1. Completed by: Andrew McVicar  
Staff number: 1121632

Faculty/Division: Division of Natural Sciences, Faculty of Science  
School/Unit: Schools of Biological Sciences, Chemistry, Molecular Bioscience, Physics.

<table>
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<tr>
<th>Document number</th>
<th>Initial issue date</th>
<th>Current version</th>
<th>Current Version issue date:</th>
<th>Next review date:</th>
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<tbody>
<tr>
<td>SWP-Workshop-001</td>
<td>29th January 2011 (SOP format)</td>
<td>Version 3</td>
<td>6th August 2013</td>
<td>6th August 2015</td>
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2. Safe work procedure title and basic description of activity

**Title:** Centre Lathe  
**Description of activity:** Turning, machining

3. List hazards and risk controls as per risk assessment

<table>
<thead>
<tr>
<th>Associated risk assessment number: RA-Workshop-001.</th>
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| **Risk Rating:** Medium  
**Machinery Location:** All workshops |

<table>
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<tr>
<th>Potential Hazards</th>
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| 1. Flying objects such as the chuck key left in chuck.  
2. Cutting tool injury when cleaning.  
3. Hair/clothing getting caught in moving machine parts.  
4. Metal splinters and swarf.  
5. Eye injuries.  

<table>
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<tr>
<th>Controls</th>
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| Ensure chuck is attached correctly and key removed.  
Ensure chuck is tightened sufficiently to hold work in progress.  
Remove cutting tools from the machine prior to cleaning.  
Long hair to be tied back. Avoid wearing loose fitting clothing.  
Wear gloves when cleaning the machine, and remove swarf from machine with a scraper.  
Wear fully protective glasses at all times. Where appropriate, hearing protection should be used. |

4. List resources required including personal protective clothing, chemicals and equipment needed

**PERSONAL PROTECTIVE EQUIPMENT**

- Safety glasses must be worn at all times in work areas.  
- Long and loose hair must be contained.  
- Sturdy footwear must be worn at all times in work areas.  
- Close fitting/protective clothing must be worn.  
- Gloves must not be worn.  
- Hearing protection may be used when using this machine.  
- Rings and jewelry must not be worn.

5. List step by step instructions or order for undertaking the task

**PRE-OPERATIONAL SAFETY CHECKS**

- Ensure material to be cut poses no hazard. For unusual materials consult the manufacturers' Material Safety Data Sheets (MSDS) for specific technical data and precautionary measures.
- Locate and ensure you are familiar with all machine operations and controls. Ensure adequate lighting.
- Ensure all guards are fitted, secure and functional. Do not operate if guards are missing or faulty.
- Ensure that machine slides and moving parts are clean, correctly adjusted and lubricated.
✓ Check workspaces and walkways to ensure no slip/trip hazards are present.
✓ Remove the chuck key before starting the lathe.

OPERATIONAL SAFETY CHECKS
✓ Ensure that chuck and spindle mounting surfaces are clean before mounting chuck. Same for tailstock taper.
✓ Check that the work piece is clamped securely in the chuck or other appropriate holding device. Note: A four jaw independent chuck will give much greater holding power than a three jaw self-centring one.
✓ Ensure that a suitable cutting tool for the operation is set to the centre height and securely fastened.
✓ Ensure that the correct speed and feed for the machining operation is selected.
✓ If work piece is offset or of a shape that causes out of balance take care not to start the lathe at a high speed. Start the lathe initially at a slow speed to assess the effect of the out of balance and progressively increase the speed. Fit balance weight if necessary to eliminate or minimise vibration.
✓ When holding long thin material that protrudes through the rear of the headstock, exercise care that the material does not bend & whip when the spindle is started. Keep overhanging length to a minimum. Do not run the machine at high speed. Use a suitable spindle plug and vee support or similar to support the rod.
✓ Use cutting fluid or coolant on the work piece and cutting tool where appropriate
✓ Keep hands clear of metal shavings and rotating chuck and/or work piece.
✓ Avoid letting swarf build up on the tool or job. Stop the machine and remove it.
✓ Before making adjustments or measurements, switch off and bring the machine to a complete standstill.
✓ Always remove the chuck key from the chuck.

ENDING OPERATIONS AND CLEANING UP
✓ Switch off the machine when work completed.
✓ Reset all guards to a fully closed position.
✓ Leave the machine in a safe, clean and tidy state.

DON'T
✗ Do not use faulty equipment. Immediately report suspect machinery.
✗ Do not try to lift chucks, face plates or work pieces that are too heavy for you.
✗ Never leave the machine running unattended.
✗ Do not attempt to slow or stop the chuck or revolving work by hand.
✗ Do not continue if chatter is apparent. Take measures to stop it such as: Increase rigidity, reduce speed, increase feed rate, change tool geometry.
✗ Do not put tools or equipment on the bed or slides.
✗ Do not use rags near rotating work piece or machine parts.
✗ Do not use files or sandpaper on the machine.
✗ Do not use compressed air for cleaning the machine.

6.List emergency shutdown procedures
Hit Emergency Stop button.

7.List Emergency procedures for how to deal with fires, spills or exposure to hazardous substances
No chemicals are used in the operation of this machine. Fire hazards would only be apparent if Magnesium alloys are used. A separate Risk Assessment must be conducted and documented should those situations arise.

8.List Clean up and waste disposal requirements
Wearing gloves remove swarf and clean down lathe after each use, as well as intermittently during the job. Where appropriate, swarf is retained for metal recycling, otherwise, all debris to general waste.

9.List legislation used in the development of this SWP
10a. List competency required – qualifications, certificates, licensing, training - e.g. course or instruction:
Metal Trades Craftsman’s Certificate, or equivalent.

10b. List competency of Assessor
David Beech – Senior Technical Officer (Physics) – BSc (Eng)

11. Supervisory approval, And review

<table>
<thead>
<tr>
<th>Supervisor</th>
<th>Gemma Thompson</th>
<th>Signature:</th>
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<tbody>
<tr>
<td>Responsibility for SWP review:</td>
<td>School Technical Managers</td>
<td>Date of review: 9\textsuperscript{th} August 2013</td>
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12. SWP Sign off sheet

SWP name and version:

In signing this section the assessor/authoriser agrees that the following persons are competent in following this SWP

<table>
<thead>
<tr>
<th>Name</th>
<th>Signature</th>
<th>Date Competent</th>
<th>Name of Assessor/Authoriser</th>
<th>Assessor/Authoriser signature</th>
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<tr>
<td>Andrew McVicar</td>
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<td>9\textsuperscript{th} August 2013</td>
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<td>Marcel Kaegi</td>
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<td>Rattan Bhandari</td>
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<td>Michael Paterson</td>
<td>See Physics file</td>
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<td>Terry Pfeiffer</td>
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<td>6\textsuperscript{th} October 2011</td>
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