Eye Tracking for Research: Course Outline

The best way to get familiar with eye tracking is through hands-on experience.

The Length of the course is 4 days. Following topics will be covered in the course:

Day 1. Learning Outcomes. At the end of Day 1, you should have a first understanding how your eye tracker works, how you design a test and record data.	
Lecture: **Background Knowledge to understand eye tracking research.** You'll learn about our eye tracking technology, the human visual system and how we process and select visual information. How an eye tracker works: ⇨ How does the eye tracker work? ⇨ dark and bright pupil tracking ⇨ what happens during eye tracker calibration ⇨ eye tracker accuracy and precision ⇨ eye tracker timing performance ⇨ How does blinking affect eye tracking? ⇨ Does head movement affect eye tracking results? ⇨ Are pupil size calculations possible with Tobii eye trackers? How does the human visual system work? ⇨ The human eye ⇨ Types of eye movements ⇨ Why do our eyes move? ⇨ How fast is human perception? How do humans process and select visual information: ⇨ What do we study when we use eye tracking data? ⇨ What is visual attention	1.5h
Tea/Coffee break (informal discussion)	15 mins
Lecture: Understanding how to design a good study This lecture will help you increase your knowledge on how to design your stimuli and therefore more successful study designs.	1h
Lecture: Eye tracker data quality and validation	1h
Lunch Break	1h
Hands_on_activities: ⇨ Design a study in Tobii Pro Studio with 'Core Elements' ⇨ Run five sessions on the 'Core Elements' study with you as a participant ⇨ Develop a one sheet document to introduce your 'Core Elements' Study	3h
Total Number of Hours:	**8h**

Day 2. Learning Outcomes. You will gain an initial understanding of how to collect eye tracking data. You will understand how to position your participants correctly, how to perform the calibration and how you can assess the quality of your data in the software. You will learn how to position participants correctly in the head box, how to calibrate them and finally create a data set you can use during the rest of this program.	
Lecture: ⇨ Eye tracking metrics ⇨ Independent variables and participant groups ⇨ Event and behavioural coding	1h
Tea/Coffee break (informal discussion)	15 mins
Hands_on_ activities: ⇨ Develop a practical understanding of participant positioning. ⇨ Calibrate yourself well and begin recording five times. ⇨ Calibrate yourself poorly five times; begin recording and view data.	2h
Lunch Break	1h
Lecture: Tobii Studio and dynamic stimuli	1h
Hands_on_ activities: ⇨ Collect data on five people on your 'Core Elements' Study. ⇨ Explore data quality for the 'Core Elements' session on the Replay tab	2h
Total Number of Hours	**8h**

Day 3. Learning Outcomes. You will gain an initial understanding of how to perform a qualitative analysis of your data using the video replay and visualizations. If you want to work quantitatively, you should learn how to use Areas of Interest (AOIs) and Metrics. This session is the most intense and it is great if you can plan in some extra time for the supplemental materials! In this session, you will create your own visualizations which are often used to illustrate eye tracking results. You will also draw Areas of Interest (AOIs) which allow you to relate eye movements to certain parts of your stimuli. Lastly, you will be able to create your own metrics. This statistical output often forms the core part of your eye tracking results.	
Lecture: Working with dynamic stimuli in AOI tool	1.5h
Tea/Coffee break (informal discussion)	15 mins
Lectures: ⇨ Setting up and using scenes and segments in Tobii Pro Studio ⇨ Working with heat maps and gaze plots ⇨ Writing up eye tracking results for a research paper	1.5h
Lunch break	1h
Hands_on_activities: ⇨ Generate eight requested visualizations based on your Image task. ⇨ Create eight areas of interest for your Image task. ⇨ Generate eight statistical outputs from your Image task data. ⇨ Export and review eight requested columns of data on the Data Export tab. ⇨ Interpreting eye tracking metrics.	3h

Total Number of Hours	**7-8h**
Day 4. Learning Outcomes. You will learn about pupil dilation and its relevance to research on affective and cognitive responses. We also want you to learn how to prepare data for further analysis in external software and how you generate a report and present it. This session is about making things real: Finish your first eye tracking study, create insights and present them. You might have internal stakeholders who want to understand the value of eye tracking. As a best practice, we recommend you present your report to your colleagues and stakeholders. It is important that you learn how to talk about eye tracking as you will receive many questions about it!	
Lecture: Pupil dilation and affective and cognitive responses	1.5h
Tea/Coffee break (informal discussion)	15 mins
Hands_on_activities: ⇨ Analysis of pupil dilation data and their link to affective and cognitive responses	1.5h
Lunch break	1h
Group activities: ⇨ Generate a report based on the Image task from your 'Core Elements' study ⇨ Present your study	2-4h
Total Number of Hours:	**6-7h**

Please note that this course is available free of charge to all CBE academics and HDR students. The first session of the course will run in February from 19th to 22nd.

Please contact Dr Amir Riaz at Amir.Riaz@anu.edu.au for further information.