

## **WD: Welcome day and choose and design a PhD research projects (6 hours, 1 CFU)**

**Type of course:** Compulsory

**Period:** October

### **Professors involved:**

*Luigi Salmaso (owner)*

Marta Disegna

### **Course objectives/Target skills and knowledge**

The welcome day is meant to know each other and to warmly welcome the new PhD students. The features of our PhD program are presented in term of research areas, structure of the program, training activities that are carried out, expectations the school has, and developed competences. Finally practicalities are presented.

### **Course description (contents)**

PhD students present themselves

PhD Program introduction

The research areas of our PhD program and the developed competences

PhD Program Organization

Teaching Program, Course and Syllabus

Practicalities

Team building

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Welcome Day	Luigi Salmaso Marta Disegna	29 September 2023, 10.00-15:30, sala riunioni San Nicola, DTG Vicenza	<ul style="list-style-type: none"> <li>• <a href="http://www.gest.unipd.it/en/research/phd-programmes/management-engineering-and-real-estate-economics?set_language=en">http://www.gest.unipd.it/en/research/phd-programmes/management-engineering-and-real-estate-economics?set_language=en</a></li> <li>• PhD course Syllabus</li> <li>• Dropbox folders</li> <li>• Regolamento di ateneo per i corsi di dottorato (<a href="https://www.unipd.it/regolamenti-studenti">https://www.unipd.it/regolamenti-studenti</a>)</li> </ul> <p>PhD program at Unipd: <a href="https://www.unipd.it/en/doctoral-degrees-unipd">https://www.unipd.it/en/doctoral-degrees-unipd</a></p> <p>Regulations: <a href="https://www.unipd.it/en/sites/en.unipd.it/files/UNIVERSITY%20REGULATIONS%20GOVERNING%20PhD%20Programmes.pdf">https://www.unipd.it/en/sites/en.unipd.it/files/UNIVERSITY%20REGULATIONS%20GOVERNING%20PhD%20Programmes.pdf</a></p>	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)

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## **RM: Research methods (30 hours, 5 CFU)**

**Type of course:** Compulsory

**Period:** October

### **Professors involved:**

Enrico Sandrin (*owner*), University of Padova, Italy; [enrico.sandrin@unipd.it](mailto:enrico.sandrin@unipd.it)

Anna Nosella, University of Padova, Italy; [anna.nosella@unipd.it](mailto:anna.nosella@unipd.it)

Fabiola Bertolotti, University of Modena e Reggio Emilia, Italy; [fabiola.bertolotti@unimore.it](mailto:fabiola.bertolotti@unimore.it)

Valentina Casarino, University of Padova, Italy; [valentina.casarino@unipd.it](mailto:valentina.casarino@unipd.it)

Pamela Danese, University of Padova, Italy; [pamela.danese@unipd.it](mailto:pamela.danese@unipd.it)

Cipriano Forza, University of Padova, Italy; [cipriano.forza@unipd.it](mailto:cipriano.forza@unipd.it)

Nikola Suzic, University of Padova, Italy; [nikola.suzic@unipd.it](mailto:nikola.suzic@unipd.it)

### **Course objectives/Target skills and knowledge**

The course presents the research approaches a PhD student should know to carry out his/her research project. The course intends to teach how to carry out a systematic literature review, identifying gaps and positioning the research project within the current body of knowledge. Furthermore, the course presents the main quantitative and qualitative research approaches in management research: as far as the former is concerned, it gives greater emphasis to the design and execution of survey research; concerning the latter it discusses the epistemological bases of qualitative research contrasted with those commonly underlying the quantitative research, as well as the main techniques of data gathering and data analysis are presented. Finally, action research is also introduced and explained.

### **Course description (contents)**

- How to carry out a literature review
- Quantitative research methodologies
- Survey research design and execution
- Modelling and optimization techniques
- Introduction to qualitative research
- Doing qualitative research: the main techniques for data collection
- Coding and grounded theory
- What action research is and how it should be designed

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
How to carry out a literature review, part 2	Anna Nosella	5/10/2023 Vicenza, DTG, 9.30-12.30, Viale Margherita, Vicenza (3h)	b) Agostini, Lara, and Anna Nosella. "Inter-organizational relationships involving SMEs: A bibliographic investigation into the state of the art." Long Range Planning (2018).	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)
How to carry out a literature review, part 1	Sandrin Enrico, Suzic Nikola	11/10/2023, Vicenza, DTG, 14.30 - 18.30, VM15, Nuovo Viale Margherita, (4h)	<p>b) Sandrin, E., Trentin, A., &amp; Forza, C. (2014). "Organizing for mass customization: literature review and research agenda". International Journal of Industrial Engineering and Management, 5(4), 159-167.</p> <p>b) Suzić, N., Forza, C., Trentin, A., &amp; Anišić, Z. (2018). "Implementation guidelines for mass customization: current characteristics and suggestions for improvement". Production Planning &amp; Control, 29(10), 856-871.</p> <p>b) Suzić, N., Sandrin, E., Suzić, S., Forza, C., Trentin, A., &amp; Anišić, Z. (2018). "Implementation Guidelines for Mass Customization: A Researcher-Oriented View". International</p>	

