, a sauna and a seasonal outdoor pool. Price from 99€ per night

<https://www.booking.com/Share-6b0eGO>



Hotel Albert 1er:

a 3-star hotel with a great location, friendly staff and good value for money. Price from 69€ per night

<https://www.booking.com/Share-Kr4ILu>



Hotel de Brienne:

a 4-star hotel with a contemporary design, a terrace and a bar. Price from 89€ per night

<https://www.booking.com/Share-8jk44j>



Hotel Ours Blanc - Place Victor Hugo:

a 2-star hotel with a cozy atmosphere, free WiFi and air conditioning. Price from 49€ per night

<https://www.booking.com/Share-kYQifu3>

HOTELS NEAR THE CITY CENTER

Hotels near the city center are located in the heart of Toulouse, where you can find many attractions, restaurants and shops. They are ideal if you want to explore the city and experience its culture and nightlife. However, they require public transportation or a taxi to get to the workshop venue, which might take longer and cost more. Here are some hotels near the city center that we recommend:

Ibis Styles Hotel Toulouse Centre Gare:

A stylish hotel with breakfast included and free WiFi. Price from 79 € per night.

<https://www.booking.com/Share-Curvac>



Ibis budget Toulouse Centre Gare:

A budget hotel with breakfast included and free WiFi. Price from 68 € per night.

<https://www.booking.com/Share-CI0i7J>



Ours Blanc Centre:

A contemporary hotel with self-catering facilities and free WiFi. Price from 109 € per night.

<https://www.booking.com/Share-NUmolt>



Le Clocher De Rodez:

A historic hotel with breakfast included and free WiFi. Price from 62 € per night.

<https://www.booking.com/Share-XYmBbV>



You can check availability and book online using the references provided in this brochure. We hope you enjoy your stay in Toulouse!



HOW TO GET TO THE ICA IN TOULOUSE

This booklet provides detailed instructions on how to reach the ICA from various locations in the city, including the airport, train station, and bus stops, as well as driving directions for those arriving by car.

We understand that navigating a new city can be challenging, but don't worry – we've got you covered! Follow our guide and make your journey to the ICA stress-free, so you can focus on getting the most out of this workshop and exploring the fascinating world of composite materials.

BY PLANE:

1. Take the shuttle ("Navette Aéroport") from the airport and get off at "Compans Caffarelli" station. The journey takes between 20 to 45 minutes depending on traffic, and the shuttle runs every 20 minutes.
2. Alternatively, take the tramway and get off at "Palais de Justice" station. The journey takes 32 minutes and the tram runs every 15 minutes.
3. From either station, take metro line B towards "Ramonville" and get off at "Faculté de Pharmacie" station.
4. Finally, take bus number 78 towards "Saint Orens Lycée" and get off at "Clément Ader" bus stop.

BY TRAIN:

1. From Toulouse Matabiau train station, take metro line A towards "Basso Cambo" and get off at "Jean Jaurès" station.
2. Transfer to metro line B towards "Ramonville" and get off at "Faculté de Pharmacie" station.
3. Take bus number 78 towards "Saint Orens Lycée" and get off at "Clément Ader" bus stop.

BY BUS:

1. Take bus number 37 from Metro Station "Ramonville" or bus number 78 from Metro Station "Faculté de Pharmacie" and get off at "Clément Ader" bus stop.

BY CAR:

From the West (Airport, Tarbes):

1. From the ring road ("périphérique extérieur"), take exit 19 towards "Labège, Ramonville-Saint-Agne, Carcassonne, Castanet, Métro".
2. Keep right towards "Carcassonne, Ramonville-Saint-Agne, Castanet, Parc d'activités du Canal, Palays, Métro".
3. Go straight to "Parc d'activités du Palays".
4. At the first roundabout, take the third exit towards "Labège / Parc d'activités du Palays".
5. At the second roundabout, take the second exit "D916" towards "Labège".
6. Take the first road on the right towards "Parc d'activité du Palays".
7. At the roundabout, take the third exit onto "Rue des Cosmonautes".
8. At the next roundabout, take the second exit towards road "Rue André Villet".
9. At the last roundabout, take the second exit onto "Avenue Didier Daurat Prolongée".
10. Turn right onto "Rue Caroline Aigle".



From the North and East (Paris, Bordeaux, Albi):

1. From the Highway A61 ("périphérique intérieur") towards Montpellier, take exit 18 towards "Montaudran (Labège, Revel, Saint Orens)".
2. Turn right onto "Route de Revel" towards "Zone industrielle, Montaudran, Cote pavée".
3. Just after, turn left and take "Avenue Didier Daurat".
4. At the roundabout, take the first exit onto "Avenue Didier Daurat Prolongée".
5. Turn right onto "Rue Caroline Aigle".



