D 1.1 Report from the training activities
December/2024
WP 1 Upscaling the capacity of Early-Stage Researchers (ESRs) and Experienced Researchers (ERs)

**Funded by
the European Union**

PROJECT SUMMARY

FOOD SENSORY SCIENCE RESEARCH.

The project aims is to improve the knowledge, skills, and competencies of the research and admin staff of UPWr in the field of the sensory evaluation of food and consumer behaviour with special attention to newly designed innovative processed food products with healthrelated properties. The project also aims to establish an international network among leading universities and centres in food sensory analysis to prepare competitive research applications/proposals within the EU and global challenges (UN SDGs).

The project aims to establish an international network of leading universities, centres in food sensory analysis and innovation consultants (SDU, UMH, BCC, REDINN) to step up in science and research, improving managerial and administrative capacities, networking skills and strategies to engage society and citizens as well as public authorities and private businesses, and regional and European institutions. SEASONED will enable FBFS and its partners, leading research institutions from Spain, Denmark, and Italy, to co-develop a capacity building programme to share and integrate expertise and skills to access new research avenues and develop new approaches to prepare competitive research applications within the EU and global challenges (Green Deal, UN SDGs). Implementing Gender Balance Monitoring, Open Science, Citizen's Engagement, FAIR data research principles, and monitoring of Key Performance Indicators project will create short–to long-term societal, scientific, and economic impacts. Ultimately, UPWr's ambition is to develop and reach the top of the sensory evaluation centres' competencies and become the leading centre of excellence in Central and Eastern Europe (CEE). As a result, at the end of the project and far beyond the project duration, UPWr wants to establish a Consumer Behaviour Centre (CBC). SEASONED CBC will be a unique platform dedicated to scientists (ESRs including the MSc and PhD students, ERs, other scientists from national and international units), business partners and consumers from this part of Europe.

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SEASONED Consortium			
Participant Number	Participant Organisation Name	Short Name	Country
1	UNIWERSYTET PRZYRODNICZY WE WROCLAWIU	UPWr	PL
2	SYDDANSK UNIVERSITET	SDU	DK
3	UNIVERSIDAD MIGUEL HERNANDEZ DE ELCHE	UMH	ES
4	BASQUE CULINARY CENTER FUNDAZIOA	BCC	ES
5	REDINN - SRL	REDINN	IT

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[1] PU – Public, fully open (Deliverables flagged as public will be automatically published in CORDIS project's page),
   SEN – Sensitive (limited under the conditions of the Grant AgreementConsortium and the EC)

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Table of Contents

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List of Tables

List of figures

List of Abbreviations and Acronyms	
DMP	Data Management Plan
ERs	Experienced Researchers
ESRs	Early-Stage Researchers
FAIR	Findable, accessible, interoperable, and reusable
IPR	Intellectual Property Rights
PCA	Principal Component Analysis
RCR	Responsible Conduct of Research
RDM	Research Data Management

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1 Introduction

This report details the main training activities conducted within Work Package (WP) 1 in the SEASONED project. WP1 – led by partner SDU – focused on upscaling the capacities of early-stage researchers (ESR) and experience researchers (ER) from partners' institutions. This report covers activities in four tasks (T) of the WP1, i.e.:

- T1.1. Training to enhance research and networking skills for ESRs and ERs
- T1.3. Training on sensory marketing of novel food products with pro-health properties and sustainability (food waste reduction)
- T1.5. Training on applied statistics for sensory data
- T1.6. Training on Ethics for sensory and consumer science

Two additional tasks from WP1 (T1.2. Summer Schools and T1.4. Joint workshop on identification, proposal and writing) are not covered in this report. Activities from those tasks are instead covered in deliverables D1.2. and D1.3, respectively.

2 Training to enhance research and networking skill for ESRs and ERs (T1.1)

2.1 Task Description

The task was set to run from month 1-10 in the SEASONED project, with two additional training workshops facilitated by REDINN at month 18 and 30. The objective of this task was to enhance especially UPWr researchers with knowledge and skills necessary to step up in world class science and research focused on sustainable bio-based technologies. Further the objectives of this training task are to enhance research and networking skills for all partner ESRs and ERs within this project.

The task included a variety of training sessions on various topics of relevant to sensory and consumer scientists at different career stages. All relevant Early-Stage Researchers (ESRs) and Experienced Researchers (ERs) from all SEASONED partners were invited to take part in the training events. A hybrid online/physical format was used for most training session to maximize impact and allow for flexible participation for all project partners.

In the first three months of the project, major needs related to sensory and consumer science in the target groups (students, ESRs, ERs) were identified through interviews and brainstorming sessions within the SEASONED partners. This was used to narrow down activities based on the already existing pool of pre-defined actions taken, including the already established protocols. Subsequently, a series of training sessions were developed with a focus on ESRs to develop research skills and wider skills.

The final list of topics covered in T1.1 was the following:

- **Communication skills** to maximize impact and visibility of the research, including communication to the wider public, companies and other interest groups.
- **Project management skills** for ESRs including designing and managing a research project; monitoring and documenting progress, assessing and managing risks.
- **Data management skills**, with a specific focus on Open science and the FAIR principles.
- **Interpersonal skills**, focusing on working with others, communicating and collaborating effectively, sharing knowledge and experience, learning from others within the research group, recognising the skills and expertise of team members, and (for ERs) mentoring and managing a research group effectively.

- **Effective networking**, including participating in workshops, conferences and working groups in the area and sensory and consumer research, and initiating and developing collaborations with academic and non-academic partners, recognizing opportunities and needs of different stakeholders.
- **Getting published**, including basics of authorship, publishing and peer review, how to choose the right publication venues, and formulating a publication strategy. This will be followed by an in-depth review of the most important journals in sensory science (e.g., Food Quality and Preference, Journal of Sensory Studies), and interactive sessions with journal editors and experienced authors on how to write and publish high-quality articles with an emphasis on impact.
- **Intellectual Property Rights (IPR) protection and commercialisation,** led by REDINN, consisted of two workshops, one on the aspects of protecting Intellectual Property and the second one on expectations and responsibilities of IPR protection in HEU project.