			Journal of Industrial Engineering and Management, 9(4), 229-243.
Basics of quantitative research methodologies	Cipriano Forza	06/10/2023 Vicenza, DTG, VM11, Nuovo Viale Margherita; 9.00 a.m. – 17.00 (7h) 16/10/2023 2.00 p.m-5.30 pm (3h) ROOM TO BE DEFINED	b) Forza, C. (2002). Survey research in operations management: a process-based perspective. International journal of operations & production management, 22(2), 152-194.
Modelling and Optimization techniques	Valentina Casarino	09/10/2023, 9:30-12:30 (3h) 16/10/2023, 9:30-12:30 (3h) ROOM TO BE DEFINED	B. Guenin, J. Könemann, L. Tunçel (2014) A gentle introduction to Optimization, Cambridge University Press.
Doing qualitative research: main techniques, coding and grounded theory	Fabiola Bertolotti	18/10/2023 ONLINE LECTURE, using Teams 10.00-13.00 (3h)	b) Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2013) Seeking Qualitative Rigor in Inductive Research Notes on the Gioia Methodology. Organizational Research Methods, 16(1), 15–31. a)Guba E. G. and Lincoln, Y. S. (2005) Competing paradigms in qualitative research? In Denzin, Y. S. and Lincoln, N. K. (Eds. ) Handbook of Qualitative Research, Thousand Oaks: Sage Publications, 105-117. a)Mattarelli, E., Bertolotti, F., Macrì D.M. (2013)

			The use of ethnography and grounded theory in the development of a management information system, European Journal of Information Systems, 22 (1), 26-44.	
Action research	Pamela Danese	24/10/2023 Vicenza, DTG, Room TO BE DEFINED; 9.00 – 13.00 pm (4h)	<p>c) Paul Coughlan, David Coughlan, (2002) "Action research for operations management", International Journal of Operations &amp; Production Management, Vol. 22 Issue: 2, pp.220-240)</p> <p>c) Danese P., Romano P. (2004). Improving inter-functional coordination to face high product variety and frequent modifications. International Journal of Operations and Production Management, vol. 24, n. 9, 2004, pp. 863-885</p>	

\*Please specify if the documents should be: a) carefully read before the lecture; b) quickly read before the lecture; c) just references for the topic

## **RM2: Research management (9 hours, 1.5 CFU)**

**Type of course:** Compulsory

**Period:** October

**Professors involved:**

*Cipriano Forza, University of Padova, Italy; [cipriano.forza@unipd.it](mailto:cipriano.forza@unipd.it)*

### **Course objectives/Target skills and knowledge**

The course presents the different programs researchers can use to finance research projects, with different peculiarities. In this context, PhD students must be aware of how to design and manage a research project effectively. Project management techniques and tools may be useful to support such activities; therefore, some techniques and tools will be presented. Finally, an example of how to manage research projects will be discussed with particular reference to a survey-based research.

### **Course description (contents)**

Different types of financing programs  
How to design and manage a research project  
Project management activities  
Application of PM techniques to survey-based research projects

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Research management	Cipriano Forza	20/10/2023 DTG, VICENZA; 9.00 a.m. – 16.00 (6h)  24/10/2023, DTG VICENZA  14. 30 a.m-17.30 (3h)		Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)

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## **OM: Operations and service management (9 hours, 1.5 CFU)**

**Type of course:** Strongly recommended for PhD students in the Management Engineering area

**Period:** January

### **Professors involved:**

Andrea Vinelli, (owner) University of Padova, Italy, [andrea.vinelli@unipd.it](mailto:andrea.vinelli@unipd.it)

Marcos Dieste, University of Padova, Italy, [marcos.dieste@unipd.it](mailto:marcos.dieste@unipd.it)

### **Owner:**

Andrea Vinelli

### **Course objectives/Target skills and knowledge**

The course introduces some relevant research fields in Operations Management (OM), related to service operations management and digital transformation. For each of these research streams, an overview of the topic will be presented, together with relevant gaps in the literature, promising areas for future research and academic debate. A lecture will be dedicated to Service Operations Management and will discuss the issue of servitization and the new trends for companies related to smart connected service-product systems. The second lecture will present the various challenges that manufacturing companies face during digital transformation from an operations management perspective. These include topics such as technology acceptance, internal and external barriers, paradoxical tensions and sustainability trade-offs. These are current issues for industrial companies that need to be properly addressed by managers.

### **Course description (contents)**

- The changes in the product-service offering. Servitization in manufacturing, the new challenges from smart connected service-product systems. The role of customer satisfaction.
- The current challenges that managers face in digital transformation, from acceptance to sustainability.

**Practicalities related to the course**

<b><i>Title of the lecture</i></b>	<b><i>Professor</i></b>	<b><i>Date and place</i></b>	<b><i>Documents to be read*</i></b>	<b><i>Grading and evaluation</i></b>
Operations Management issues in Digital Transformation	Marcos Dieste	Padova, 24/01/2024, 14.00 pm – 18.30 pm, DII, Sala riunioni piccola, terzo piano, via Venezia 1 (4 h, 30 min)	<p>a) Dieste, M., Sauer, P. C., &amp; Orzes, G. (2022). Organizational tensions in industry 4.0 implementation: A paradox theory approach. <i>International Journal of Production Economics</i>, 251, 108532.</p> <p>b) Dieste, M., Orzes, G., Culot, G., Sartor, M., &amp; Nassimbeni, G. (2023). The “dark side” of Industry 4.0: How can technology be made more sustainable?. <i>International Journal of Operations &amp; Production Management</i>.</p>	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)
Service Operations Management	Andrea Vinelli	16/01/2024, Vicenza Viale Margherita room tbd, 9.00 am – 13.30 (4 h, 30 min)	<p>c) Baines, T., Lightfoot, H., Benedettini, O. and Kay, J. (2009), “The servitization of manufacturing: a review of literature and reflection on future challenges”, <i>Journal of Manufacturing Technology Management</i>, Vol. 20, No. 5, pp. 547-567.</p> <p>c) Porter, M., Heppelmann, J. How smart and connected products are transforming competition, <i>HBR</i> 3, November 2014.</p> <p>c) Parasuraman, A., Zeithaml, V. A. and Berry, L. L. (1985), “A conceptual model of service quality and its implications for future research”, <i>Journal of Marketing</i>, Vol. 49, No. 4, pp. 41-50.</p>	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)

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## **IPM: Intellectual property management (9 hours, 1.5 CFU)**