OVERALL PROGRAMME

Period	DAY 1 24/05	DAY 2 25/05	DAY 3 26/05
Morning	Welcome	MSc Dissertation Pitch I	Keynote Lecture II
	Visit to ICA Labs	Coffee-break	^B Seminar
		MSc Dissertation Pitch II	^B Job Fair
		Keynote Lecture I	
			Closing ceremony
Afternoon	Lunch Time	^A Lunch Time	
	^A Cultural vitit to Museum AEROSCOPIA	Scientific presentations from ICA	
		MSc Dissertation Pitch III	
		Coffee-break	
		MSc Dissertation Pitch IV	

^A | Finacially supported by the EMJM FRP++ Consotium.

^B | Events exclusive for EMJM FRP++ students.



All the hybrid events will be accessed through the following Zoom link:
<https://videoconf-colibri.zoom.us/meeting/register/tJAsc-2qrT0qE9XwCRVdw5LOoLiZo8FU0ic>

DETAILED PROGRAMME

Day 1 | 24/05/2023

Morning

10:00-10:30	Welcome Session
10:30-12:00	Visit to ICA Labs
12:00-14:00	Lunch Time

Afternoon

14:30-16:30	Cultural visit to Museum AEROSCOPIA
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Day 2 | 25/05/2023



Morning

08:30-09:30	MSc Dissertation - Pitch I (4 students × 15 min each)
09:30-10:00	Coffee-break
10:00-11:00	MSc Dissertation - Pitch II (4 students × 15 min each)
11:00-12:00	Keynote Lecture I <u>Jaap van der Woude</u> Circular economy: What does it mean for our european industries?
12:00-13:00	Lunch Time

Afternoon

13:00-14:30	Scientific presentations from ICA <u>Pegane Vingadas E.</u> Study of the multiaxial fatigue behavior of mixed systems (TA6V-WC) developed by thermal spraying for aeronautical applications <u>Quentin Bausiere</u> Study Sizing of stiffened plates for debonding test under multiaxial loading
14:30-15:30	MSc Dissertation - Pitch III (4 students × 15 min each)
15:30-16:00	Coffee-break
16:00-17:00	MSc Dissertation - Pitch IV (4 students × 15 min each)

Day 3 | 26/05/2023



Morning

09:00-10:00	Keynote Lecture II <u>François Pons</u> The composite structures in the airbus propulsion of tomorrow
10:00-10:30	*I Seminar <u>Rita Oliveira</u> How to prepare a CV
10:30-12:00	*I Job Fair
12:00-12:30	Closing ceremony

*I Events exclusive for EMJM FRP++ students.

KEYNOTE LECTURES



Jaap van der Woude
EuCIA/Brussels
AVK/Deutschland

Dr. JHA (Jaap) van der Woude is a renowned expert in the field of composites, with a distinguished career spanning over three decades at PPG Industries. He has held various managerial and technical positions in science, technology, and manufacturing across Europe and the US. Dr. van der Woude's recent role was as the Director of Science and Technology at PPG Industries Fiber Glass BV, with global R&D responsibility for the company's thermoplastic products and processes.

CIRCULAR ECONOMY: WHAT DOES IT MEAN FOR OUR EUROPEAN INDUSTRIES?

May 25th
11:00 – 12:00

Currently, Dr. van der Woude is the Chairman of the EuCIA Sustainability Committee and the Chairman of the working group Sustainability at AVK. He is also the project leader for the EcoCalculator Project and Composites Recycling Study. Dr. van der Woude's extensive contributions to the field of composites are reflected in his numerous conference papers, articles, patents, and scientific book chapters. He has also received several awards for his significant contributions, including the Honorary Membership of AVK, Industrievereinigung Verstärkte Kunststoffe e. V.



François Pons
Airbus/France

From 2002 to 2005, François Pons developed NDT means for the Composite Center Wing Box of the A380 test campaigns. From 2005 to 2008, during the A400M development, he improved the thermoset curing cycle thanks to the residual stress modellings. From 2008 to 2012, he was involved in the A350 development as he led the Multiscale and Multiphysics composite simulation of the fuselage. From 2012 to 2016, he was the head of the Material & Processes Composite D41 Lab. Then from 2016 to 2021, to boost the composite progression, he was the R&T Air Inlet Leader and was the Acoustic Structure Advisor.

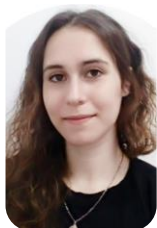
THE COMPOSITE STRUCTURES IN THE AIRBUS PROPULSION OF TOMORROW

May 26th
9:00 – 10:00

Since 2022, François is the Airbus Propulsion department Acoustic Structure Expert. He is working on the Propulsion of Tomorrow Project as the Innovation Catalyst. His R&D group develops the technologies that shall be used on the next generations of engines for the Aircraft decarbonation.



SEMINAR



Rita Oliveira
University of Minho

Rita Oliveira is an experienced professional in human resources with a focus on talent acquisition and development. In her seminar on "*how to prepare a CV*", she will provide valuable insights and practical tips to help students create an effective CV that will stand out to potential employers.

HOW TO PREPARE A CV

May 26th
10:00 – 10:30

The seminar will start with an overview of the purpose of a CV and what employers are looking for when reviewing CVs. Rita will then discuss the different sections of a CV and how to structure them effectively, highlighting the importance of tailoring the CV to the specific job and employer. She will provide examples of different types of CVs, including chronological, functional, and combination formats, and offer guidance on when each type might be most appropriate.