2.2 Results of the training activities

The training sessions were distributed over four main training events. The topics "communication skills", "project management skills", "data management skills", "interpersonal skills", "effective networking", "getting published", and two additional topics found from interviews and brainstorming sessions ("dissemination" and "career opportunities") was held in the context of SEASONED General Assembly meetings (M1, M6 and M10). The first two training sessions were held in a hybrid online/physical format to maximize impact and allow for flexible participation for all project partners. The third training was held exclusively in a physical form, as it was held in combination to the first summer school. The last training event was held again as a hybrid event at M27 in connection with the project general assembly.

A total of two hours were spent on interviews and brainstorming sessions to define major needs related to sensory and consumer science in the target groups (students, ESRs, ERs). Then, 18 hours of training were spent on the first three training events, that distributed over the already pre-defined topics and new topics found from interviews and brainstorming sessions. The interviews and brainstorming sessions were conducted during the two first training events. Finally, two hours was spent on the last training session, that targeted the last pre-defined topic (IPR).

A total of 134 participants participated in the four training events. Multiple participants participated in two or more training events. Details on the number of participants at each training events, including their mode of attendance (Physical or Online) and their career stage (ESR or ER), are given in Table 1, whereas the next sections contain details on each specific topic covered.

Table 1. Key figures regarding attendees at the various training events organized within T1.1.

Training event	Total	Attendance type		Attendees career stage	
		Physical	Online	ESR	ER
M1 (October 2022, Poland)	45	30	15	34	11
M6 (February 2023, Denmark)	39	19	20	7	32
M10 (July 2023, Spain)	31	31	0	22	9
M27 (December 2024, Poland)	19	16	3	14	5

2.3 Program of the training events

The following three sections contain the detailed program/agenda of each training event, including dates and titles of the training, the time duration and the training facilitator (Tables 2 – 4).

2.3.1 First training event at UPWr (M1)

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Table 2. Detailed agenda of the first training event

October 6th, 2022			
9:00-10:30	Research and networking skills: Responsible conduct of research and communication skills – part 1	2 lessons (90 min)	Lone Bredahl (SDU)
10:30-10:45	Break		
10:45-12:15	Research and networking skills: Responsible conduct of research and communication skills – part 2	2 lessons (90 min)	Lone Bredahl (SDU)
12:15-13:15	Lunch		
13:15-14:45	Research and networking skills: Responsible conduct of research and communication skills – part 3	2 lessons (90 min)	Christina Rune (SDU)
14:45-15:00	Break		
15:00-16:30	Research and networking skills: Effective networking	2 lessons (90 min)	Lone Bredahl and Christina Rune (SDU)
October 7th, 2022			
9:00-10:30	Research and networking skills: Data management – part 1	2 lessons (90 min)	Evgenios Vlachos (SDU)
10:30-10:45	Break		
10:45-12:15	Research and networking skills: Data management – part 1	2 lessons (90 min)	Davide Giacalone (SDU)

2.3.2 Second training event at SDU (M6)

Table 3 Detailed agenda of the second training event

February 2nd, 2023			
15:00-16:30	Project management skills	2 lessons (90 min)	Laura Vazquez (BCC)
February 3rd, 2023			
9:00-10:30	Getting Published – part 1	2 lessons (90 min)	Lone Bredahl (SDU)
10:30-10:45	Break		
10:45-12:15	Getting Published – part 1	2 lessons (90 min)	Davide Giacalone (SDU)
12:15-13:15	Lunch		
13:15-14:45	Data Management: – Part 3 - Metadata in sensory science	2 lessons (90 min)	Christina Rune (SDU)

2.3.3 Third training event at UMH (M10)

Table 4. Detailed agenda of the third training event.

July, 11th 2023			
15:00-16:30	Dissemination - Pecha Kucha	2 lessons (90 min)	Leontina Lipan (UMH)

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July 13th, 2023			
15:00-16:30	Career opportunities - What happens next in your career	2 lessons (90 min)	Christina Rune (SDU)

2.3.4 Fourth training event at UPWr (M27)

Table 5. Detailed agenda of the fourth training event. This event was conducted adjacent to the general assembly held at M27.

December, 3rd, 2024			
14:00-15:30	IPR protection and commercialization	1 lesson (90 min)	Sebastian Puculek (REDINN)

2.4 Detailed walkthrough of the training activities – breakdown by topic

2.4.1 Communication skills

The topic communication skills were reviewed at the first training event (M1). In total 4 lessons of 45 minutes each was used for this subject. Associate Professor Lone Bredahl from SDU facilitated this training. The training was called *"Research and networking skills: Responsible conduct of research and communication skills".*

The aim of this training was to convey the importance of communication skills to maximize impact and visibility of the research, including communication to the wider public, companies and other interest groups. At first the training focused on Responsible conduct of research (RCR), based on the experience of developing a similar curriculum for PhD students at SDU, where every PhD student and postdoc much receive guidance on research integrity, which is a vital part of communication your work. Further the training focused on publishing and science communication, and included a discussion of authorship and authorship rules. The session also include an interactive session on possible dilemmas in academia, and the student then proceeded to play the "ERASMUS dilemma game" (a pedagogical card game developed within H2020 project INTEGRITY, project number 824586 – see e.g., Koterwas, Dwojak-Matras, & Kalinowska, 2021) in small groups and in plenum. An example of this is shown in Figure 1.

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2)

Figure 1. Example of one of the dilemmas related to science communications discussed by the ESRs

2.4.2 Interpersonal skills

The topic interpersonal skills were reviewed at the first training event (M1). In total 2 lessons of 45 minutes each was used for this subject. Christina Rune from SDU facilitated this training. The training was called *"Research and networking skills: Responsible conduct of research and communication skills"*.

The aim of this training was to provide a toolbox of skills to the students on how to present them self and communicate (talk and listen) to others. The training focused on working with others, communicating and collaborating effectively, sharing knowledge and experience, learning from others within the research group, recognising the skills and expertise of team members, and (for ERs) mentoring and managing a research group effectively. The training was conducted by mixing theory and small practical exercises.

2.4.3 Effective networking

The topic effective networking was reviewed at the first training event (M1). In total 2 lessons of 45 minutes each was used for this subject. Lone Bredahl and Christina Rune from SDU facilitated this training. The training was called *"Research and networking skills: Effective networking"*.

