

CNC Milling and Turning

Competition Overview

Entry requirements

The CNC Milling and Turning competitions are for any technician who has been involved in CNC milling or turning.

This competition is at advanced level which means a competitor should be undertaking qualifications up to level 3 (for England, Northern Ireland and Wales), up to level 6 (for Scotland) or should have up to five years experience in a working environment.

Competitors should be able to do the following to be suitable to enter the competition:

- Write a CNC programme
- Place tools in the machine
- Manually measure tool offsets
- Use correct work holding (chucks and vices)
- Use inspection equipment
- Be able to square and true components

Up to 3 competitors can be entered per organisation per skill.

WorldSkills London 2011 eligibility criteria

The international rule for these WorldSkills competitions are that competitors are required to be under the age of 23 in the year of the competition; This means that for the WorldSkills London 2011, competitors must be born on or after 1 January 1989.

Competition structure

Stage one: Enter online by **19 March 2010** and make a note of your competitor number which is issued to you when you enter the competition.

Stage two: Download either the **milling** or the **turning** competition project brief from the WorldSkills UK website and label and submit your work to UK Skills by **14 May 2010**. Details of submission overleaf.

COMPETITORS HAVE 7 HOURS TO COMPLETE THE COMPETITION PIECE.

Rules for submission of work

Please use the guidelines below for submitting your work. Any competition pieces submitted without ALL the required materials stated will not be marked,

Stage two: the competition piece should be sent to:

Lisa Hartnell
WorldSkills UK
36 Queen Street
London
EC4R 1BN

- The deadline for sending the competition piece is **5pm** on the **14 May 2010**. **Any competition pieces received after this date will not be marked.**
- All work should be packed securely to avoid damage on route
- All work should be clearly labelled with your correct competitor number on (not your name)
- Alongside the labelled competition piece please provide your name, address and contact telephone number.
- All work should be submitted with the covering statement which is available for download on the CNC competition page
- All work submitted should be your own work as should you be successful enough to get through to the UK final you will be taking part in a live competition. You must sign the form provided to confirm this is the case.
- Your work will not be returned from stage two.
- The judging of stage two will take place during the 17th – 21st May 2010

Stage three: all submissions of work will be judged (details given below) and the highest scoring competitors that meet the required standard will be invited to compete at the UK final to be held in June or July 2010.

Stage four: Once the judging has taken place competitors will find out if they have been successful to go forward and compete in the UK final by 5pm on the **24th May 2010**.

Please note - Once you have been notified of your success in the UK final it is advisable to contact the venue hosting the competition to arrange a time to visit prior to the competition. During this visit you can have a look around the venue and spend some time on the machines and this will help you when you come to compete. Please note you must arrange this visit yourself with the venue and this includes arranging your travel and, if necessary, accommodation.

Competition description

CNC Milling & CNC Turning – test pieces must be downloaded from www.worldskillsuk.org CNC milling and turning competition page.

Competitors will produce projects split into two areas, programming offline using any cam system and machining.

The test projects for the competition covers practical work carried out on a CNC 3 axis mill or a CNC 2 axis lathe.

To enter either the CNC Milling or Turning competition you are required to have prior knowledge and be able to display the following skills throughout the competition.

- Tool length offset setting
- Workshift/datum setting
- Programming knowledge
- Reading of engineering drawings
- The use of Mastercam
- Use of trigonometry if programming manually
- Proving programmes
- Execution of programmes
- Inspection of components
- Following H&S guidelines at all times
- Transferring of programmes to MCU
- Machine to an accuracy of 0.01mm

For **CNC milling** the work pieces shall be worked on two faces and include such features as external contours, milling channels, hollow-out bore, tapped holes, reamed holes and pocket milling.

For **CNC turning** the work pieces shall be worked on both ends and include turned diameters, undercuts, angles, screw threads (internal and external) and machined profiles

The test projects for the competition cover practical work that will be programmed offline using cam systems.

The Machine Control Unit (MCU) of the CNC machines will be controlled by FANUC or other commercially available control systems such as Siemens and Heidenhain.

PLEASE NOTE:

You are not permitted to use programme enhancing software i.e. – Supercapi or Shopmill as we need to be able to ascertain your level of programming knowledge and can not do so if this is used.

Marking and assessment

Work will be marked according to Worldskills format. Marks will be awarded for accuracy and surface finish. The marks will be split across different features, for example:

Description	Marks
Main dimensions	50
Secondary dimensions	25
Surface finish	8
Conformity to drawing	12
Only using ONE piece of material	5

Judging

A panel of judges have been drawn from industry, further education and higher education. The judges' decisions will be independently moderated and quality assured by UK Skills before being confirmed.

Rules

Each competitor will, without assistance programme offline using cam systems and machine the components using Fanuc, Heidenhain or Siemens (dependant on machine availability at the time of the competition).

Competitors will have programing time using cam systems for each project and set up and machining time (programinig may allso be finished within machining time).

If a problem occurs with the macine then a technician will assess if it is a problem with the control or the programme. If it is with the control, the time required to correct such will be added to the competitors time allocation.

The Judges decision is final.

WorldSkills selection process:

- There is **no guaranteed entry** to the WorldSkills International competitions
- UK Skills invites the most promising national competitors, who meet the eligibility criteria, to compete to join a short-list of competitors for the WorldSkills Competition.
- Those selected for the short-list are trained and then compete for potential inclusion in Squad UK for the WorldSkills Competition.
- Squad members then undergo a rigorous programme of training, support and appraisal.
- Finally, they compete at a selection event to decide who wins a place in Team UK.
- **Please note:** UK Skills makes the final decision on any issues regarding the short-list, squad, team, team members and performance at every stage of the competition

journey and selection process.

Contact details

For technical advice about the **Milling** competition contact:

Andy McLean

Email: Andrew.McLean@bentley.co.uk

For technical advice about the **Turning** competition contact:

Craig Endicott

Email: craige_ukskills@hotmail.co.uk

For general information about competitions please contact the WorldSkills UK contact centre:

Free phone: 0800 612 0742

Email: worldskillsuk@ukskills.org.uk