**Type of course:** Strongly recommended for PhD students in the Management Engineering area

**Period:** October/November

### **Professors involved:**

*Lara Agostini (owner), University of Padova, Italy; [lara.agostini@unipd.it](mailto:lara.agostini@unipd.it)*

Benedetta Soranzo, Società Italiana Brevetti, Italy; [benedetta.soranzo@gmail.com](mailto:benedetta.soranzo@gmail.com)

Federico Caviggioli, Politechnic of Turin, Italy; [federico.caviggioli@polito.it](mailto:federico.caviggioli@polito.it)

*Note: Collaboration with a non-academic partner*

### **Course objectives/Target skills and knowledge**

The course aims at providing PhD students with a theoretical basis on what Intellectual Property (IP) and Intellectual Property Rights (IPRs) are, how IPRs can be used to generate value from innovation, and how IPRs can be managed, with a particular focus on patents. The theoretical part will be useful to the subsequent practical approach aimed at showing how to collect, analyze and use IP data, as well as how to address patentability issues during the R&D process.

In so doing, PhD students could gain a basic knowledge of IP and IPRs and the ability to use databases and analytical tools they could take advantage from in several contexts after their PhD program.

### **Course description (contents)**

Definition and examples of IP and IPRs

Basic principles of patentability of inventions

The patenting procedure

Patent landscape

Patent, trademark and industrial design searches

A framework for patent management

Case studies and discussion

## Practicalities related to the course

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Basic principles of patent management and practical tools	Lara Agostini, Benedetta Soranzo	30th October 2023, 14:00-18:00, DTG, Viale Margherita, ROOM TO BE CONFIRMED, (4,5h)	Pdf of a case study (a)	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)
Patent landscape and other IPRs	Lara Agostini, Federico Caviggioli	31st October 2023, 13:30-17:30, DTG, Viale Margherita, ROOM TO BE CONFIRMED, (4,5h)	---	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)

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## **PPSP: How to prepare and present a scientific paper (15 hours, 1.5 CFU)**

**Type of course:** Strongly recommended

**Period:** October and January, in collaboration with School of Agricultural Sciences and Veterinary Medicine

### **Professors involved:**

Davide Pettenella

G. Cozzi

B. Sturaro

### **Course objectives/Target skills and knowledge**

The course will provide knowledge on how to organize the structure, select the contents and the editing format for an effective oral communication of scientific contents.

Furthermore the student will acquire general knowledge on how to plan a scientific publication, writing a scientific paper and following its peer review process.

### **Course description (contents)**

The course has the following framework:

- How to structure, organize and preparing visual that are useful for preparing a scientific paper
- Analysis of the publishing process
- Basis for a successful scientific literature review
- The structure of a scientific paper
- The process of paper's submission
- The peer review process

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
How to present a scientific paper	Davide Pettenella	TO BE DEFINED; Agripolis Campus, Legnaro	Check the documents in Dropbox	The assessment will be carried out asking each student to prepare a presentation with PP or similar SW
How to prepare a scientific paper	G. Cozzi E. Sturaro	TO BE DEFINED; Agripolis Campus, Legnaro	Writing and Presenting Scientific Papers by Birgitta Malmfors, Phil Garnsworthy and Michael Grossman, 2nd ed., Nottingham University Press (2004) (C)	At the end of the teaching program, students will submit a final homework made of a scientific summary on a given topic supported by a short literature review that is going to be evaluated by the course responsible.

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## **ESR: Ethics in scientific research (28 hours, 2,5 CFU)**

**Type of course:** Strongly recommended

**Period:** November

**Professors involved:** in collaboration with School of Agricultural Sciences and Veterinary Medicine

Marco Borga

M. Polidoro

E. Taylor

### **Course objectives/Target skills and knowledge**

This course will provide a guide on ethical issues in scientific publishing and reviewing and the basic knowledge on the main ethical issues in carrying out scientific research.

### **Course description (contents)**

General introduction to ethics of science, research misconduct (falsification, fabrication, plagiarism, conflicts of interests), responsible authorship and peer review, mentorship issues, data management issues, basics regarding animal and human research.

Four main topics will be examined: 1. plagiarism; 2. multiple submissions; 3. conflict of interest; 4. authorship. Guidelines for the review activity will be discussed with the class.

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Ethics in writing and reviewing	Marco Borga	TO BE DEFINED; Agripolis Campus, Legnaro	Committee on publication ethics. Available from: <a href="https://publicationethics.org/">https://publicationethics.org/</a> accessed on 08/08/18.	Each student will be assigned a case study, with the request to provide indications on the emerging ethical issues
Dissemination of science: contents and tools	M. Polidoro	TO BE DEFINED; Agripolis Campus, Legnaro		
Engaging Students through Active Learning: Interactive Lecturing and Effective Power Point Presentations	E. Taylor	TO BE DEFINED; Agripolis Campus, Legnaro		

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## **IM: Innovation management (6 hours, 1 CFU)**

**Type of course:** Strongly recommended for PhD students in the Management Engineering area

**Period:** January/February

### **Professors involved:**

*Ettore Bolisani (owner) University of Padova, Italy; [ettore.bolisani@unipd.it](mailto:ettore.bolisani@unipd.it)*

Enrico Scarso, University of Padova, Italy; [enrico.scarso@unipd.it](mailto:enrico.scarso@unipd.it)

Chiara Verbano, University of Padova, Italy; [chiara.verbano@unipd.it](mailto:chiara.verbano@unipd.it)

### **Course objectives/Target skills and knowledge**

The course will provide a general outline of innovation management in theoretical and practical terms, as well as a field of research. PhD students will acquire knowledge of general concepts and definitions, main theories explaining the phenomenon of innovation, and the primary challenges for management. They will also acquire the main concepts of knowledge management, seen as a central issue of innovation management. Particularly, the hot topics for research will be discussed with students.

In practical terms, students will acquire skills of how to analyze a case-study related to innovation, how to understand the strategic issues and possible solutions implemented by companies, and how to manage innovations and innovation-intensive projects. Also, students will acquire competencies on how to plan and implement a research project related to innovation and knowledge management.