The aim of this training was to disclose the importance of professional networks, how, how much and where to network. The training was conducted as an active discussion, where the students were asked to give their thoughts on the matter, then followed with concrete examples such as; participating in workshops, conferences and working groups in the area and sensory and consumer research, and initiating and developing collaborations with academic and non-academic partners, recognizing opportunities and needs of different stakeholders.

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2.4.4 Data management skills

The topic data management skills were first reviewed at the first training event (M1) and again at the second training event (M6). In total 6 lessons of 45 minutes each was used for this subject. Evgenios Vlachos, Davide Giacalone and Christina Rune from SDU facilitated each 2 lessons. The first 4 lessons were reviewed at the first training event (M1) and were called *"Research and networking skills: Data management"*, and the last 2 lessons was reviewed at the second training event (M6) and was called *"Data Management: Metadata in sensory science"*.

From the interviews and brainstorming sessions, to identify the major needs related to sensory and consumer science in the three target groups (students, ESRs, ERs), and there was a strong desire to learn more about Metadata in the field of sensory science.

The aim of this training was to implement the importance of data management by introducing different aspects of data management, with a specific focus on Open science practises, the FAIR principles, research data management (RDM) and metadata.

The first two lessons (M1) focused on RDM, including open and FAIR science in a lecture setting. The next two lesions (M1) focused on open access, reproducibility, ethical considerations, GDPR, how to make a data management plan (DMP), in a lecture setting including group discussion. Students were introduced to concrete tools developed by SDU researchers (Figure 2), such as DMP online (https://dmp.deic.dk/).

The final two lessons (M6) focused on metadata in sensory and consumer science specifically. Since no standardized solution exists, the training was based on the recent paper by Visalli *et al.* (2023), who wanted to raise awareness in the community, and further proposed a "minimum information standard" in order to make data open and FAIR and possible to transform the data in an aggregated form into metadata.

DATA MANAGEMENT PLAN

There are tools that can help you write a data management plan.

One such tool is **DMPonline**, provided by the Danish e-Infrastructure Cooperation (DeIC) and available under https://dmponline.deic.dk/
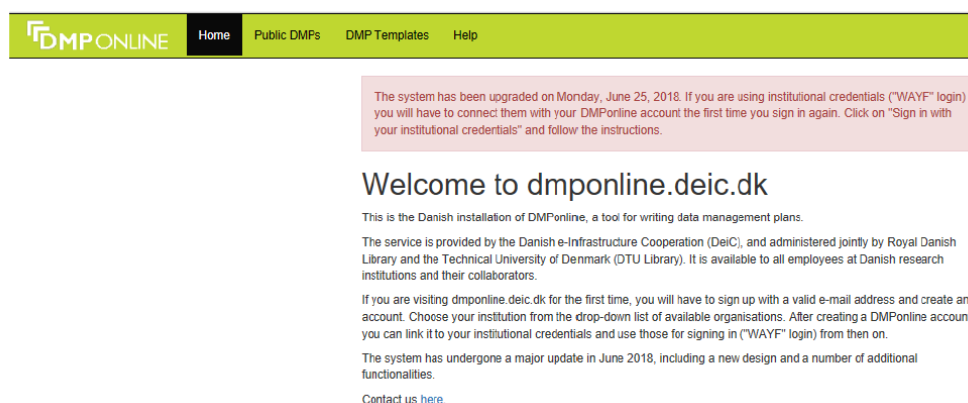
DMP examples!

Figure 2. Screenshot from the training on data management showing some of the tools introduced to the participants.

2.4.5   Getting published

The topic "getting published" was in focus at the second training event (M6). In total 4 lessons of 45 minutes each was used for this subject. Lone Bredahl and Davide Giacalone from SDU facilitated each 2 lessons. The aim of this training was to getting tools to navigate within and understand all the pieces in the complex and expanding publishing landscape.

The training was divided into two parts, where part 1 dealt with topics such as; How to identify journals for publishing your research. How to avoid common mistakes when publishing, such overseeing important requirements on author guidelines, overlooking the journal scope, not proofreading your paper, etc), as well as giving general insights into the 'machine room' of journals from the editors' and reviewers' perspectives. How to choose journals in order to maximize different kinds of impact was also discussed.

Part 2 included an in-depth review of the most important journals in sensory science, as well as a discussion of their main differences in terms of scope with specific examples. This part included a guest presentation by Prof. Sara Jaeger, editor of the journal *Food Quality and Preference*, on what is expected of authors by reviewers and editors of their journal and on how to write and publish high-quality articles with an emphasis on impact.

2.4.6   Project management skills

The topic project management skills were reviewed at the second training event (M6). In total 2 lessons of 45 minutes each was used for this subject. Laura Vazquez from BCC facilitated this training.
The aim of this training was to define and discuss the meaning and implications of "research projects management". To settle the bases of efficient research project management. To provide some examples on tools that can be used in project management. To find out the skills needed to be an efficient research project manager; such as e.g. monitoring and documenting progress, assessing and managing risks.

2.4.7   Dissemination

The topic "dissemination" was reviewed at the third training event (M10). In total 2 lessons of 45 minutes each was used for this subject. Leontina Lipan from UMH facilitated this training.

From the interviews and brainstorming sessions, to identify the major needs related to sensory and consumer science in the three target groups (students, ESRs, ERs). Both early-stage and senior researchers requested more knowledge and hands on training on effective presentation – how to present our work for different audiences (academia, non-academia) using different medias (oral presentation, PowerPoint, posters etc.).

The aim of this training was to get familiar with techniques useful to be a better presenter of your work. The chosen technique was Pecha Kucha (Beyer, 2011), a storytelling format in which a presenter shows 20 slides for 20 seconds per slide. The technique was presented to the students, who then prepared a short power-point presentation about their work. They then rehearsed it in small groups, and later presented it in plenum.

2.4.8   Career opportunities

The topic "career opportunities" was covered during the third training event (M10). In total 2 lessons of 45 minutes each was used for this subject. Christina Rune from SDU facilitated this training.

