



**Centre for Medical & Industrial Ultrasonics (C-MIU)
Laboratory 1, Room 324, James Watt South Building**

CODE OF PRACTICE

The adoption and practice of good safety procedures are of paramount importance both for the health and safety of fellow workers and for the integrity of the fabric of the C-MIU laboratory.

Note: No latex products are to be brought into the laboratory

1. No work may be carried out in the C-MIU Lab 1, Room 324, James Watt North building without the prior permission of one of Professor Margaret Lucas, Professor Sandy Cochran, Dr Paul Prentice, and Dr Andrew Feeney (**Lab Guardian**).
2. Online risk assessments must be completed for specific tasks, or for the use of specific items, and it must be approved by your supervisor, the appropriate responsible person(s) (see list below) and Dr Andrew Feeney, **BEFORE ANY WORK COMMENCES**. As examples, such work may involve high voltage, use of a laser, use of chemicals or biological cells/material. The list is not exhaustive. <https://risks.eng.gla.ac.uk/>
3. New staff and students should also make themselves aware of safety procedures and of the location of safety equipment in the lab.

These are:

Emergency telephone number: **4444**

Fire Extinguisher (Next to entrance door, beside Area 5, see floor plan below)

First Aid kits (JWS Level 3: Janitors box, Level 4: Tuck lab)

Ear protection (Hanging inside the main lab door)

Laser safety spectacles (Hanging inside each lab, by the door)

Emergency exit (through main building entrance, through the exit leading to the Wind Tunnel lane or through James Watt building North)

4. Work outwith standard office hours and weekend working requires the permission of your supervisor. If permitted, the out-of-hours working book located in the foyer of the JWS building must be signed (on arrival **and** departure). It is recommended to download the [Safety Zone App](#). The SafeZone App is **very useful** for every member of staff and student at the UofG as it is monitored 24 hours a day by the Campus Security team, safeguarding the safety and security of our staff and students throughout their time at UofG. Please either [click here](#) to download on your phone or use the QR code shared in image below.

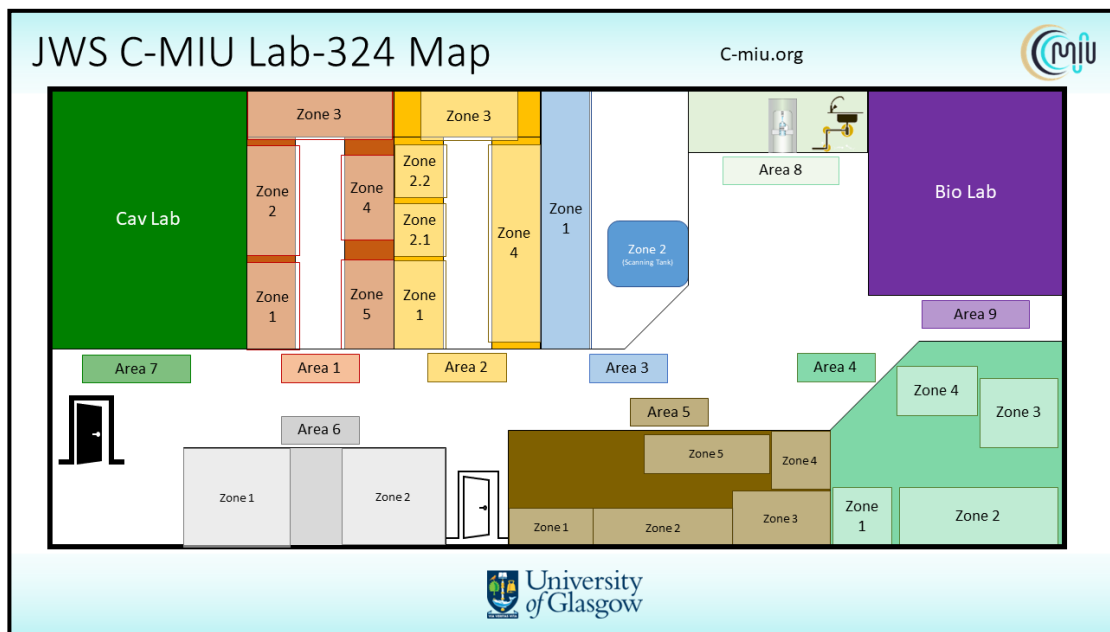


5. Various lasers are used in this lab, with Class IV lasers contained within the laser enclosure (sliding door entrance, to the left of the main lab entrance). **DO NOT ENTER THE ENCLOSURE** when the **LASER IN USE** sign is illuminated.