Integral part of this course will be the engagement of students in active learning activities, including assigned tasks, 1-minute papers, and group work.

### **Course description (contents)**

Innovation as knowledge management

Innovation as a strategic weapon.

Innovation and knowledge strategies.

Managing innovation: organizational structures and processes

Innovation and risk management

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Risk Management: approaches, methods and fields of application	Chiara Verbano	DTG (Vicenza) – 08.02.2024; 9.15-13.15 (4h) (ROOM TO BE DEFINED)	<p>b) Renn, O. 2(008). Concepts of risk: An interdisciplinary review – Part 1: Disciplinary risk concepts. <i>GAIA</i>, 17 (1), 50–66.</p> <p>b) Verbano, C., &amp; Venturini, K. (2011). Development paths of risk management: approaches, methods and fields of application. <i>Journal of Risk Research</i>, 14(5), 519-550.</p> <p>b) De Araújo Lima, P. F., Crema, M., &amp; Verbano, C. (2020). Risk Management in SMEs: a systematic literature review and future directions. <i>European Management Journal</i>.</p>	Grading (A=above the average; B=around the average; C=below the average) is based on assigned activity (50%) and class active participation/interaction (50%)
Innovation management, innovation strategies, and knowledge management	Ettore Bolisani, Enrico Scarso	DTG (Vicenza) – 31.01.2024 10.00-12.00 (ROOM TO BE DEFINED) (2H)	<p>Students can be assigned materials to read before the seminar</p> <p>Here are ADDITIONAL REFERENCES:                      Bolisani E., Bratianu C. (2018), <i>Emergent Knowledge Strategies</i> (chapter 3: Knowledge as a strategic weapon, 49-72), Springer, Berlin (copy available in the DTG library)                      Scarso, E., &amp; Bolisani, E. (2023). Knowledge management processes and innovation phases: insights from metalworking SMEs. <i>Knowledge Management Research &amp; Practice</i>, 1-11. (available online from publisher website)</p>	<p>Students will be assigned exercises and will be involved in a class discussion</p> <p>Grading (A=above the average; B=around the average; C=below the average) is based on assigned activity (50%) and class active participation/interaction (50%)</p>

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## **SO: Strategy and organization (15 hours, 2.5 CFU)**

**Type of course:** Strongly recommended for PhD students in the Management Engineering area

**Period:** January

### **Professors involved:**

*Stefano Biazzo (owner), University of Padova, Italy; [stefano.biazzo@unipd.it](mailto:stefano.biazzo@unipd.it)*

Moreno Muffatto, University of Padova, Italy; [moreno.muffatto@unipd.it](mailto:moreno.muffatto@unipd.it)

Anna Nosella, University of Padova, Italy; [anna.nosella@unipd.it](mailto:anna.nosella@unipd.it)

Patrizia Garengo, University of Padova, Italy; [patrizia.garengo@unipd.it](mailto:patrizia.garengo@unipd.it)

### **Course objectives/Target skills and knowledge**

The objective of this course is to provide knowledge of models, concepts, and tools necessary to address the problem of organizational design and to understand the relationships between internal organization and firm's strategic choices. The problem of organizational design is addressed through the lens of product innovation: what are the organizational choices that can foster the capability for systematic innovation in companies? What are the substantial differences between organisational solutions suitable for small and large enterprises? Furthermore, it delves into the key ideas and methods of strategic and competitive analysis and the processes by which strategy is formulated and translated into action also using performance measurement. Finally, the course addresses the issues of entrepreneurship.

### **Course description (contents)**

- Systems approaches to organizational design
- Organizational structures
- The concept of strategy
- From industrial economics to strategic management and beyond: the relations between strategic management and economics
- Translate strategy into action through performance measurement
- The Design Problem for Entrepreneurs
- The Effectuation logic of Entrepreneurs

**Practicalities related to the course**

<b><i>Title of the lecture</i></b>	<b><i>Professor</i></b>	<b><i>Date and place</i></b>	<b><i>Documents to be read*</i></b>	<b><i>Grading and evaluation</i></b>
Organization for innovation: developing a methodology for generating emotion-rich new product ideas	Teresa Alaniz, Stefano Biazzo	Padova, 24/1/2024, 10.00 am - 1.30 pm, DII, Sala riunioni piccola, terzo piano, via Venezia 1 (3,30h)	a) Koen, P., et al. (2001). Providing clarity and a common language to the “fuzzy front end”. <i>Research-Technology Management</i> , 44(2), 46-55.	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)
Strategy management theory: an introduction to the field	Anna Nosella	Vicenza, 18/1/2024, 9.30 am – 12.30 am, DTG	a) Porter, M.E., 1991. Towards a Dynamic Theory of Strategy. <i>Strategic Management Journal</i> , 12, 95-117. a) Grant, R.M., 1991. The resource based theory of competitive advantage: implications for strategy formulation, <i>California management review</i> , Spring, vol. 33 Issue 3, p 114-135	
Entrepreneurship as a method	Moreno Muffatto	22/1/2024 9.30- 1:00 pm, Padova, DII, Sala riunioni piccola, terzo piano, via Venezia 1 (3h, 30)	a) Sarasvathy, Saras D., and Sankaran Venkataraman. "Entrepreneurship as method: Open questions for an entrepreneurial future." <i>Entrepreneurship theory and practice</i> 35.1 (2011): 113-135.	
Performance measurement and management	Patrizia Garengo	Padova, 22/01/2024 14:30- 18.30, Padova, DII, Sala riunioni piccola, terzo piano, via Venezia 1 (3h, 30 min)	a) Kaplan R Norton D 1992 "The Balanced Scorecard - Measures That Drive Performance"; <i>Harvard Business Review</i> , (January-February): 71-79 b) Eccles R. G.1991 The Performance Measurement Manifesto, <i>Harvard Business Review</i> (January–February): 131-7 c) Bititci U., Garengo P., Dorfler V., Nudurupati S. (2012), “Performance Measurement: Where Next?”,	