From the interviews and brainstorming sessions, to identify the major needs related to sensory and consumer science in the three target groups (students, ESRs, ERs), many from the target group requested training in *"the next step in my career"*. Many ESRs wondered what to do next in their career after finishing their PhD or postdoc projects. Two main routes were identified - to stay in academia or to work in non-

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academia. The aim of this training was to identify skills required to proceed in both academia and non-academia, and how to obtain those skills.

The training was conducted from small presentation given by the ERs in the project on their career paths and other "good advises". The structure of each small presentation was as follows:

- What skills are required to proceed in either direction (academia or non-academia).
- What job titles to look for (academia or non-academia).
- What did you do to get where you are now.
- What would you have liked to have known in your early career.
- What to do and not to do.
- Other topics relevant for the younger generation.

2.4.9 IPR protection and commercialization

The topic "IPR protection and commercialization" was covered during the fourth and final training event (M27). Sebastian Puculek from REDINN conducted this training, which consisted of 90 minute session conducted in a hybrid form. This training provided an essential introduction to IPR tailored for both ERs and ECRs, focusing on both theoretical aspects and concrete examples. Participants learned the basics of how to identify what constitutes their IP in academic settings and how to safeguard it via e.g. a patenting process. The session also covered practical tips for collaborating with industry and explore pathways to commercialize academic research.

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3 Training on sensory marketing of novel food products with pro-health properties and sustainability (T1.3)

3.1 Task description

This training activity focused on how to use sensory and consumer science methods to address societal challenges such as transition towards healthy and sustainable diets. Special topics included dietary shift (e.g., meat reduction and alternative proteins), food diversity (e.g., novel, underutilized food sources), waste reduction and circularity, etc. This training activity was originally scheduled to be carried out in M10 but had to be postponed due to staffing issues of the task leader (SDU) and scheduling conflicts with other planned activities within the project. The workshop instead took place on October 30th, 2024. The agenda for the workshop is given in Table 5.

The activity was carried out as a one-day workshop in a hybrid (onsite at SDU & online) format and included a mix of lectures and case studies, with some of the lectures building on the research activities carried out within SEASONED.

Table 6. Agenda for the 1-day workshop for Task 1.3.

Date: 30th October 2024		
Title: Sensory and food marketing methods for healthy and sustainable foods (Hybrid workshop)		
Location: Meeting room "Nobel" at SDU (physical) and Zoom: https://syddanskuni.zoom.us/j/68821822437		
09.00-10:30	Introduction and welcome Sensory and consumer science contributions to a sustainable food sector	Davide Giacalone (SDU)
10:30-10:45	Short break	
10:45-12:30	Emerging methods in food consumer science, protocols and practical examples from H2020 project COMFOCUS	Jakub Bercik and Anna Mracova (SUA, Nitra, Slovakia)
12:30-13:30	Lunch break	
13:30-14:15	Consumer understanding of sustainability concept in agricultural products	Luis Noguera-Artiaga (UMH)
14:15-14:30	Short break	
14:30-15:15	Consumer perception of a new product including upcycled ingredients: a case study on apple pomace	Agnieszka Nemś (UPWr)
15:15-16:00	Plenum discussion and Q&A with all presenters	

3.2 Results

A total of 61 researchers participated (41 women and 20 men) in the hybrid workshop on sensory and marketing methods. The event was open for sensory researchers also outside the SEASONED project,

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although most attendees came from the participating countries. Accordingly, the majority of attendees resided in Poland (57%), followed by Spain (23%), Denmark (10%) and rest of the world (10%).

After a brief welcome session, the workshop started with a first session led by Davide Giacalone (SDU) focused on contributions of sensory and consumer scientists to sustainability in the agro-food sector. This section was loosely based on the paper by Aschemann-Witzel et al. (2019), in which research streams relating to sensory and consumer science and sustainability are reviewed and six possible contributions are discussed: 1) Shift to sustainable diets (i.e., encourage acceptance of plant-based and other low-impact foods); 2) Increase food diversity (i.e., promote a broader range of crops and ingredients); 3) Reduce food waste (i.e., enhance acceptance of "imperfect" foods and extend shelf life); 4) Support circular food systems: (i.e., facilitate consumer acceptance of waste-to-value products); 5) Prioritize well-being (i.e., align food enjoyment with sustainable choices). 6) Adapt to climate impact (i.e., encourage acceptance of resilient, climate-adapted foods). Each type of contribution was introduced to the participants and illustrated through concrete case studies based on previous/ongoing research at SDU.

The second part of the workshop was led by two guest researchers – Jakub Bercik and Anna Mvravcova from Slovak University of Agriculture in Nitra (Slovakia) – and was based on work done in the Horizon 2020 project "COMFOCUS – Community in Food Consumer Science" (Grant Agreement nº 101005259) which is thematically close to SEASONED. Specifically the section focused on emerging methods including biometric (e.g., eye-tracking, facial expression analysis, galvanic skin responses) and neuromarketing methods (e.g., fMRI and EEG), and several examples were given of the work conducted in COMFOCUS on using these methods to understand consumer attendance to health (e.g., the nutriscore) or sustainability label in food products. The approaches were also practically demonstrated to the participants trough an online eye-tracking and facial analysis experiment focusing on their own reactions to insect-containing products.

The afternoon portion of the workshop featured presentations from two SEASONED partners. Luis Noguera-Arteaga (UMH) focused on consumer understanding of the "sustainability" concept in the context of agricultural products, inspired by a recent paper from their research group (Sanchez-Bravo et al., 2021). The talk in particular focused on the differences between consumers in different countries and in different demographics segments with respect to what is understood to comprised within the term sustainability. It also highlights how often there is a mismatch between which food product categories are objectively (un)sustainable and which are perceived as such by the consumers.

The last session was led by Agnieszka Nemś (UPWr) and was focused around using sensory and consumer science methods for promoting novel food products using upcycled ingredients, and highlighted the importance of involving the consumer in the product development process to decrease the chance of later failure. The bulk of the talk focused on part of the research carried out within SEASONED, specifically the cross-cultural study on consumer acceptance of potato snacks enriched with upcycled apple pomace (Kita et al., 2024) which had just been accepted for publication at the time the workshop tool place.

The day rounded off with a general discussion and Q&A session involving all presenters.

