

School of Computer Science

Workshop Code of Practice

December 1995: Revised by CJW March 2006

1 Purpose of the Workshop

- a) The fabrication and machining of mechanical components to support the research in the School of Computer Science.
- b) The maintenance of equipment as required.

2 Introduction

This Code of Practice is displayed for the benefit of all personnel using equipment and machines within the workshop.

It is essential that you read it before using the machines or equipment located within the workshop.

3 Access

The workshop is open from 09.00 – 17.00 Monday to Friday, when the workshop technician Russell Arundale is in attendance. Access is restricted to the above times.

4 Use of Equipment and Machines

The facilities available in the Workshop can be divided into three categories:

- a) **Low Risk:** Hand operated machines. This category includes vices, benders, rollers, fly presses and guillotines.

These machines may be used by any member of staff or postgraduate student with the express permission and knowledge of the Workshop Technician.

- b) **Medium Risk:** Small rotating machines. This category includes pillar drills, grinders, band saws, jig saws, power hacksaws and linishers.

These machines may be used by any competent member of staff or postgraduate students. The staff member or postgraduate student must have first proved competency to the Workshop Technician.

- c) **High Risk:** Large rotating machines and welding equipment. This category includes circular saws, lathes, milling machines, oxyacetylene welding and arc welding equipment.

These machines may only be used by suitably trained personnel and only then at the discretion of the Workshop Technician.

The Workshop Technician may refuse access to any person who he feels is a danger to themselves or to others.

The Workshop Technician is empowered to make the decision about who is to be allowed to use the machines and equipment in the Workshop. His decision is final.

5 General Safety

Users of the workshop should comply with the following rules:

- a) Ensure you are aware of the location of fire extinguishers, emergency exits and emergency stop buttons.
- b) All personnel using electrically operated machinery must remove ties, loose clothing and jewellery. Long hair must be tied back and covered.
- c) Wear strong shoes, not trainers. If lifting or moving heavy items, wear shoes or boots with toe protection.
- d) If you spill anything, clean it up immediately. Keep the floor of the workshop clean and keep passageways clear at all times.
- e) Remember that you have a duty to yourself and others to work in a safe manner at all times.
- f) Never leave a machine running unattended.
- g) Switch off machines at the isolator before leaving the workshop.
- h) Ensure that the power supply to all machines is locked off when the workshop is closed.
- i) Do not playact or fool around. The Workshop is a potentially dangerous area.

6 Machines in Use

See Workshop Risk [Assessment](#)

7 Chemicals and Processes involved

- a) Chemicals used are oils, detergents, solvents and anti-bacterial agents. See relevant COSHH sheets.
- b) Processes include fabrication of sheet metal, drilling, turning, milling, grinding, sawing and welding.

8 Hazards

See Workshop Risk [Assessment](#)

9 Ways of containing the hazards

See Workshop Risk [Assessment](#)

10 What to do in emergencies

- a) Switch off power.
- b) Alert First Aider.
- c) In case of fire, raise alarm using nearest break glass. Then, if safe to do so and you are trained to use an extinguisher, tackle the fire with an extinguisher, otherwise leave immediately.

NOTE: ALL accidents, no matter how minor, must be reported to Lynn Howarth, Colin Wallis or Frank Pickard.

WORKSHOP RISK ASSESSMENT

Prepared 11th December 1995; revised March 2006

Machines	Risk Likelihood x Consequence	Chemicals & Processes Involved	Hazards	Ways of containing Hazards	Notes and Remarks
51" Bender (floor mounted)	Low 1 * 2 = 2	Bending of sheet metal.	Cuts from sharp edges of sheets.	Wear gloves when handling sheets.	Hand operated.
51" Box Bender (floor mounted)	Low 1 * 2 = 2	Bending of sheet metal.	Cuts from sharp edges of sheets.	Wear gloves when handling sheets.	Hand operated.
36" Roller (floor mounted)	Low 1 * 3 = 3	Rolling of sheet metal.	Cuts from sharp edges of sheets. Pinching fingers in rollers.	Wear gloves when handling sheets. Keep fingers away from rollers.	Hand operated.
20" Roller (Bench mounted)	Low 1 * 2 = 2	Rolling of sheet metal.	Cuts from sharp edges of sheets. Pinching fingers in rollers.	Wear gloves when handling sheets. Keep fingers away from rollers.	Hand operated.
48" Guillotine (floor mounted)	Low 1 * 4 = 4	Cutting of sheet metal up to 14 BG aluminium 20 BG steel.	Cuts from sharp edges of sheets. Sharp blade. Trapping feet under operating lever.	Wear gloves when handling sheets. Stand at front of machine when operating lever. Never put fingers behind guard. Keep standing foot clear of operating lever.	Foot operated. Adequately guarded providing the machine is used correctly.
Fly Press (bench mounted)	Low 1 * 3 = 3	Pressing of metals.	Trapping fingers. Hitting head on overhead ball.	Keep fingers clear of press. Check area of swing of ball before use. Clamp work when possible.	Hand operated. Safe, providing adequate care is taken when using.
Hand punch (bench mounted)	Low 1 * 4 = 4	Notching of metals.	Trapping fingers.	Keep fingers clear of press. Ensure locking pin is in position while setting up machine. Clamp work when possible.	Hand operated. Safe, providing adequate care is taken when using.
Bender (bench mounted)	Low 1 * 3 = 3	Bending of metal bars.	Pinching fingers.	Keep fingers clear of bending jaws.	Hand operated. Safe, providing adequate care is taken when using.