			International Journal of Management Reviews, Vol. 14, pp. 305-327	
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## **SPM: Sustainable process management (12 hours, 2 CFU)**

**Type of course:** Strongly recommended for PhD students in the Management Engineering area

**Period:** November/December

**Professors involved:**

Laura Macchion

### **Course objectives/Target skills and knowledge**

This course introduces some relevant research fields related to sustainability and circular economy, linked to waste reduction in processes, sustainable process management, and event process management. For each of these research streams, an overview of the topic will be presented, together with relevant gaps in the literature, promising areas for future research and academic debate. Waste reduction is a topic which has been receiving a renewed attention in process management. The lecture will provide students with an overview of the historical evolution of the debate on waste reduction in processes, till the recent debate. Sustainable process management is a further hot topic in management. The course will explain how companies/organizations can increase their social and environmental sustainability. Finally, the lecture on sustainable event management will focus on how measuring and managing the impact of events (e.g. conferences).

### **Course description (contents)**

- What waste management is and the evolution of the academic debate on waste management.
- The concepts of sustainability and circular economy in process management
- Event management and sustainability

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Sustainable supply chain	Laura Macchion	30/11/2023 Vicenza, Complesso di Viale Margherita, 09:30 - 13:30 (4h), ROOM VM10	c) Moretto, A., Macchion, L., Lion, A., Caniato, F., Danese, P., & Vinelli, A. (2018). Designing a roadmap towards a sustainable supply chain: A focus on the fashion industry. <i>Journal of cleaner production</i> , 193, 169-184.	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework or in-class groupwork or individual work (20%) and class participation and interaction (80%)
Sustainable event management	Antonio Cavallin Toscani	05/12/2023 Vicenza, Complesso di Viale Margherita, 9 am – 13 am (4h), room VM10	c) Kaplan, R. S., & Ramanna, K. (2021). Accounting for climate change. <i>Harvard Business Review</i> , 99(6), 120-131.  c) Antonio Cavallin Toscani, Laura Macchion, Anna Stoppato & Andrea Vinelli (2022) How to assess events' environmental impacts: a uniform life cycle approach, <i>Journal of Sustainable Tourism</i> , 30:1, 240-257, DOI: 10.1080/09669582.2021.1874397	

Lean and organizational culture	Pamela Danese	12/12/2023 Vicenza, Complesso di Viale Margherita, 9.00 am – 13 am (4h), Room VM10	<p>c) T. Bortolotti, S. Boscari, P. Danese (2015). Successful lean implementation: organizational culture and soft lean practices. INTERNATIONAL JOURNAL OF PRODUCTION ECONOMICS, vol. 160, pp. 182-201</p> <p>c) P. Danese, V. Manfè, P. Romano (2018). A systematic literature review on recent lean research: state-of-the-art and future directions. INTERNATIONAL JOURNAL OF MANAGEMENT REVIEWS, Vol.20, n.2, pp.579-605</p>	
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\*Please specify if the documents should be: a) carefully read before the lecture; b) quickly read before the lecture; c) just references for the topic



## **I4.0: Industry 4.0 and Mass Customization (20 hours, 3.5 CFU)**

**Type of course:** Strongly recommended for PhD students in the Management Engineering area

**Period:** January

**Professors involved:**

*Alessio Trentin (owner), University of Padova, Italy, [alessio.trentin@unipd.it](mailto:alessio.trentin@unipd.it)*

Lara Agostini, University of Padova, Italy, [lara.agostini@unipd.it](mailto:lara.agostini@unipd.it)

Cipriano Forza, University of Padova, Italy, [cipriano.forza@unipd.it](mailto:cipriano.forza@unipd.it)

Laura Macchion, University of Padova, Italy, [laura.macchion@unipd.it](mailto:laura.macchion@unipd.it)

Marta Disegna, University of Padova, Italy, [marta.disegna@unipd.it](mailto:marta.disegna@unipd.it)

### **Course objectives/Target skills and knowledge**

The course aims to provide an overview of Industry 4.0 technologies and to stimulate reflection on their relationships with organizational practices and strategic choices. In particular, the course offers an introduction to the topics of Big Data and machine learning by describing the two phenomena and their applications as well as by examining the critical aspects of the two subjects, with the aim of providing all the tools required for a comprehension of this new complex context. The course also presents new traceability technologies, with particular attention to blockchain technology, and analyzes new frontiers of research in this field. Finally, the course provides an overview of mass customization, one of the business models enabled by Industry 4.0, and focuses on two important practices that support this business model: form postponement and IT-supported product configuration.

### **Course description (contents)**

- Overview of Industry 4.0: technology, organization and strategy
- Big data analytics and machine learning: characteristics, critical analysis and applications
- Blockchain: new possibilities for supply chains offered by innovative traceability tools
- Mass customization: an overview in the context of Industry 4.0
- Form postponement and its effects on a firm's operational performance

Practicalities related to the course

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Big data analytics and machine learning: characteristics, critical analysis and applications	Marta Disegna	31/01/2024, 10:00 am - 2:00 pm, VM12 (4h)	<p>c) Nevala, K. (2018). <i>The Machine Learning Primer</i>. SAS Best Practices e-book.</p> <p>c) Kubat, M. (2017). <i>An Introduction to Machine Learning</i>. Springer.</p> <p>c) Gareth, J. et al. (2017). <i>An Introduction to Statistical Learning with Applications in R</i>. Springer.</p> <p>c) Lazer, D. et al. (2014). The Parable of Google Flu: Traps in Big Data Analysis. <i>Science</i>, 343(6176): 1203–1205.</p> <p>c) Ginsberg, J. et al. (2009). Detecting influenza epidemics using search engine query data. <i>Nature</i>, 457: 1012-1014.</p> <p>c) Geitgey, A. “Machine Learning Is Fun! – Adam Geitgey – Medium.” Medium, Augmenting Humanity, 5 May 2014, <a href="https://medium.com/@ageitgey/machine-learning-is-fun-80ea3ec3c471">https://medium.com/@ageitgey/machine-learning-is-fun-80ea3ec3c471</a></p> <p>c) Sutton, R.S. and Barto, A.G. (1998). <i>Reinforcement Learning: An Introduction</i>. MIT Press.</p> <p>c) Xue Bin (Jason) Peng, X.B.(J.) “Towards a Virtual Stuntman.” The Berkeley Artificial Intelligence</p>	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)