4 Training on applied statistics for sensory data (T1.5)

4.1 Task description

This task focused on providing training on statistical analysis of large amounts of data collected during sensory analysis and consumer studies is essential for experiment design, performance, and results dissemination. The training was provided by Dr. Carolina Chaya, Department of Agricultural Economics, Statistics and Business Management, Universidad Politécnica de Madrid, Spain. Dr. Chaya is a well-known expert in the field of sensometrics and an experienced educator within applied statistics.

The training activity took place at UPWr in June 2024 and was delivered in two parts: part 1 (10-11.06.2024) and part 2 (13-14.06.2024). The first part dealt with fundamental concepts in sensometrics and univariate data analysis (e.g., ANOVA, Friedman, Tukey), whereas the second part focused on multivariate data analysis methods like Principal Component Analysis (PCA), clustering, etc. Both parts featured practical tutorials involving real datasets and data problems from different sensory projects. The detailed program for this training activities is given in Table 6.

Table 7. Agenda for the statistics for sensory data training provided in T1.5.

		THEORY	PRACTICALS	
			SENSORY TESTING	DATA ANALYSIS
Part I	Day 1	Section 1: Introduction to Sensometrics. Influence of the data nature on the statistical data analysis. Difference between a descriptive and an inference approach. Guide to select the suitable statistical test according to the aim of the study and the nature of the data. Section 2: Introduction to Tests of Hypothesis. Type I and II errors. How the binomial test works. What is behind the critical values tables of a triangle or a paired comparison test. Why the procedure differs when investigating differences or similarity. Section 3: Analysis of ranking data. Non-parametric method: Friedman test.	Test 1: Ranking on sourness of three dilutions (Data 1) Test 2: Hedonic test of 6 biscuits (Data 2)	
	Day 2	Section 4: Applications of ANOVA and Multiple Range Test. Mixed ANOVA applied to the analysis of hedonic data. Section 5: Application of 2-way ANOVA to check trained panel assessments. Why and how you should check the discrimination power and agreement between assessors and the repeatability		Tutorial 1: Applications of 1-way ANOVA and Multiple Range Test: Differences on saltiness of three products (Data provided). Tutorial 2: Friedman test applied to the analysis of ranking on

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		between sessions. What is behind the p-value?		sourness of three dilutions (Data generated on test 1). Tutorial 3: 2-way mixed ANOVA model and Tukey test applied to the analysis of hedonic data of biscuits (Data generated on test 2). Tutorial 4: Applications of 3-way ANOVA to check the trained panel assessments. Training on strawberry aroma of wine samples (Data provided).
Part II	Day 3	Section 6: Introduction to Multivariate Analysis. Principal Component Analysis. Applications	Test 3: CATA test of 4 biscuits (Data 3)	Tutorial 5: PCA application to quantitative descriptive data of blackcurrant squashes (Data provided) Tutorial 6: Small Cluster Analysis example step-by-step (Data provided)
	Day 4	Section 7: Cluster Analysis step by step. Applications		Tutorial 7: Cluster Analysis application to quantitative descriptive data of blackcurrant squashes (Data provided) Tutorial 8: Cochran's test applied to the analysis of CATA data of 4 biscuits (Data generated on test 3) Tutorial 9: Cluster Analysis of consumers by liking of 6 biscuits (Data generated on test 2)
		Optional Test		

4.2 Results

A total of 20 ESRs (18 from UPWr, 1 from SDU and 1 from BCC) participated in the applied statistics training. All participants received attendance certificates and they could (optionally) take part in a test to receive an additional certificate. The training provided was received very positively as demonstrated by the results of an exit survey conducted following the training (Appendix A).

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5 Training on Ethics for sensory and consumer science (T1.6)

5.1 Task description

Sensory and consumer science deals with human participants, and ethical considerations are of paramount importance (e.g., to ensure participants' safety) to the field. Moreover, external organizations such as funders and journals increasingly demand ethical approval before granting funds, accepting a publication, or engaging in other types of partnering activities. This training activity focused on understanding and meeting these requirements (ethical, legal, codes of practice, social responsibility, etc.) for a professional scientist. Administrative procedures for obtaining research ethics approval at SDU and the other project partners was reviewed to identify best practices. The training was carried out as a full-day workshop (hybrid) in December 2024, adjacent to the 6th GA meeting in two sessions, the first one focusing on research ethics in sensory and consumer science and the second one focusing on ethical research conduct and publishing. The agenda for the event is given in Figure 3 below.

SEASONED General Assembly Agenda

03 - 04 December 2024

Location: Centrum Biologii Stosowanej oraz Innowacyjnych Technologii Produkcji Żywności

Building F14, room 1.17; ul. Chełmońskiego 37, Wrocław

GA: 4th December 2024 (Wednesday)

Training on Ethics		
09.00 – 10.00	**Research ethics in sensory and consumer studies** Video call link: https://meet.google.com/fxb-eihi-fbn	[SDU] Davide Giacalone, Associate Professor
10.00 – 10.30	**Coffee break**	
10.30 – 12.30	**Research ethics in sensory and consumer studies** Video call link: https://meet.google.com/fxb-eihi-fbn	[SDU] Davide Giacalone, Associate Professor
12.30 – 13.30	**Lunch break**	
13.30 – 16.00	**Research integrity in scientific publishing** (online session: https://meet.google.com/joo-auby-ekk)	[SDU] Leander Møller Gøttche, Research Librarian

Figure 3. Agenda for the training on research ethics (Task 1.6), a full day hybrid activity adjacent to the general assembly held at M27.

5.2 Results

A total of 33 researchers (26 from UPWr, 3 from BCC, 2 from UMH, 1 from SDU and 1 from REDINN) took part in the training event either physically (17) or online (16). The training activity was led by SDU researchers, specifically, the morning session – "Research ethics in sensory and consumer studies" – was led by Associate Professor Davide Giacalone, and focused on critical aspects of research ethics in sensory and consumer science. Key topics included ethical considerations for ensuring participant safety in sensory studies, the treatment of personal data and the importance of obtaining ethical approval from relevant institutional review boards, particularly drawing on the experience and procedures (e.g., to obtain approval research ethics committee) implemented at SDU. Participants were encouraged to reflect

on these principles by considering how they apply to their own research projects and their own institutions.

