

KFE4Skills Competition Spec – Plumbing Level 3

Note: For general competition rules and guidance see: <https://www.kentfurthereducation.org/skills-competitions-1>

Industry Name		
Lead Brief Writer	Name: Mark Hill	Email: Rule5solutions@gmail.com
EKCG Industry Lead	Name: Gregor MacGregor	Email: Gregor.MacGregor@eastkent.ac.uk
MKC Industry Lead	Name: Ruth Kay / Nabil Mugharbel	Email: Ruth.Kay@midkent.ac.uk
NKC Industry Lead	Name: Dave Smith	Email: davesmith@northkent.ac.uk

	Section	Criteria Guidance	Confirmed Spec Criteria
1	Entry Criteria	Entrants must be in education and/or employment with training, at one of the KFE college organisations (EKC Group, MidKent College and North Kent College (including Hadlow College), and/or have completed or be undertaking a relevant Level 2 or 3 or above programme within the last 12 months.	
2	Entrant Numbers	Standard entrant number per college organisation is 2 students for most industry rounds where more than 2 college organisations are participating and 3 per organisation where only 2 colleges are participating.	<ul style="list-style-type: none"> ○ Each college organisation (not campus) may register up to (6) students. ○ Confirmed max number of students in total showcase: 6 <p>At the time of entry the entrants must have been challenged at the level of the competition. This means that entry is only possible through a qualifying process at your local college and with the endorsement and verification of the lead staff from that college.</p>
3	Competition Prep	This section describes preparation needed for this competition.	<p>Preparatory Brief</p> <p>It can take years of training to become a qualified plumber / heating engineer. A career in plumbing and heating calls for a dedication to lifelong learning, as the rate of technological advancement is rapid.</p> <p>An understanding of maths and science is vital. The plumbing industry holds diverse career paths, good wages and the opportunity for individuals to run their own business. Many plumbers progress to design, consultancy, teaching and management, making the plumbing and heating industry a career with a future.</p>

			Competitors will be required to perform pipework skills to replicate a pipework drawing with accuracy. This will include; measuring and cutting pipes, bending copper tube, joining pipes using a variety of fittings and working in a safe manor.
4	Core Competency	Summary of relevant education level industry competency.	<ul style="list-style-type: none"> ○ Professional conduct ○ Measuring and marking out ○ Task layout and pipework soundness ○ Bend & Joint Quality ○ Bend angles & clearances ○ Plumb & Level ○ Effective health & safety ○ Material usage and overall presentation
5	Duration	This is the time that the actual competition activity will take.	5 hours total working time (excluding any familiarisation and health & safety briefings.)
6	The Skills Competition Task Details	This section describes the skills competition task to be undertaken in detail.	<p>Task 1.</p> <ul style="list-style-type: none"> ○ There will be an initial written problem solving task. This will be given to each competitor and a written answer needs to be provided. <p>Task 2.</p> <ul style="list-style-type: none"> ○ The second live competition will be a practical exercise. The exercise consists of an installation of copper pipework including various jointing techniques and complex bending. Jointing of the copper pipework layout will be by application of heat and soft solder to produce air tight joints and by use of compression fittings where applicable. All bends on pipework to be carried out by portable hand held machine (no fixed bench machines available). <p>Note: Supporting diagrams are in a separate pdf document on the KFE4Skills site page.</p>