			<p>Research Blog, 10 April 2018,  <a href="https://bair.berkeley.edu/blog/2018/04/10/virtual-stuntman/">https://bair.berkeley.edu/blog/2018/04/10/virtual-stuntman/</a></p>
<p>Form postponement and its effects on operational performance – An example of theory building through analytical conceptual research</p>	<p>Alessio Trentin</p>	<p>19/01/2024, 9:00 am - 1:00 pm, 2:00 pm - 4:00 pm, VM12 (6h)</p>	<p>a) Whetten, D.A. (1989). What constitutes a theoretical contribution? <i>Academy of Management Review</i>, 14(4): 490-495.</p> <p>a) Selected parts of one of the following works, assigned by the professor to different PhD students:</p> <p>1) Alderson, W. (1950). Marketing efficiency and the principle of postponement. <i>Cost and Profit Outlook</i>, 3(4): 15-18.</p> <p>2) Zinn, W. and Bowersox, D.J. (1988). Planning physical distribution with the principle of postponement. <i>Journal of Business Logistics</i>, 9(2): 117-136.</p> <p>3) Zinn, W. (1990). Developing heuristics to estimate the impact of postponement on safety stock. <i>The International Journal of Logistics Management</i>, 1(2): 11-16.</p> <p>4) Lee, H.L. and Billington, C. (1994). Designing products and processes for postponement. In: Dasu, S. and Eastman, C. (Eds). <i>Management of Design: Engineering and Management Perspectives</i>. Kluwer, Boston, MA, pp. 105-122.</p>

			<p>5) Swaminathan, J.M. and Tayur, S.R. (1998). Managing broader product lines through delayed differentiation using vanilla boxes. <i>Management Science</i>, 44(12): 161-172.</p> <p>6) Aviv, Y. and Federgruen, A. (2001). Design for postponement: a comprehensive characterization of its benefits under unknown demand distributions. <i>Operations Research</i>, 49(4): 578-598.</p> <p>c) Wacker, J.G. (2004). A theory of formal conceptual definitions: developing theory-building measurement instruments. <i>Journal of Operations Management</i>, 22(6): 629-650.</p> <p>c) Forza, C., Salvador, F. and Trentin, A. (2008). Form postponement effects on operational performance: a typological theory. <i>International Journal of Operations &amp; Production Management</i>, 28(11): 1067-1094.</p> <p>c) Kerlinger, F.N. (1986). <i>Foundations of Behavioral Research</i>. Holt, Rinehart and Winston, New York, NY.</p>	
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<p>Mass customization – An overview in the context of Industry 4.0</p>	<p>Cipriano Forza</p>	<p>10/01/2024, 11:30 am - 5:00 pm (including lunch break), VM12 (4h)</p>	<p>a) Salvador, F. and Forza, C. (2004). Configuring products to address the customization-responsiveness squeeze: a survey of management issues and opportunities. <i>International Journal of Production Economics</i>, 91(3): 273-291.</p> <p>b) Trentin, A., Perin, E. and Forza, C. (2011). Overcoming the customization-responsiveness squeeze by using product configurators: beyond anecdotal evidence. <i>Computers in Industry</i>, 62(3): 260-268.</p> <p>c) Forza, C., Salvador, F. and Rungtusanatham, M. (2005). Coordinating product design, process design, and supply chain design decisions: Part B. Coordinating approaches, tradeoffs, and future research directions. <i>Journal of Operations Management</i>, 23(3-4): 319-324.</p>	
<p>Blockchain: new possibilities for supply chains offered by innovative traceability tools</p>	<p>Laura Macchion</p>	<p>23/01/2024, 9:00 am - 1:00 pm, VM12 (4h)</p>	<p>c) Wang, Y., Singgih, M., Wang, J. and Rit, M. (2019). Making sense of blockchain technology: How will it transform supply chains? <i>International Journal of Production Economics</i>, 211: 221-236.</p>	
<p>Overview of Industry 4.0</p>	<p>Cipriano Forza</p>	<p>10/01/2024, 9:30 am - 11:30 am, VM12 (2h)</p>	<p>b) Agostini, L. and Filippini, R. (2019). Organizational and managerial challenges in the path toward Industry 4.0, <i>European Journal of Innovation Management</i>.</p>	

			b) Agostini, L. and Nosella, A. (2019). The adoption of Industry 4.0 technologies in SMEs: results of an international study, Management Decision.	
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## **S: Statistics (18 hours, 3 CFU)**

Type of course: Compulsory

## **DAS: Data analytics software (18 hours, 3 CFU)**

Type of course: Optional

Period: February; June

Professors involved:

*Luigi Salmaso (owner), Università degli Studi di Padova, luigi.salmaso@unipd.it*

Marta Disegna

Rosa Arboretti

### **Course objectives/Target skills and knowledge (S)**

The objective of the course is to provide the fundamental statistical concepts required for PhD students in engineering. The course will start with an introduction to descriptive statistics and basic inferential statistics methods, then some more advanced techniques like ANOVA and experimental designs (Design Of Experiments) will be presented. Students will be provided the theoretical concepts which are needed to deal with data of different nature, including data from the PhD project they are developing.