The second session (afternoon), "Research integrity in scientific publishing" was led by Research Librarian Leander Møller Gøttche, the main responsible for the "Responsible Research Conduct" course at SDU[2]. The afternoon session delved into the critical aspects of research integrity in scientific publishing. Key topics include authorship guidelines and the responsibilities authorship entails; how to identify and avoid predatory journals and deceptive publishing practices; plagiarism and preventing the unethical use of others' work. Participants engaged in group discussions to reflect on concrete ethical dilemmas.

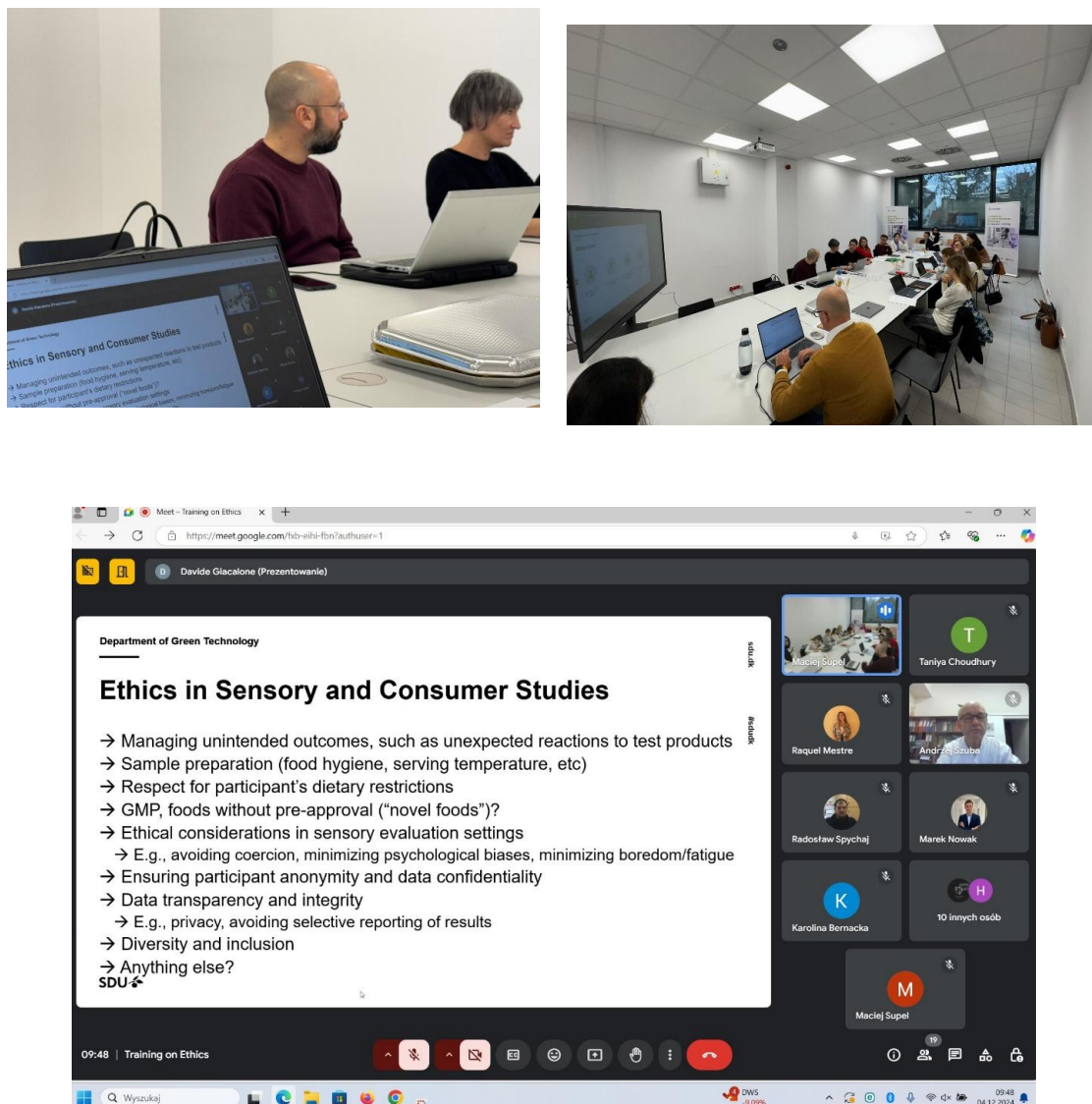Some figures and screenshots from the event are given in Figure 4 below.

Figure 4. Pictures and screenoshots from the hybrid training event on research ethics.

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[2] https://sdunet.dk/en/research/phd_postdoc_hub/responsibleconduct/rcrcoursephdstudents

6 Summary and conclusions

This deliverable has covered the main training activities conducted within WP1 in the SEASONED project. WP1 focused on training activities to upscale the capacities of early-stage researchers (ESR) and experience researchers (ER) from partners' institutions and of UPWr specifically.

This deliverable has detailed activities in four tasks: 1) T1.1. Training to enhance research and networking skills for ESRs and ERs; 2) T1.3. Training on sensory marketing of novel food products with pro-health properties and sustainability; 3) T1.5. Training on applied statistics for sensory data; 4) T1.6. Training on Ethics for sensory and consumer science. All four tasks have been completed as of December 2024.

In total, WP1 activities in the four tasks covered this report have involved **248 researchers**[3] (134 in Task 1.1, 61 in T1.3, 20 in T1.5 and 33 in T1.6) and provided **over 60 hours of training** on various topics covering both general research skills and specific training on sensory and consumer science topics. All activities had > 50% of participants from UPWr.

Two additional tasks within WP1 (T1.2. Summer Schools and T1.4. Joint workshop on identification, proposal and writing) are reported separately in deliverables D1.2. and D1.3, respectively.

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[3] The list of participants is omitted from this public report but is available at the coordinator or WP1 leader.

6 References

Aschemann-Witzel, J., Ares, G., Thøgersen, J., & Monteleone, E. (2019). A sense of sustainability?–How sensory consumer science can contribute to sustainable development of the food sector. *Trends in Food Science & Technology*, *90*, 180-186.