6. All new lasers, and users of lasers and high power light sources in the School should register with John Nelson and watch the laser safety video owned by the University (on DVD and kept by John Nelson – Paul Prentice also has a DVD). The laser-safety video should be made available to new users of lasers within 1 week of the user reporting to the laser safety officer. The new user will then complete the University’s laser user registration form. Records of all laser users are held by the University Radiation Protection Service. Existing users of lasers should view the video at least every 5 years to maintain awareness of developing safety issues and best practice.
7. For your own safety, ear protection and laser safety goggles must be used when required.
8. Considerations for codes of practice and risk assessment for the James Watt School of Engineering can be found here:
[\(https://www.gla.ac.uk/schools/engineering/informationforstaff/safety/\)](https://www.gla.ac.uk/schools/engineering/informationforstaff/safety/)



James Watt building North Level 3: Floorplan



Area management floorplan



GENERAL LAB PRACTICE

1. To minimise trip hazards, extension cables should be plugged into the closest available socket.
 - i. Once equipment is not in use, it should be turned off and any extension cables used should be tidied to a suitable location.
 - ii. Leads and plugs should ONLY be used on the allocated item of equipment and should NOT be swapped between equipment
 - iii. The gain on power amplifiers should be set to zero when not in use.
2. Electrical connectors between different devices or equipment should be safe. If in doubt speak with electrical technicians (Rm 619).
3. If you are unsure how to correctly use an item of equipment, seek assistance from an appropriate responsible person(s) (see list below).
4. The fridges in the lab are used to store perishable ultrasound phantoms and contrast agents, and therefore should only be used for this intended use. Do not store food/drink in the lab fridges.
5. The hot water urn in the lab is for heating water for experiments only.
6. If outside clothing or bags are brought into the lab they should be hung on the hooks by the main entrance
9. Food and drink are not permitted in the lab.
10. Once experimental work has been completed and the experimental setup is no longer required, the experimental area should be cleared in preparation for another researcher/experiment. The following practices should be followed after the completion of experimental work;
 - i. Equipment should be placed in an appropriate location ensuring its safety, minimising potential damage and allowing other researchers access to it.
 - ii. The experimental area should be wiped or cleaned. This is NOT the responsibility of the cleaners.
11. Laboratory doors should remain locked at all times to ensure security.
12. If equipment is required to leave the lab, permission is required from your supervisor and, if necessary, seek assistance.
13. If equipment breaks down or is not working, report the fault to your supervisor immediately.
14. A fault with the fabric of the room, such as a lighting failure, should be reported through Maintenance Request found on the Estates and Buildings webpage, <https://ebweb.cent.gla.ac.uk/helpdesk/default2.asp>
15. All non-contaminated broken glassware, slides and coverslips must be disposed of in the sharps bins provided.
16. Use of space in the lab will be managed by the PIs, the Lab Guardian (Andrew Feeney) and C-MIU manager (Manish Jain), in collaboration with the School Safety Coordinator. Please consult with your supervisor if space for experiments is required.

Laser work

17. If you plan to use any laser equipment you must first consult John Nelson and Paul Prentice to receive appropriate training on how to safely use that device. Goggles are provided for your safety, use them at all times whilst you operate any laser. General guidelines on using lasers can be found at; <http://www.gla.ac.uk/schools/engineering/studentstaff/safety/>.
18. Class IV lasers are contained within the interlocked laser enclosure. Do not enter the enclosure when the **LASER IN USE** sign is illuminated. Goggles for the appropriate wavelengths and powers are available (hanging inside the laser enclosure door) and must be used at all times a laser is operational. Lasers include:
- A frequency-doubled pulsed Nd:YAG, emitting at 532 nm
- Operating instructions are available at the laser enclosure safety station.
19. The laser blocking blind over the window must be closed during the use of any laser, within the enclosure.
- Other laser vibrometers are located in the main lab.
- i. When any laser vibrometer is in use, the **LASER IN USE** sign outside the main lab door must be illuminated, and all lab doors must remain closed.
 - ii. Lasers should never be directed at any entrance to, or window of, the lab.