### **Course objectives/Target skills and knowledge (DAS)**

In this course the basic concepts of descriptive and inferential statistics will be applied using software. Students will be introduced to Minitab, a user-friendly statistical software, R, and RapidMiner. They will learn how to carry out the most diffused statistical techniques on data of different nature, including data from the PhD project they are developing. Focus of the course will be on descriptive statistics, statistical tests, ANOVA and experimental design (Design of Experiments).

### **Course description (contents)**

1. Elements of univariate statistical methods:
  - a. Elements of descriptive statistics: frequency, indices of synthesis (position, variability and shape) and graphical representations (histogram, boxplot, scatterplot).
  - b. Elements of probability theory: discrete and continuous probability distributions.
  - c. Elements of statistical inference: sampling distributions, point and interval estimation, hypothesis testing, One-way ANOVA.
2. Linear and non-linear regression models:
  - a. Simple and multiple linear regression model
  - b. Logit model
3. Machine Learning algorithms:

- a. Introduction to Supervised Machine Learning algorithms
  - b. Introduction to Unsupervised Machine Learning algorithms
4. DOE: Introduction to Factorial Designs, Two level and general factorial designs. Tutorials in MINITAB.

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read</i>	<i>Grading and evaluation</i>
Elements of univariate statistical methods; Intro to inferential statistics	Salmaso, Disegna, Arboretti	Friday the 2 <sup>nd</sup> February 2024 Online	The materials will be uploaded in a shared Drive folder	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)
Inferential statistics	Salmaso, Disegna, Arboretti	Friday the 9 <sup>th</sup> February 2024 Online		
Linear and non-linear regression models	Salmaso, Disegna, Arboretti	Summer School: Tuesday the 25 <sup>th</sup> of June 2024		
Supervised and unsupervised Machine Learning algorithms	Salmaso, Disegna, Arboretti	Summer School: Wednesday the 26 <sup>th</sup> of June 2024		
DOE with applications	Salmaso, Disegna, Arboretti	Summer School: Thursday the 27 <sup>th</sup> of June 2024		
DOE with applications	Salmaso, Disegna, Arboretti	Summer School: Friday the 28 <sup>th</sup> of June 2024		



## **IDUU: Investment decisions under uncertainty (15 hours, 2.5 CFU)**

**Type of course:** Strongly recommended for PhD students in the Real Estate area

**Period:** February-April

### **Professors involved:**

*Chiara D'Alpaos (owner), University of Padova, Italy, [chiara.dalpaos@unipd.it](mailto:chiara.dalpaos@unipd.it)*

Michele Moretto, University of Padova, Italy, [michele.moretto@unipd.it](mailto:michele.moretto@unipd.it)

### **Course objectives/Target skills and knowledge**

The course reviews current techniques of capital budgeting and details an approach based on the pricing of Real Options which provides a means of quantifying the elements of managerial flexibility in the face of unexpected changes in markets. Upon completion of the course students will have acquired a critical understanding of basic principles of capital budgeting and investment decisions under uncertainty and will be able to determine the real-options value for simple capital investment projects.

### **Course description (contents)**

Investment Decisions and Capital Budgeting

Risk, Return and the Opportunity Cost of Capital

Risk and Capital Budgeting: the Capital Asset Pricing Model

Uncertainty and Consumer/Investor Behavior

The Contingent Claim Analysis (CCA)

Real Options Theory

Examples (e.g., Managerial Flexibility, Weather Derivatives, Scale Production, Land Use)

**Practicalities related to the course**

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Investment Decisions and Capital Budgeting, part 1	Chiara D'Alpaos	13/02/2024, 2:00-5:00 pm, DII, Padova Meeting Room 3 <sup>rd</sup> floor, Via Venezia 1 (3h)	a) Brealey, Myers, Allen (2019): Principles of Corporate Finance, McGraw-Hill, International Edition- Cap. 1,2, 5, 6 c) Brealey, Myers, Allen (2019): Principles of Corporate Finance, McGraw-Hill, International Edition c) Ross, Jordan (2018): Fundamentals of Corporate Finance, McGraw-Hill, International Edition	Grading is based on class participation and interaction (20%), group work (40%) final test (40%)
Investment Decisions and Capital Budgeting, part 2	Chiara D'Alpaos	14/02/2024, 2:00 pm-5:00 pm, DII, Padova, (3h) Meeting Room 3 <sup>rd</sup> floor, Via Venezia 1	b) Brealey, Myers, Allen (2019): Principles of Corporate Finance, McGraw-Hill, International Edition- Cap. 7, 8, 9 c) Brealey, Myers, Allen (2019): Principles of Corporate Finance, McGraw-Hill, International Edition	

			c) Ross, Jordan (2018): Fundamentals of Corporate Finance, McGraw-Hill, International Edition
Contingent Claim Analysis and Real Options Theory, part 1	Michele Moretto	15/02/2024, 11:00 am -2:00 pm, DII, Padova (3h)  Meeting Room 3 <sup>rd</sup> floor, Via Venezia 1	b) Lambrecht (2017): Real Options in Finance, Journal of Banking and Finance, 81, pp. 166-171  b) Schneider, Imai: Valuing Investments in Digital Business Transformation: A Real Options Approach  c) Dixit, Pindyck (1994), Investment under Uncertainty, Princeton University Press  c) Trigeorgis L. (1996): Real Options: Managerial Flexibility and Strategy in Resource Allocation, MIT Press
Contingent Claim Analysis and Real Options Theory, part 2	Michele Moretto	16/02/2024 , 11:00 am -2:00 pm, DII, Padova (3h)	c) Dixit, Pindyck (1994), Investment under Uncertainty, Princeton University Press