Beyer, A. M. (2011). Improving student presentations: Pecha Kucha and just plain PowerPoint. *Teaching of Psychology*, *38*, 122-126.

Kita, A., Rune, C. J. B., Giacalone, D., Noguera, L., Carbonell-Barrachina, A., Nems, A., … & Vázquez-Araújo, L. (2024). Understanding consumer perception of a new product including apple pomace: The role of health, sustainability and culinary engagement. *International Journal of Gastronomy and Food Science, 38*, 101037.

Koterwas, A., Dwojak-Matras, A., & Kalinowska, K. (2021). Dialogical teaching of research integrity: an overview of selected methods. *Facets*, *6*, 2138-2154.
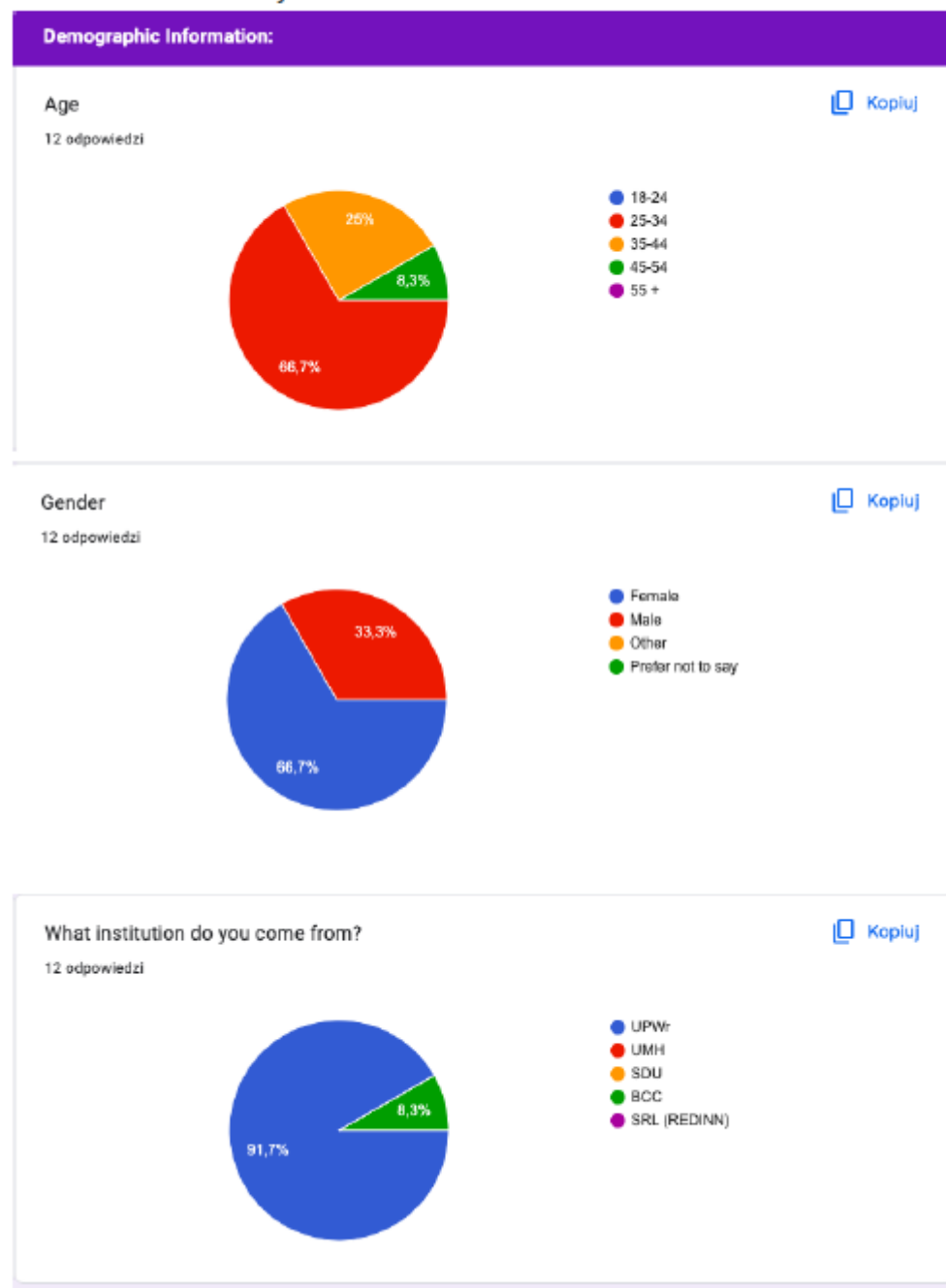
Sánchez-Bravo, P., Chambers, E., Noguera-Artiaga, L., Sendra, E., Chambers IV, E., & Carbonell-Barrachina, Á. A. (2021). Consumer understanding of sustainability concept in agricultural products. *Food Quality and Preference*, *89*, 104136.

Visalli, M., Schlich, P., Mahieu, B., Thomas, A., Weber, M., & Guichard, E. (2023). First steps towards FAIRization of product-focused sensory data. *Food Quality and Preference*, *104*, 104765.

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7 Appendix

A. Exit survey for training on applied statistics for sensory data

Survey Results: **Training on applied statistics for sensory data (ESR) with dr Carolina Chaya at UPWr.**

Demographic Information:

Age

12 odpowiedzi

- 18-24
- 25-34
- 35-44
- 45-54
- 55 +

25%
8,3%
66,7%

Gender

12 odpowiedzi

- Female
- Male
- Other
- Prefer not to say

33,3%
66,7%

What institution do you come from?

