Session 2 – Data collection

Recommended schedule:

**Session 2. Data collection (*approx. 2 hours)***
- Hands-on experience of experimental set up, applying electrodes and running the software.
- Mock / simple experiment, e.g. recording EDA and then present a stimulus (e.g. an image on screen – a negative/aversive stimulus usually works well).
- If students are in groups – have them practice data collection on each other
- If sole student – have them practice on the trainer
- After training, additional time in the lab should be set up for student to come in and collect their own data on this mock experiment (e.g. peers or through University recruitment system).
- Aim: is to have collected one or two (minimum) example signals to use in the next session to practice analysis.
- If additional testing is not possible, the trainer can provide an example signal or the student can analyse the signals from session 2 training.

Go through Set up / testing basics:
- Hardware set up
- Software: AcqKnowledge
- Laptop / Biopac machine – do's and don'ts – 'busy' light, turning off before laptop, do not run multiple signals / files alongside data collection.
- Electrode gel and application to fingers
- Open up template and save as a Graph file (.acq)
- Start and run signal.
- Discuss the features of the interface during data collection
- Allow 30 secs (at least) from clicking Start before collecting data. In AcqKnowledge, there is an artefact / deflection in the background SCL which takes a while to stabilize
- Insert hot keys (manually add / use trigger codes)

The AcqKnowledge Interface (see images)
- Y-axis = microsiemens (variable scale)
- X-axis = time. Can set this via Display screen preferences
  Display → Preferences → Time units → seconds (recommended).
- The importance of the I-Beam (I) and Magnifier tools (a magnifying glass)
- Scale icons horizontally and vertically to condense / return entire signal on screen
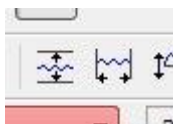
- Add flags (for any significant markers / points using the flag button (flag with a cross will delete the flag)
- Add lightbulbs (typically) for stimulus events (these can also be set up as hot keys or triggers sent straight from things like E-prime).

The Measurement boxes:
- Can select and edit for your analysis needs.
- These boxes will be columns when exported into Excel
- Different colour boxes represent the different channels (if applicable)
- Open a saved Preset or create your own selection of measurement boxes
- To set up: select boxes and click and create "New Preset" (recommended if working on your own laptop)

- Option for multiple channels (if applicable) e.g., if temperature, EMG amplifiers are also included. Make sure you are on the correct channel of interest (indicated by different colour measurement boxes). For ease, you can temporarily hide a channel = Alt and click on its associated number in top identification box. Repeat step to unhide.

Example signal – EDA / SCR channel 1, red line and body temperature channel 2, blue line
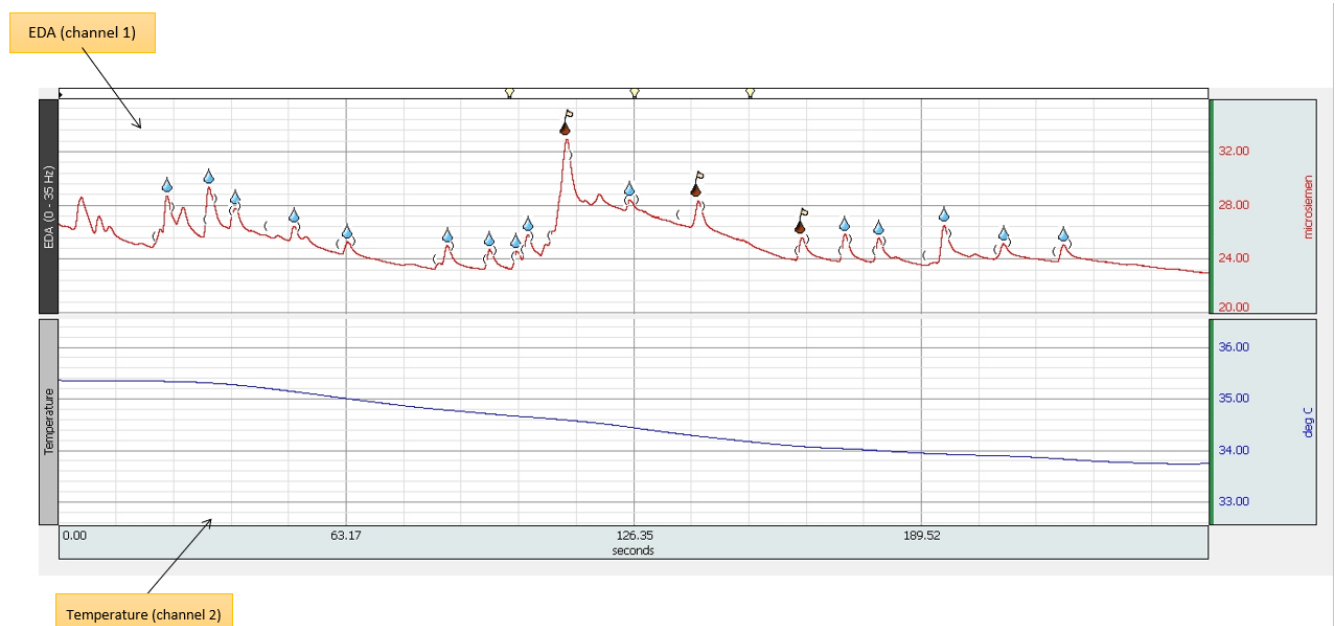
Example signal from the EDA / SCR channel
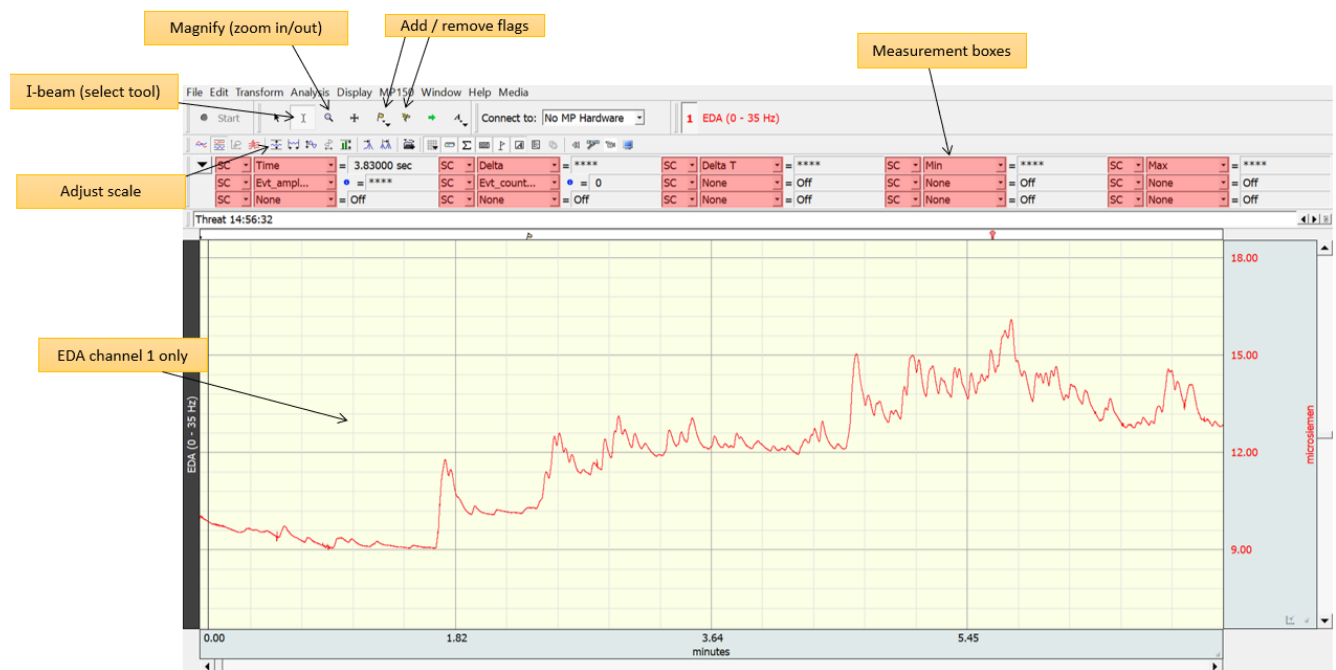
Application & Data Collection:

- Give a demonstration to the students – using an image on screen (e.g., negative image or visual illusion) or conduct an experiment on the real person/body tactile stimulation (e.g. rubber hand illusion).
- Ask the students to then pair up and test each other (or test trainer/researcher)
- Each will have practice being the experimenter (applying the electrodes, running the signal), and should have experience as the participant (to feel the application of the electrodes, how movement /coughs etc. can influence the signal).
- Record for approx. 10mins each

After example run through's – go through points about good testing practice (below)

Good Testing Practice for data collection

- Application: put electrodes on at least 10 mins before starting data collection
- Electrodes: good electrode contact is essential (clean, dry, warm hands)
- Fixed wires: use masking tape to fix wires to hand / up arm
- Ensure testing is in a quiet room with no distractions
- Temperature: ambient and stable room temperature – mild
- Times of testing – 10am – 3 or 4pm is optimum to ensure participants aren't too tired etc.

- Recommended to collect data for the experiment in a single session (on the same day) - as EDA can fluctuate daily.

Good Testing Practice for participants:

- Movement: fidgeting / foot shaking will cause spikes.
- Ensure participants remain as still as possible!
- Movement: excessive talking / coughing / sneezing etc. may all cause SCRs – these can be highlighted using the hot key during collection or marked afterwards (and removed from analysis)
- Non-responders: approx. 10 – 25% of participants are non-responders – resulting in a flat / extremely messy signal. They may generally have low conductance (< 1 microsiemens along y-axis). Should be removed.

Good Testing Practice for design or analysis

- It is recommended to take a Baseline recording (no manipulation or stimulus) where the participant can stare at a blank screen/fixation cross for example, before and after the stimulus for a more comprehensive, holistic recording of the individual's EDA.
- It is useful to collect data for a longer duration than needed.
- It is not recommended to use SCR with stimuli presented in fast succession – it is recommended to allow 1-3 secs after the stimulus presentation for SCRs to begin.
- To deem an SCR as event-related, i.e. tied to specific stimulus presentation depends on a few factors such as stimulus duration, the type of stimulus (e.g. if it's dynamic/changing). Conduct pilot data and/or use guidance based on previous literature.
- For multiple stimuli (e.g. visual/images), it is best to present stimuli followed by a break / ISI.
- SCR fluctuates and is influenced by time – so keep experimental conditions precise and consistent.
- Be mindful of the changing scales – sometimes it looks messy, but it isn't
- Remember to zoom in and out of signal during analysis – for precision. Note, for experiments of longer duration (e.g., 20mins) – when zoomed out to fit one screen the signals may look like they need smoothing / noisier. But zooming in you will see the signal is fine in reality.