		Meeting Room 3 <sup>rd</sup> floor, Via Venezia 1	c) Trigeorgis L. (1996): Real Options: Managerial Flexibility and Strategy in Resource Allocation, MIT Press
Paper Discussion	Chiara D'Alpaos and Michele Moretto	11/04/2024, 10:00 am-1:00 pm, DII, Padova (3h) Meeting Room 3 <sup>rd</sup> floor, Via Venezia 1	
Final test		11/04/2024, 1:00 pm-2:00 pm, DII, Padova (1h) Meeting Room 3 <sup>rd</sup> floor, Via Venezia 1	

\*Please specify if the documents should be: a) carefully read before the lecture; b) quickly read before the lecture; c) just references for the topic

## **SREM: Shaping the real estate market in the future: new trends (12 hours, 2 CFU)**

**Type of course:** Strongly recommended for PhD students in the Real Estate area

**Period:** March

### **Professors involved:**

*Giuliano Marella (owner), University of Padova, Italy, giuliano.marella@unipd.it, and*

*Ezio Micelli (owner), IUAV University of Venice, Italy, ezio.micelli@iuav.it*

Laura Gabrielli, IUAV University of Venice, Italy, laura.gabrielli@iuav.it

Adriano Bisello, EURAC Bolzano, Italy, adriano.bisello@eurac.edu

Rubina Canesi, University of Padova, Italy, rubina.canesi@unipd.it

Aurora Ruggeri, IUAV University of Venice, Italy, aurora.ruggeri@iuav.it

### **Course objectives/Target skills and knowledge**

The course aims to provide PhD students with a review of some of the most stimulating research perspectives concerning the real estate market and the transformation of cities. The topics that the course intends to present concern the new drivers of value that underlie the development of real estate markets and the economic and social implications that derive from them.

The first module presents an overview of some of the most relevant issues of cities' transformations and the implications on the real estate markets. The second presents recent researches on the growing role of sustainability as a driver of the market. The third part highlights the connections between real estate and energy market. The fourth focuses on the most recent economic trends concerning techniques and methodologies for real estate valuation and market analysis.

The course is organised in 4 modules of 3 hours each, with professors from the University of Padua, University IUAV of Venice and the EURAC research centre of Bolzano.

### **Course description (contents)**

Real estate market trends

Sustainability as value driver

Emerging trends in energy markets and real estate market values

Co-benefits in cities

Real estate assets valuation and market analysis

## Practicalities related to the course

<i>Title of the lecture</i>	<i>Professor</i>	<i>Date and place</i>	<i>Documents to be read*</i>	<i>Grading and evaluation</i>
Recycling the city. Emerging trends in real markets and urban regeneration	Ezio Micelli	4/03/2024, 10.00 AM – 1.00 PM, DTG, Room To Be Defined (3h)	b) Mangialardo A., Micelli E., 2017. From sources of financial value to commons: Emerging policies for enhancing public real-estate assets in Italy. <i>Papers in Regional Sciences</i> ,1-12.	Grading (A=above the average; B=around the average; C=below the average) is based on assigned homework (20%) and class participation and interaction (80%)
New real-estate market trends: sustainability as a driver of value	Ezio Micelli	5/03/2024, 10.00 AM – 1.00 PM, DTG, Room To Be Defined (3h)	b) Mangialardo A., Micelli E., Sacconi F., 2019. Does sustainability affect real-estate market values? Empirical evidence from the office building market in Milan. <i>Sustainability</i> , 11(2): 12.	
Urban policy tools and RE market: Assessing sustainability.	Adriano Bisello, Rubina Canesi and Giuliano Marella	18/03/2024, 10.00 AM – 1.00 PM, DTG, Room to Be Defined	Canesi, R. (2022). Urban Policy Sustainability through a Value-Added Densification Tool: The Case of the South Boston Area. <i>Sustainability</i> , 14(14), 8762.	
Energy retrofitting and economic implications: Energy assessment, economic valuation, optimization and risk analysis	Laura Gabrielli and Aurora Ruggeri	25/03/2024, 10.00 AM – 1.00 PM, DTG, Room To Be Defined	Gabrielli L., Ruggeri A. Developing a model for energy retrofit in large building portfolios: Energy assessment, optimization and uncertainty <i>Energy and Buildings, Volume 202, 1 November 2019, 109356</i>	

\*Please specify if the documents should be: a) carefully read before the lecture; b) quickly read before the lecture; c) just references for the topic

## CT: Practicing critical thinking and continuous improvement in scientific research (60 hours, 10 CFU)

**Type of course:** Compulsory

**Period:** all along the 3 years (considered 20 hours and 3,3 credits every year)

Professors involved:

*Marta Disegna, Luigi Salmaso (owner), Cipriano Forza*

All the other professors

### Course objectives/Target skills and knowledge

The course is organized in three or four workshops every year where PhD students present to all the PhD Board the advancements of their PhD research project and they receive feedback and suggestions to further strengthen and improve it. These presentations are also considered as evaluation steps, since the PhD board will approve what has been done so far.

An annual report (to be regularly updated) has to be uploaded in Dropbox in each personal folder by all of the PhD students.

Schedule	Activities
November	<ul style="list-style-type: none"><li>● Presentation of the status of your PhD research thesis to the PhD Faculty (<u>3rd year PhD students</u>)</li></ul>
February	<ul style="list-style-type: none"><li>● Presentation of the topic of interest and the motivations of the research to the PhD Faculty (<u>1st year PhD students</u>)</li><li>● Presentation to the PhD Faculty of the literature review, gaps and research questions (<u>2nd year PhD students</u>)</li></ul>
June	<ul style="list-style-type: none"><li>● Detailed presentation of the research project to the PhD Faculty (<u>3rd year</u>)</li></ul>
September	<ul style="list-style-type: none"><li>● Show a printed draft of the PhD thesis to the PhD Coordinator and Vice-coordinator. Based on the decision of the PhD Faculty taken in June, you might be requested to present again your work to the PhD Faculty (<u>3rd year PhD students</u>)</li></ul>

**Please check in the shared calendar all the deadlines and the scheduled workshops.**