Machines	Risk Likelihood x Consequence	Chemicals & Processes Involved	Hazards	Ways of containing Hazards	Notes and Remarks
Hand knife (bench mounted)	Low 1 * 4 = 4	Cutting sheet metal and thin bar.	Sharp blade. Cuts from edge of sheets.	Wear gloves. Keep fingers clear of blade. Ensure locking pin is in position while setting up.	Hand operated. Safe, providing adequate care is taken when using.
Startrite Speedway Pillar Drill (floor mounted) 2 off	Medium 2 * 4 = 8	Drilling of metal and wood.	Swarf and dust in eyes. Cuts to hands from work piece. Fingers in pulleys.	Use goggles. Clamp work in vice. Ensure guards are in position. Ensure machine is isolated at wall before changing speed.	Machines are suitably guarded and are safe provided good practice is followed.
Startrite Mercury Mark II Pillar Drill (bench mounted)	Medium 2 * 4 = 8	Drilling of metal and wood	Swarf and dust in eyes. Cuts to hands from work piece. Fingers in pulleys.	Use goggles. Clamp work in vice. Ensure guards are in position. Ensure machine is isolated at wall before changing speed.	Machine is suitably guarded and is safe provided good practice is followed.
Meddings Pillar Drill (Bench Mounted)	Medium 2 * 4 = 8	Drilling of metal and wood.	Swarf and dust in eyes. Cuts to hands from work piece. Fingers in pulleys.	Use goggles. Clamp work in vice. Ensure guards are in position. Ensure machine is isolated at wall before changing speed.	Machine is suitably guarded and is safe provided good practice is followed.
Union Jubilee Grinder (floor mounted)	Medium 2 * 3 = 6	Grinding metal and tools	Sparks and dust in eyes. Abrasion to hands from rotating wheels.	Use goggles. Ensure guards are in place. Use tool rests and ensure that they are correctly adjusted. Isolate machine at wall before changing wheels. Wheels to be changed by trained person only	Machine is suitably guarded and is safe provided good practice is followed.
6" Clarke grinder (bench mounted)	Medium 2 * 3 = 6	Grinding metal and tools.	Sparks and dust in eyes. Abrasion to hands from rotating wheels.	Use goggles. Ensure guards are in place. Use tool rests and ensure that they are correctly adjusted. Isolate machine at wall before changing wheels. Wheels to be changed by trained person only	Machine is suitably guarded and is safe provided good practice is followed.

Machines	Risk Likelihood x Consequence	Chemicals & Processes Involved	Hazards	Ways of containing Hazards	Notes and Remarks
Band Saw (floor mounted)	Medium 2 * 4 = 8	Sawing metal, plastics and wood.	Dust in eyes. Moving blade.	Use goggles, Ensure guards are in place. Keep fingers clear of blade. Never feed work into saw with fingers. Use a scrap piece of wood to feed work.	Machine is adequately guarded and safe providing good practice is followed.
	High 3 * 4 = 12	Welding of blade.	Hot metal.	Use goggles	Blade welding to be carried out by the Workshop Technician only.
Belt Linisher (floor mounted)	Medium 3 * 3 = 9	Sanding.	Dust in eyes and inhalation. Rotating sanding belt.	Wear goggles and face mask. Dust extraction system.	Ensure dust extraction unit is emptied and filter is cleaned regularly.
Jig Saw (floor mounted)	Medium. 2 * 3 = 6	Sawing metals, plastics and wood.	Dust in eyes. Moving blade.	Use goggles. Ensure guards are in place. Keep fingers, clear of blade. Use scrap piece of wood to feed work into blade.	Machine is adequately guarded and safe providing good practice is followed.
Power Hacksaw (floor mounted)	Medium 3 * 3 = 9	Sawing of metal sections.	Cutting fluid. Risk of heavy sections falling on feet. Lifting heavy sections.	Ensure hands are washed after coming into contact with cutting fluid. Ensure work is adequately supported to retain work after cutting is complete. Ensure lifting is carried out in the correct manner. Wear suitable footwear.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis.
Elliot Milling Machine	High 3 * 5 = 15	Milling and sawing components.	Rotating parts. Swarf in eyes. Cutting fluid. Fingers in pulleys.	Wear goggles. Ensure guards are in position. Wash hands after contact with cutting fluid. Ensure work is securely clamped. Isolate machine before changing speed.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis.