Rita will also discuss how to highlight relevant skills and accomplishments in the CV, including the use of action verbs and quantifiable results. She will provide guidance on how to address gaps in employment or changes in career direction, and how to handle sensitive information such as health issues or age.

Throughout the seminar, participants will have the opportunity to ask questions and receive feedback on their own CVs. By the end of the seminar, participants will have a better understanding of how to create a compelling CV that will make them stand out in the competitive job market.

MSC DISSERTATION PITCH

This session divided in 4 parts, is designed to give to the students an opportunity to share their progress on their MSc dissertation work, as well as any challenges they have faced and their plans for completion.

Each student will have **8 minutes** to present on their work so far, followed by a brief Q&A session with the audience of **6 minutes**. We encourage all attendees to actively engage with the presenters, ask questions, and provide feedback.

DURING THESE PRESENTATIONS, STUDENTS SHOULD AIM TO COVER THE FOLLOWING TOPICS:

- The background and context of the research questions or topics
- The specific aims and objectives
- The methodology and research design used
- The results obtained so far
- Any challenges or roadblocks are encountered
- Future plans for completing the work, including timelines and potential next steps

By sharing their progress with each other, students will not only receive valuable feedback and support from their peers but also gain experience in presenting their work in a professional setting.

The participation of the students in the MSc Dissertation Pitch is **compulsory** either in person or virtually (by videoconference), according to the sequence below.

MSc Dissertation - Pitch I

08:30-08:45	Abdulmalik Alawode <i>Wrinkling of sandwich structures</i>
08:45-09:00	Ahmed Adel <i>BEC - Bridge Edge Curbs – GFRP RWB rebar reinforcement</i>
09:00-09:15	Ajiboye Bello <i>Review of composite structures in aeronautic applications - Part 1</i>
09:15-09:30	Arslan Mahmood <i>Review of composite structures in aeronautic applications - Part 3</i>

MSc Dissertation - Pitch II

10:00-10:15	Asmaa Mohamed <i>Enhancing FRP-to-concrete bond by using transverse spike anchors: experimental tests and analytical modelling</i>
10:15-10:30	Atef Sawalmeh <i>Evaluation of repair quality of carbon/epoxy structures using abrasive water jet process</i>
10:30-10:45	Dagmawi Gebrehiwot <i>Assessment of critical energy release rate of plywood under Mode II delamination</i>
10:45-11:00	Fatemeh Ahmadi <i>Study of process-induced stresses and deformations in thermoplastic matrix composites</i>

MSc Dissertation - Pitch III

14:30-14:45	Mahmoud Abdelhak Abdallah <i>Innovative structural system based on advanced materials for lightweight and durable Offshore Wind Towers</i>
14:45-15:00	Muhammad Akif Akram Malik <i>Characterisation of the interlaminar fracture toughness of 3D-printed composites</i>
15:00-15:15	Muritala Arowolo <i>Numerical modelling of natural fibres reinforced thermoplastic composite materials</i>
10:45-11:00	Oluwadamilare Adesina <i>A mode II-III decomposed cohesive zone model for 3D simulation of delamination propagation in laminated composite materials</i>

MSc Dissertation - Pitch IV

16:00-16:15	Radouan Bouallala <i>Mechanical performance of adhesively bonded innovative aeronautic carbon composites</i>
16:15-16:30	Renan Belli Berman <i>Developing or improvement of computing models for defect identification and characterization in wind turbines</i>
16:30-16:45	Sarath Das K P <i>Shear strengthening of RC columns under extreme event</i>
16:45-17:00	Zarar Aziz Afridi <i>Experimental study of the mechanical joining of CFRP and Aluminum by a novel punching process</i>

JOB FAIR

A Job Fair will take place on the last day of the Workshop FRP++ 2023. Initially (**10:30-11:30**), all the participating Companies will provide a brief description of their business and needs. In the second part (**11:30-12:00**), the students will have the opportunity to contact the companies and raise their questions individually.

This event will run in a virtual way format.

10:30		Altair France <i>Immeuble Colombe Parc - Bâtiment A1, 5 boulevard Jean-Auguste 31 770 Colomiers FRANCE</i>
10:40		EDP <i>R. Particular à R. Cidade de Goa 2 Sacavém PORTUGAL</i>
10:50		ISQ - Centro de Interface e Tecnologia <i>Avenida Professor Dr. Cavaco Silva, 33 Taguspark 2740-120 Porto Salvo PORTUGAL</i>
11:00		PIEP - Centre for Innovation in Polymer Engineering <i>Universidade do Minho Campus de Azurém 4800-058 Guimarães PORTUGAL</i>
11:10	 <small>A Simpson Strong-Tie® Company</small>	S&P Clever Reinforcement Ibérica, Lda <i>R. José Fontana 76 2845-405 Amora PORTUGAL</i>
11:20		Vestas <i>R. Lionesa Edifício B 4465-671 Leça do Balio PORTUGAL</i>





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FRP++

Advanced structural analysis and
design using composite materials