		<p>Order of Competition / Competitor Schedule Note: This schedule is a broad guide to expected timings and there will be some flex on the day.</p> <table border="1"> <thead> <tr> <th>Timing</th> <th>Activity</th> </tr> </thead> <tbody> <tr> <td>8.45 – 9.15am</td> <td>Arrive at College – registration and complete paperwork</td> </tr> <tr> <td>9.15 – 9.35am</td> <td>Competitor induction / rules / Health & Safety etc.</td> </tr> <tr> <td>9.35 – 9.45am</td> <td>Technical briefing in competition area with Judges (tool, materials & PPE check)</td> </tr> <tr> <td>9.45 – 9.55am</td> <td>Task 1 Initial written problem solving task.</td> </tr> <tr> <td>9.55am – 12.55pm</td> <td>Task 2 Practical session 1 (3 hours)</td> </tr> <tr> <td>12.55 – 1.25pm</td> <td>Lunch break (food & drinks will be provided – voucher available)</td> </tr> <tr> <td>1.25 – 3.25pm</td> <td>Practical session 2 (2 hours)</td> </tr> <tr> <td>3.25 – 4.00pm</td> <td>All tools and equipment cleared from competition bays. Competitors and all visitors to leave the competition area to allow judging to commence.</td> </tr> <tr> <td>3.25– 3:45pm</td> <td>Wash and change for awards (judges mark practical exercises)</td> </tr> <tr> <td>3:45pm</td> <td>Awards presentation</td> </tr> </tbody> </table>	Timing	Activity	8.45 – 9.15am	Arrive at College – registration and complete paperwork	9.15 – 9.35am	Competitor induction / rules / Health & Safety etc.	9.35 – 9.45am	Technical briefing in competition area with Judges (tool, materials & PPE check)	9.45 – 9.55am	Task 1 Initial written problem solving task.	9.55am – 12.55pm	Task 2 Practical session 1 (3 hours)	12.55 – 1.25pm	Lunch break (food & drinks will be provided – voucher available)	1.25 – 3.25pm	Practical session 2 (2 hours)	3.25 – 4.00pm	All tools and equipment cleared from competition bays. Competitors and all visitors to leave the competition area to allow judging to commence.	3.25– 3:45pm	Wash and change for awards (judges mark practical exercises)	3:45pm	Awards presentation
Timing	Activity																							
8.45 – 9.15am	Arrive at College – registration and complete paperwork																							
9.15 – 9.35am	Competitor induction / rules / Health & Safety etc.																							
9.35 – 9.45am	Technical briefing in competition area with Judges (tool, materials & PPE check)																							
9.45 – 9.55am	Task 1 Initial written problem solving task.																							
9.55am – 12.55pm	Task 2 Practical session 1 (3 hours)																							
12.55 – 1.25pm	Lunch break (food & drinks will be provided – voucher available)																							
1.25 – 3.25pm	Practical session 2 (2 hours)																							
3.25 – 4.00pm	All tools and equipment cleared from competition bays. Competitors and all visitors to leave the competition area to allow judging to commence.																							
3.25– 3:45pm	Wash and change for awards (judges mark practical exercises)																							
3:45pm	Awards presentation																							
<p>7 Marking & Assessment Requirements</p>	<p>This section provides the marking and assessment approach.</p>	<p>Each competition module will be assessed and marked independently of any other competition activity, using objective and judgement criteria or a combination of both during each task.</p> <table border="1"> <thead> <tr> <th>Task Skill</th> <th>Score</th> </tr> </thead> <tbody> <tr> <td>Task 1</td> <td>10%</td> </tr> <tr> <td>Task 2</td> <td></td> </tr> <tr> <td>Measuring and marking out</td> <td>20%</td> </tr> <tr> <td>Bend and joint quality</td> <td>20%</td> </tr> <tr> <td>Bend and angles clearances</td> <td>20%</td> </tr> <tr> <td>Plumb and level</td> <td>15%</td> </tr> <tr> <td>Effective H&S</td> <td>5%</td> </tr> <tr> <td>Material usage and overall presentation</td> <td>10%</td> </tr> <tr> <td>Total</td> <td>100</td> </tr> </tbody> </table>	Task Skill	Score	Task 1	10%	Task 2		Measuring and marking out	20%	Bend and joint quality	20%	Bend and angles clearances	20%	Plumb and level	15%	Effective H&S	5%	Material usage and overall presentation	10%	Total	100		
Task Skill	Score																							
Task 1	10%																							
Task 2																								
Measuring and marking out	20%																							
Bend and joint quality	20%																							
Bend and angles clearances	20%																							
Plumb and level	15%																							
Effective H&S	5%																							
Material usage and overall presentation	10%																							
Total	100																							

		<p>Standards</p> <ul style="list-style-type: none"> ○ The measurements should be within +/- 2mm of the specified dimensions. ○ The bends should be within +/- 1degree of the specified dimensions.. ○ The soldered fittings should not be burnt or have drips (wiping of joints is not permitted) ○ Burn marks on background surface will result in mark deduction ○ There should be no burrs at the end of the pipes. ○ The task must be completed within the time scale for full marks to be gained ○ The task must be completed as per the drawing supplied. <p>Safe Working</p> <ul style="list-style-type: none"> ○ Candidates must work safely at all times and take the appropriate precautions when working with any tools that have a potential safety hazard. ○ Appropriate Personal Protective Equipment must be worn at all times. ○ No power tools to be used. <p>Drawings</p> <ul style="list-style-type: none"> ○ The drawing provided is not to scale. ○ Care must be taken to ensure datum line is as briefed by the lead Judge. ○ No pre used / made drawings or templates can be brought into the competition area. <p>Note diagram pdf is at Appendix 2.</p> <p>For all judgement criteria, the following marking scale will be used/ or a variation:</p> <ul style="list-style-type: none"> ○ 0 = Does not meet industry standard ○ 1 = Meets minimum industry standard ○ 2 = Meets industry standard ○ 3 = Exceeds industry standard <p>Each competition module will be assessed and marked independently of any other competition activity. Once marks have been awarded by each of the judges, they will be averaged to obtain the final mark. The</p>
--	--	---