Machines	Risk Likelihood x Consequence	Chemicals & Processes Involved	Hazards	Ways of containing Hazards	Notes and Remarks
Harrison Milling Machine	High 3 * 5 = 15	Milling and sawing metal components	Rotating parts. Swarf in eyes. Cutting fluid. Fingers in pulleys.	Wear goggles. Ensure guards are in position. Wash hands after contact with cutting fluid. Ensure work is securely clamped. Isolate machine before changing speed.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis.
Colchester Master Lathe	High 3 * 5 = 15	Turning of metal components.	Rotating parts. Swarf in eyes. Cutting fluid.	Wear goggles. Ensure guards are in position. Wash hands after contact with cutting fluid. Ensure work is securely clamped.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis.
Colchester 5 x 20 Lathe	High. 3 * 5 = 15	Turning of metal components.	Rotating parts. Swarf in eyes. Cutting fluid.	Wear goggles. Ensure guards are in position. Wash hands after contact with cutting fluid. Ensure work is securely clamped.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis.
Pultra Precision Lathe	High. 3 * 5 = 15	Turing of metal components,	Rotating parts. Swarf in eyes. Cutting fluid.	Wear goggles. Ensure guards are in position. Wash hands after contact with cutting fluid. Ensure work is securely clamped.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis.
Clarkson Tool & Cutter Grinder	High. 4 * 3 = 12	Grinding shafts and tools.	Sparks and dust in eyes. Rotating abrasive wheels. Cutting fluid.	Wear goggles. Ensure guards are in place. Keep fingers clear of grinding wheel. Ensure work is securely clamped. Wash hands after contact with cutting fluid.	

Machines	Risk Likelihood x Consequence	Chemicals & Processes Involved	Hazards	Ways of containing Hazards	Notes and Remarks
Surface grinding	High. 4 * 4 = 16	Grinding of flat metal components.	Sparks and dust in eyes. Rotating abrasive wheels. Cutting fluid.	Wear goggles and face mask. Ensure guards are in place. Keep fingers clear of grinding wheel. Ensure work is securely clamped. Wash hands after contact with cutting fluid. Wheel to be changed by trained person only.	Cutting fluid is oil based and contains an anti-bacteria treatment which some people may be allergic to. Can also cause dermatitis. Care is required to ensure work is locked onto magnetic chuck.
Circular saw	High. 5 * 4 = 20	Sawing of wood.	Dust in eyes and inhalation. High speed rotating saw blade.	Wear goggles and face mask. Ensure guard is in place. Never feed work into saw with fingers, always use another piece of wood.	Extreme care to be exercised when using this machine. Dust extraction unit to be fitted to base of machine.
Arc Welder	High. 3 * 5 = 15	Welding of metal.	Ultra violet light. Burning. Fire.	Always use welding shield. Wear protective apron. Wear gloves. Ensure there is no combustible material within 3m of process.	Arc welding will damage eyes. Ensure arc is shielded from other personnel around. Cease work at least 1 hour before leaving workshop.
Propane Torch	Medium 2 * 5 = 10	Heat treatment of metals and soldering.	Burning. Fire.	Wear goggles. Never handle work until it has had sufficient to cool. Ensure there is no combustible material within 2m of process.	Reasonable care is required when using this equipment. Cease work at least 1 hour before leaving workshop.

Machines	Risk Likelihood x Consequence	Chemicals & Processes Involved	Hazards	Ways of containing Hazards	Notes and Remarks
Felco Mobile Lifting Gantry (2 ton capacity)	High. 3 * 5 = 15	Lifting heavy equipment.	Dropping heavy items on feet, hands, etc.	Ensure load is adequately supported before lifting. Keep clear of items on hoist. Wear protective footwear. Gantry is inspected annually for insurance purposes	Only to be used under the direct supervision of the Workshop Technician.
Alexander 2B Engraving Machine	Low 1 * 3 = 3	Engraving metal and plastics.		Keep fingers clear of cutting tool and belts.	
Shaping machine	Medium 2 * 3 = 6	Machinery, metal components.	Swarf in eyes. Moving parts.	Use goggles. Ensure work is securely clamped.	Machine is safe provided good practice is followed.
Chop Saw	High 3 * 4 = 12	Sawing of wood, metals and plastic.	Dust in eyes. High speed rotating blade. Laser	Wear goggles and face mask. Ensure guard is in place and working. Keep hands clear of blade. Never look directly at source of laser.	Care to be exercised when using this machine.
T16 Welder	High 3 * 5 = 15	Welding of metals.	Burning. Fire.	Wear goggles. Never handle work until it has cooled. Ensure no combustible material within 2m of process.	Reasonable care is required when using this equipment, Cease work at least 1 hour before leaving workshop.
Oxyacetylene Welding	High. 4 * 5 = 20	Welding and brazing of metals.	Burning. Explosion. Fire.	Ensure bottles are secure in carry trolley. Never remove key from acetylene bottles while in use. Wear goggles. Ensure welding torch is in good condition. Never handle work until it has had sufficient time to cool. Ensure there is no combustible material within 2m of process.	Oxygen and Acetylene are dangerous if misused. Never use faulty equipment. In the event of an incident with an acetylene bottle isolate and notify supplier. Cease work at least 1 hour before leaving workshop.