

MEG Training and Certification for KIT-Macquarie Brain Research laboratory users

1. Introduction

To conduct an MEG experiment at the KIT-Macquarie Brain Research laboratory, every lab user needs to complete MEG Basic Training and obtain Level 1 certification. The purpose of MEG training is for lab users to achieve good results while adhering to lab policies without getting lost in the process.

Running an experiment at the MEG lab involves six independent processes: (1) getting approval to run your experiment, (2) setting up your experiment at the lab, (3) recruiting subjects, (4) working with your subjects (this includes getting them ready for the experiment), (5) acquiring MEG data, (6) analysing MEG data. Each of these processes, in turn, has its own set of procedures. The MEG Executive Committee have established policies, protocols and routines that make running a MEG experiment easy on the researcher, the staff and above all, the subject. You will become familiar with these when you participate in MEG training.

2. Submitting proposal to Executive Committee

To obtain approval to conduct an experiment at the KIT-Macquarie Brain Research Laboratory, you must submit a project description in writing to the Executive Committee for the MEG lab. Please submit your project proposal directly to any member of the committee. The committee will provide immediate feedback if the proposal is incomplete and, once complete, you will be invited to the next meeting to present and discuss your proposal. It is recommended that all local researchers present their proposal at an Executive Committee meeting, usually held bi-weekly.

The project description need not to be more than one page - two pages at most. The project description should explain (a) the experimental hypothesis, (b) the method of stimulus presentation and the subject's task, (c) it should provide examples from each of the experimental conditions and the number of items in each condition, and (d) it should indicate how you plan to analyse the MEG data. If you feel you will need assistance from the lab staff to complete your project, please state this also.

3. Basic training

Before you start running your experiment, you must obtain Level 1 certification. In order to do so, you have to go through MEG Basic Training. After successfully completing Basic Training, the lab staff will submit a report to the Executive Committee, who will approve your Level 1 certification (see below for details of the essential criteria for obtaining Level 1 certification). The lab staff are not responsible for providing training pertaining to the ethical requirements related to participant treatment and privacy. Moreover, the staff may bring to the attention of the Executive Committee any concerns that are observed. A session may be terminated by lab staff in the case of serious misconduct.

After obtaining Level 1 certification, the lab staff will assist you with the steps involved in setting up your experiment to run using the MEG system. The lab staff are responsible for acquiring the MEG data (i.e. handling the MEG system itself) while you are responsible for interacting with your subject at all times. Finally, lab staff will also help you to provide the MEG data in a format that you can use, but lab staff will not analyse the data for you (NB: the lab staff do love a good discussion, so feel free to show and tell, and we will be delighted to watch and listen!).

3.1. Basic Training stages:

Stage 1: Hands-on learning to set-up a subject (marker coil placement, digitization, setting up a subject inside the MSR, running a presentation script). Throughout this stage of training, it is important that lab users are able to demonstrate that they can prioritise subject comfort above all else. Researchers should contact Lab staff to organize date.

Stage 2: Setting up the lab user's new experiment (if Level 1 certification was obtained).

If, for any reason, you are unable to participate in MEG Basic Training, we highly recommend that you seek a collaborating partner. Even if you have obtained project approval from the MEG executive committee before you commence training, you will not be able to start your experiment until you have completed Basic Training and received Level 1 certification. In that case, you should try to contact the lab staff as soon as possible.

3.2. Lab users who do not live in Sydney/ Australian and International MACCS visitors:

You will need to allow for a few days to go through stages 1-3. Otherwise, please seek a collaborating partner who can participate in this training. Ideally, training should extend over a few weeks.

4. Level 1 certification: allows the user to run their experiments with the supervision of MEG lab staff. Acquisition is conducted by MEG lab staff. The user is responsible for participants and the MEG facility.

4. 1 Essential criteria for obtaining Level 1 certification

The researcher must demonstrate respect and consideration for human subjects at all times. In addition, to obtain Level 1 certification, the researcher will have to demonstrate the following skills while running two MEG lab staff as subjects (on two occasions):

- 1) Researcher ensures subject is kept informed and comfortable throughout experimental sessions.
- 2) Researcher correctly instructs the subjects to remove all metal objects from clothing and body, as well as make up and shoes.
- 3) Researcher applies marker coils correctly to subject's fiducial points.

- 4) Researcher displays careful handling of the coils (while placing them on and removing them from subjects).
- 5) Researcher sets up digitization software correctly, and obtains a usable headshape and coil position file
- 6) The researcher sets up the subject inside the MSR by themselves:
 - a. Subject is provided with new eartips, eartubes, response buttons if applicable.
 - b. Subject is comfortable and able to communicate to people outside the shielded room.
 - c. Subject understands that she/he can constantly communicate via the microphone/camera and that she/he can terminate the experiment at any time.
 - d. Subject understands expected behaviours during the experiment (e.g. movement, blinking, responses, talking, etc.).
 - e. Subject is straight and as close to the dewar as possible.
 - f. Marker coils are plugged in to the unit.
 - g. Marker unit is on before the door is closed.
- 7) Researcher administers the pre-tests and experiment while communicating with MEG lab staff in charge of acquisition (e.g. checking with staff before initiating the protocol).
- 8) Researcher tidies up the lab.

4.2 After completing training and assessment, the MEG lab staff will submit a report to the MEG Executive Committee. Final approval for Level 1 certification is at the discretion of the Executive Committee.

To set up a time for MEG training, contact Graciela at gtesan@maccs.mq.edu.au or call at 02 9850 1581.