			<p>panel of judges has been selected from a range of industry, college and training provider representatives. The judges’ decisions will be moderated and quality assured.</p>
8	Judges & Marking	This competition benefits from college and external judges.	<p>The KFE competition will use marking guides best suited to the industry event. An example scoring sheet is below.</p> <p>Judges will be selected from the expert KFE staff drawn from various colleges. Panels will normally number three to five judges and in some cases may include an external judge from the industry sector or an awarding body. Judges’ decisions are final in all instances, although scoring will be open and transparent.</p> <p>JUDGE MARKING SHEET</p> <p>See Appendix 1 below.</p>
9	Student Support Required	Detail if student helpers are required and how many per student undertaking the task.	<ul style="list-style-type: none"> ○ XXXXXX ○ These should also be registered on the KFE4Skills portal as they will also be issued a participation medal and will be named in the programme.
10	Resources	Detail any PPE or dress code requirements.	<p>Competitors are responsible for providing all consumable products and equipment needed for the competition. Resources and materials for Task 2 will be provided by the venue.</p> <p>Plumbing Competition Tool List and Sundry items you may bring with you or you can use those provided by the venue. Additional tools will not be permitted.</p> <ul style="list-style-type: none"> ○ 2 x Adjustable spanners to suit compression connections ○ Full set of Screwdrivers flat and cross head ○ Bradawl ○ Junior Hacksaw complete with spare blades ○ Tape measure or steel rule 300mm/600mm types ○ Small and Large spirit levels ○ Protractor ○ Adjustable angle

			<ul style="list-style-type: none"> ○ Pencils, rubber and pencil sharpener ○ Plain paper for drawing templates ○ Pipe cutters ○ Pipe bender mechanical 15mm – 22mm (portable hand bender only) ○ Blow torch and cylinder ○ Soldering Mat ○ Wire wool, flux and solder ○ Jointing Compound / PTFE tape <p>Personal Protective Equipment (PPE) <u>That you are required to bring with you!</u></p> <ul style="list-style-type: none"> ○ Goggles / safety glasses (clear) ○ Gloves ○ Safety boots / shoes ○ Work-wear trousers or overalls
11	Health & Safety	Confirmation that relevant health and safety checks and assurances are undertaken or are to be by each college locally where necessary.	See relevant risk assessments and additional competition round specific rules and guidance requirements.
12	Risk Assessment	Confirmation that relevant risk assessments have been or are to be undertaken locally where necessary.	<ul style="list-style-type: none"> ○ The host college must have completed a relevant risk assessment and filed this centrally for KFE4Skills. ○ Participating visiting colleges should complete risk assessments relevant to their event participation.
13	Competition Spec additional rules and requirements	Detail of additional specific rules and requirements for this competition spec.	<p>The following is in addition to the overall KFE4Skills General Rules & Guidance. A completed registration is a confirmation that a competitor has agreed to the following:</p> <p>No additional rules or requirements.</p> <p>All electrical equipment must be PAT tested and labelled before using at the competition and all the supporting equipment must be fit for purpose.</p>

Appendix 1

Competitor	College	Score Task 1 10%	Score Task 2	90%	Total Score
			Measuring and marking out (20%) Bend & Joint Quality (20%) Bend angles & clearances (20%) Plumb & Level (15%) Effective health & safety (5%) Material usage & presentation (10%)		
			Measuring and marking out (20%) Bend & Joint Quality (20%) Bend angles & clearances (20%) Plumb & Level (15%) Effective health & safety (5%) Material usage & presentation (10%)		
			Measuring and marking out (20%) Bend & Joint Quality (20%) Bend angles & clearances (20%) Plumb & Level (15%) Effective health & safety (5%) Material usage & presentation (10%)		
			Measuring and marking out (20%) Bend & Joint Quality (20%) Bend angles & clearances (20%) Plumb & Level (15%)		

			Effective health & safety (5%) Material usage & presentation (10%)		
			Measuring and marking out (20%) Bend & Joint Quality (20%) Bend angles & clearances (20%) Plumb & Level (15%) Effective health & safety (5%) Material usage & presentation (10%)		
			Measuring and marking out (20%) Bend & Joint Quality (20%) Bend angles & clearances (20%) Plumb & Level (15%) Effective health & safety (5%) Material usage & presentation (10%)		
	<p>Comments:</p> <p><i>Use this space for any specific comments noting the competitors as appropriate.</i></p>				

Diagrams

Appendix 2