Biological work

20. If you are doing experiments in microbiology related areas then you will need to have appropriate training before starting this work.
21. All culture work must be carried out in the laminar flow cabinet.
22. All solid waste products from culture work i.e. plastic petri dishes, pipettes must be placed in the Biological Waste containers which are collected for disposal (contact Elizabeth Palmer). Glassware must be disinfected after use by complete immersion (or completely filling large bottles and fully swabbing outsides) in Virkon for a minimum of 2h prior to washing and/or disposal.
23. All spillages must be disinfected and cleared immediately with Virkon (1% in water) where possible (if Virkon cannot be used, for example inside the cabinet, 70% ethanol should be used instead).
24. Cultures and used medium must be disinfected by mixing with Virkon for at least 24h before disposal.

Specific named items and responsible persons

25. The following people are responsible for specific equipment/areas in the lab corresponding to the "Area management floorplan" on Page 2. It should be emphasized that **no work should be undertaken within these areas before training and approval has been obtained from the relevant person(s).**

Location	Setup	Point of Contact (email address)
Area 1 (Zone 1)	Ultrasound Imaging Microscopy	Sandy Cochran (sandy.cochran@glasgow.ac.uk)
Area 1 (Zone 2)	Capillary preparation	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 1 (Zone 3)	Sonocat acoustic detection	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 1 (Zone 4)	TBC (to be confirmed)	Paul Prentice (paul.prentice@glasgow.ac.uk)



Area 1 (Zone 5)	Water Degassing Zone	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 2 (Zone 1)	Autocapsule Electronic Setup	Alex Moldovan (alexandru.moldovan@glasgow.ac.uk)
Area 2 (Zone 2.1)	ESD-Safe Soldering Station	Alex Moldovan (alexandru.moldovan@glasgow.ac.uk)
Area 2 (Zone 2.2)	OnScale PC	Abdul Chibli (abdul.chibli@glasgow.ac.uk)
Area 2 (Zone 3)	Fluorescent Microscope	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 2 (Zone 4)	TBC	Sandy Cochran (sandy.cochran@glasgow.ac.uk)
Area 2 (Zone 5)	Verasonics	Hide Metzger (hide.metzger@glasgow.ac.uk)
Area 3 (Zone 1)	Transducer Fabrication	Mahshid Hafezi (mahshid.hafezi@glasgow.ac.uk)
Area 3 (Zone 2)	Scanning Tank	Alex Moldovan (alexandru.moldovan@glasgow.ac.uk)
Area 3 (Zone 3)	Hydrophones	Hide Metzger (hide.metzger@glasgow.ac.uk)
Area 4 (Zone 1)	Laboratory Oven	Paul Daly (paul.daly@glasgow.ac.uk)
Area 4 (Zone 2)	Acoustic Microphones	Paul Daly (paul.daly@glasgow.ac.uk)
Area 4 (Zone 3)	NDT	Mahshid Hafezi (mahshid.hafezi@glasgow.ac.uk)
Area 4 (Zone 4)	Dynamic Mechanical Analysis	Mahshid Hafezi (mahshid.hafezi@glasgow.ac.uk)
Area 5 (Zone 1)	Optical Setup	Sakineh Fotouhi (sakineh.fotouhi@glasgow.ac.uk)
Area 5 (Zone 2)	TBC	Sakineh Fotouhi (sakineh.fotouhi@glasgow.ac.uk)
Area 5 (Zone 3)	Material Characterisation Drawers	Sakineh Fotouhi (sakineh.fotouhi@glasgow.ac.uk)
Area 5 (Zone 4)	Material Characterisation Tray	Sakineh Fotouhi (sakineh.fotouhi@glasgow.ac.uk)
Area 5 (Zone 5)	PCs for Impedance analyser O/P	Sakineh Fotouhi (sakineh.fotouhi@glasgow.ac.uk)
Area 6 (Zone 1)	Degassed Water Storage	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 6 (Zone 2)	TBC	Sandy Cochran (sandy.cochran@glasgow.ac.uk)
Area 7	Cav Lab	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 8	Sink etc.	Paul Prentice (paul.prentice@glasgow.ac.uk)
Area 9	Bio Lab	Rebecca Cleary < rebecca.cleary@namisurgical.com >
Area (Virtual)	Comsol	Sakineh Fotouhi (sakineh.fotouhi@glasgow.ac.uk)

Access to C-MIU Setup/ Equipment Booking System and C-MIU Forum

26. Access to setups within C-MIU labs are strictly regulated via membership of our online booking system on Clustermarket. Therefore, **after** gaining approval from your supervisor, please submit your membership request to C-MIU Centre manager Manish Jain (manish.jain@glasgow.ac.uk). In order to gain access to C-MIU forum for discussion on different setups (some with video tutorials), please again reach out to the centre manager.