12 odpowiedzi

- UPWr
- UMH
- SDU
- BCC
- SRL (REDINN)

8,3%
91,7%

Course Evaluation:

How do you rate the overall quality of the training? (1-Needs Improvement, 2 - Meets Expectations, 3 - Outstanding) 📋 Kopiuj
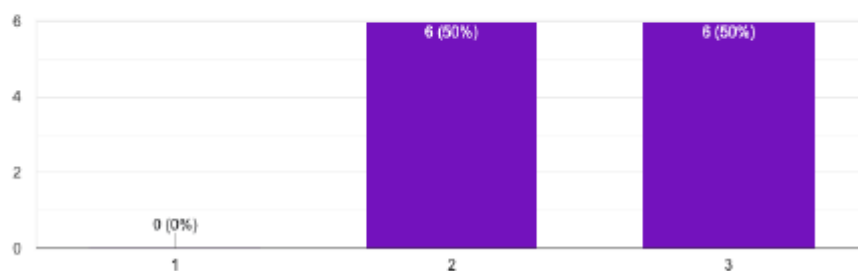
12 odpowiedzi

How do you rate the instructor's expertise? (1-Needs Improvement, 2 - Meets Expectations, 3 - Outstanding) 📋 Kopiuj
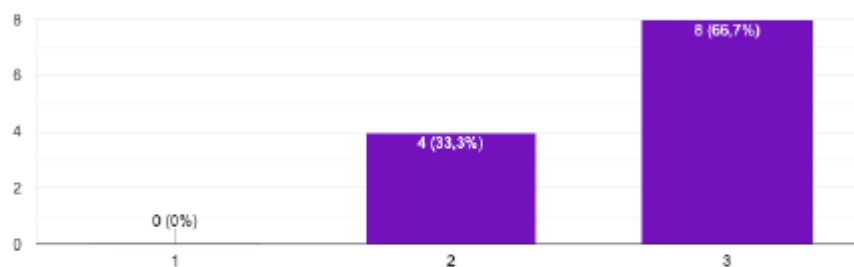
12 odpowiedzi

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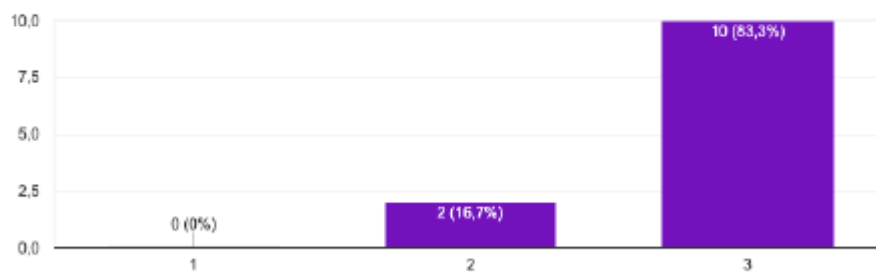
Was the training material understandable? (1 - Not understandable at all, 2 - Moderately understandable, 3 - Very understandable)
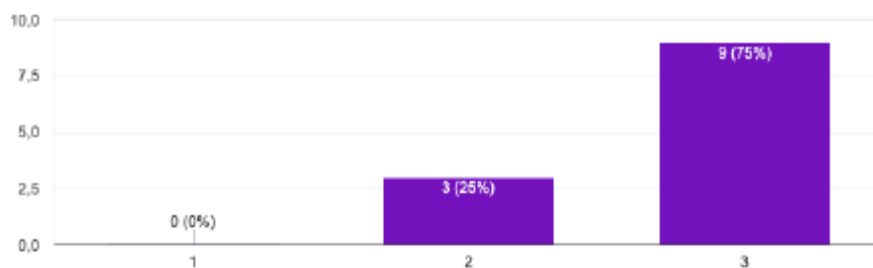
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12 odpowiedzi

How do you rate the instructor's interaction with participants?(1-Needs Improvement, 2 - Meets Expectations, 3 - Outstanding)
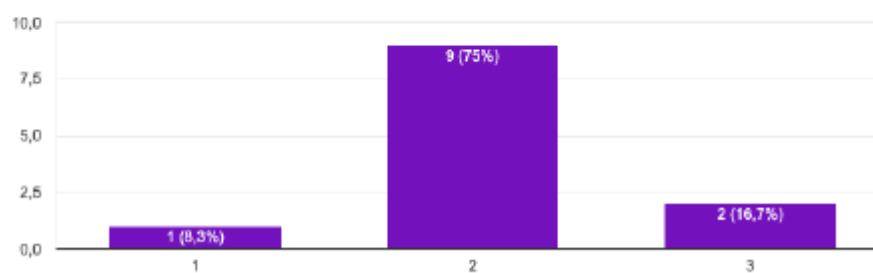
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12 odpowiedzi

Was the time allocated for the training appropriate? (1 - Definitely Too Short, 2 - Just Right, 3 - Definitely Too Long)
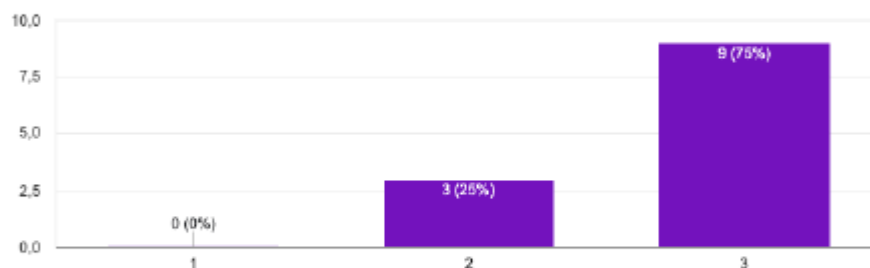
📋 Kopiuj

12 odpowiedzi

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Did the training meet your expectations? (1 - Definitely Not, 2 - Not Sure, 3 - Definitely Yes)

Kopiuj

12 odpowiedzi

Feedback and Suggestions:

What did you like the most? What could we improve?

8 odpowiedzi

Everything was explained thoroughly and tailored to the needs of the participants. The materials we used (presentations, tutorials) were well prepared and I will definitely use them when preparing data for my research work. I would be happy to take part in other training courses led by dr Carolina Chaya

Maybe work in the various kinds of software?

It may be more helpful to use statistica instead of xl stat

I like the most the explanation of the ANOVA basis and hypothesis formulation.

practical approach, clear division of methods, real analytical data

Practical exercises were very helpful.

I really enjoyed the way Dr Chaya conducted the workshop and her huge knowledge. I think the materials were very well prepared. I have no negative comments about the workshop. Only the workshop could have been extended in time.

Would you recommend this training to others? (1 - Definitely Not, 2 - Not Sure, 3 - Definitely Yes)

Kopiuj

12 odpowiedzi

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